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Ministry of Counter Narcotics

Afghanistan

Opium Survey 2008



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This report is dedicated to the memory of Fazal Ahmad, MCN/UNODC who was part of the team carrying out the dangerous task of verifying opium eradication statistics and lost his life in the process.

The report is also dedicated to all the others who have lost their lives in the cause of building peace in Afghanistan.

ABBREVIATIONS

AEF	Afghan Eradication Force
ANP	Afghan National Police
GPS	Global Positioning System
ICMP	Illicit Crop Monitoring Programme (UNODC)
MCN	Ministry of Counter-Narcotics
RAS	Research and Analysis Section (UNODC)
UNODC	United Nations Office on Drugs and Crime

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This report, and other ICMP survey reports can be downloaded from:
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COMMENTARY FROM THE EXECUTIVE DIRECTOR

In 2008 opium has become less important to the Afghan economy. Our summary report, released in August, showed a sharp drop in its physical dimensions: cultivation and production. This final *Afghan Opium Survey 2008* assesses the complex nature of the opium economy in Afghanistan this year and prospects for 2009.

The Afghan drug economy. In 2007 the (farm gate) value of opium cultivation was one of the largest ever, at about \$1 billion. In 2008 it dropped by more than a quarter, to \$730 million. In 2007 the (potential) export value of opium, morphine and heroin (at border prices in neighbouring countries) was \$4 billion. This year's drug export was valued at \$3.4 billion. (Note that these export amounts are *potential* as they do not account for changes in domestic stocks, unknown to us).

The Taliban war economy. In many parts of Afghanistan, authorities impose a charge (called *ushr*) on economic activity, traditionally set at 10% of income. Thus, opium farming may have generated \$50-\$70 million of such tax income in 2008. Furthermore, opium processing and trafficking may have raised an additional \$200-\$400 million. Who collects this money? Local strong men. In other words, by year end, war-lords, drug-lords and insurgents will have extracted almost half a billion dollars of tax revenue from drug farming, production and trafficking. Not surprisingly the insurgents' war machine has proven so resilient, despite the heavy pounding by Afghan and allied forces.

The downturn in the opium economy. Since 2007 opium cultivation declined by 19% to 157,000 hectares this year, for several reasons. *First*, as shown in our August Report, restraint at planting (but not eradication), has been successful. Pressure by governors, shuras and village elders has kept cultivation down in many provinces. *Second*, and most importantly, the dynamics of farm prices. As (Afghan) supply has once again exceeded (world) demand, prices for opium (both fresh and old) are down 20% in nominal terms (and much more at constant prices). *Third*, the terms of trade effect. While opium farmers' income has declined, the revenue from wheat has tripled since 2007 (partly due to drought). The gross income ratio of opium to wheat (per hectare) in 2007 was 10:1. This year it narrowed to 3:1. The net income ratio is down to 2:1. The Afghan government, and its international partners face a unique opportunity to reinforce these economic trends with counter-narcotic measures that can further reduce opium's appeal.

A smaller, more intensive drug problem. There is evidence that Afghanistan's opium problem is shrinking in size and concentrating geographically. *First*, Afghan opium is grown exclusively (98%) in seven south-west provinces, where insurgents control the territory and organized crime groups benefit from their protection. *Second*, in 2008 just 2.1% of Afghanistan's arable land was used to grow opium, as opposed to 2.5% in 2007. *Third*, opium is now cultivated by fewer, richer farmers: in 2008 opium was farmed by one million fewer people than in 2007. *Fourth*, the convergence of opium prices this year shows that the Afghan drug market is now unified. In crude medical terms, the opium chemotherapy applied throughout Afghanistan has shrunk the cancerous metastasis to the southern region, where surgery is now needed and feasible.

Prospects for 2009? The decline in opium cultivation may continue, *first* because of policy: Mohammad Gulab Mangal, Governor of Helmand, is taking a tough stance. Since his province produced 2/3 of all Afghan opium in 2008, any decline in cultivation in the districts he controls would have a major impact. *Second*, because of price trends: if food prices remain high, farmers will stick and/or shift to food crops. Of course, as high food prices impose hardship to cities (there were riots in Kabul this spring), they have to be offset by generously subsidized distribution of food in urban centres. The international community has a special responsibility and I call on all Afghan partners to be generous, and fast.

Where are the opium stocks? For a number of years now, Afghan opium production has exceeded (world) demand. The bottom should have fallen out of the opium market. It has not. Prices charged by farmers this past July (\$85/kg) were 20% lower than in 2007 and half the price in July 2005 (\$171/kg). This is significant, but not dramatic. As such price inelasticity can only be the result of stock build-ups, we should ask: where, why and by whom? *First*, our UNODC surveys show that farmers hold some stocks of dry opium, but not thousands of tons. *Second*,

traders are unlikely to stock a devaluing commodity. Hence, and *third*, a non-economic explanation: the drugs must have been withheld from the market for non-speculative considerations in areas of insurgency, on both sides of Afghanistan's southern border.

A wild card in the hands of insurgents. If the Taliban are holding major drug stockpiles, they may welcome lower opium cultivation. The resulting price increase would revalue their stocks and improve war financing. Indeed, news picked up by UNODC surveyors in a number of eastern and southern provinces confirm that the Taliban are taking a passive stance at this time of opium planting, as against past efforts to promote it. If opium prices are allowed to increase because of a moratorium on cultivation supported by the Taliban, the resulting market manipulation would spell disaster in the north-east of Afghanistan where so many provinces have abandoned opium cultivation voluntarily, enticed by expectation of development assistance and good revenues from wheat. If wheat/opium terms of trade change again in favour of the latter, this would spell trouble for Afghan counter-narcotic policy.

Keep both production and price of opium down. The laws of economics do not usually allow values and volumes to move in the same direction. Yet, in Afghanistan today there are (economic) reasons for it, and (non-economic) means to disrupt it. Opium production and prices can both be kept down by destroying high value targets like drug markets, heroin labs and trafficking convoys moving to the south-western borders. The inflow of precursor chemicals must also be reduced. If the Afghan drug economy's umbilical cord to the world (i.e. the link between the farmers in Afghanistan and the heroin addicts in the rest of the world) is cut by powerful law enforcement means, the domestic market (i.e. traders and their Taliban mentors) would remain flooded with poisonous drugs. Opium prices in Afghanistan would stay down, and so would output. The geo-concentration of opium cultivation in the southern region offers the tactical opportunity to accomplish this.

A more honest government administration and a greater/faster delivery of development assistance in opium-free provinces offer a proper context for the achievement of these results.



Antonio Maria Costa
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FACT SHEET ANNUAL OPIUM POPPY SURVEY 2008

	2007	Difference from 2007	2008
Net opium cultivation (after eradication)	193,000 ha	-19%	157,000 ha
in per cent of agricultural land ¹	2.5%		2.1%
in per cent of global cultivation	82%		79% ²
Number of poppy-free provinces	13		18
Number of provinces affected by opium cultivation	21		16
Eradication	19,047 ha	-71%	5,480 ha
Weighted average opium yield	42.5 kg/ha	+15%	48.8 kg/ha
Potential production of opium	8,200 mt	-6%	7,700 mt
In per cent of global production	93%		93%
Number of households involved in opium cultivation	509,000	-28%	366,500
Number of persons involved in opium cultivation	3.3 million	-28%	2.4 million
in per cent of total population ³	13.7%		9.8%
Average farmgate price (weighted by production) of fresh opium at harvest time	US\$ 86/kg	-19%	US\$ 70/kg
Average farmgate price (weighted by production) of dry opium at harvest time	US\$ 122/kg	-22%	US\$ 95/kg
Current GDP ⁴	US\$ 8.2 billion		US\$ 10.2 billion
Total farmgate value of opium production	US\$ 1 billion	-27%	US\$ 730 million
in per cent of GDP	12%		7%
Potential export value of opium, morphine and heroin (border areas of neighbouring countries)	US\$ 4 billion		US\$ 3.4 billion
Average yearly gross income from opium of opium-growing farmers ⁵	US\$ 1965	+2%	US\$ 1997
Average per capita gross income from opium of opium-growing households ⁶	US\$ 302	+2%	US\$ 307
Current GDP per capita	US\$ 340	+22%	US\$ 415
Indicative gross income from opium per ha	US\$ 5200	-10%	US\$ 4662
Indicative gross income from wheat per ha	US\$ 546	+198%	US\$ 1625

¹ The area available for agriculture has been updated by UNODC based on Landsat 7 ETM images. This estimate replaced previous FAO estimates dating back to 1993.

² Preliminary estimate.

³ Population 24.1 million in Afghan year 1385 (April 2006 to March 2007) and 24.5 million in Afghan year 1386 (April 2007 to March 2008); source: Afghan Government, Central Statistical Office.

⁴ GDP Afghan year 1385 (April 2006 to March 2007), revised figure, and GDP for Afghan year 1386 (April 2007-March 2008; preliminary estimates); GDP growth in constant Afghanis amounted to 16.2% in the Afghan year 1386, up from 11.2% in the Afghan year 1385; source: Afghan Government, Central Statistical Office.

The inflation (change in the Consumer Price Index) amounted to 16.9% in 2007 and 27.1% over the first two quarters of 2008 (Source: IMF International Financial Statistics, October 2008). Foreign exchange rate of the Afghan currency remained practically unchanged (2006: Afghanis 49.93; 2007: Afghanis 49.96; first two quarters of 2008: Afghanis 49.65 for US\$ 1).

⁵ Net income is estimated at around US\$ 1100 in 2008 (55% of gross income)

⁶ Net income is estimated at around US\$ 170 in 2008 (55% of gross income)

EXECUTIVE SUMMARY

The total opium cultivation in 2008 in Afghanistan is estimated at 157,000 hectares (ha), a 19% reduction compared to 2007. Unlike previous years, 98% of the total cultivation is confined to seven provinces with security problems: five of these provinces are in the south and two in the west of Afghanistan.

Of the 34 provinces in the country, 18 were poppy-free in 2008 compared to 13 in 2007. This includes the eastern province of Nangarhar, which was the number two cultivator in 2007 and now is free from opium cultivation. At the district level, 297 of Afghanistan's 398 districts were poppy-free in 2008. Only a tiny portion of the total cultivation took place in the north (Baghlan and Faryab), north-east (Badakhshan) and east (Kunar, Laghman and Kapisa). Together, these regions accounted for less than 2% of cultivation. The seven southern and western provinces that contributed to 98% of Afghan opium cultivation and production are Hilmand, Kandahar, Uruzgan, Daykundi, Zabul, Farah and Nimroz. This clearly highlights the strong link between opium cultivation and the lack of security.

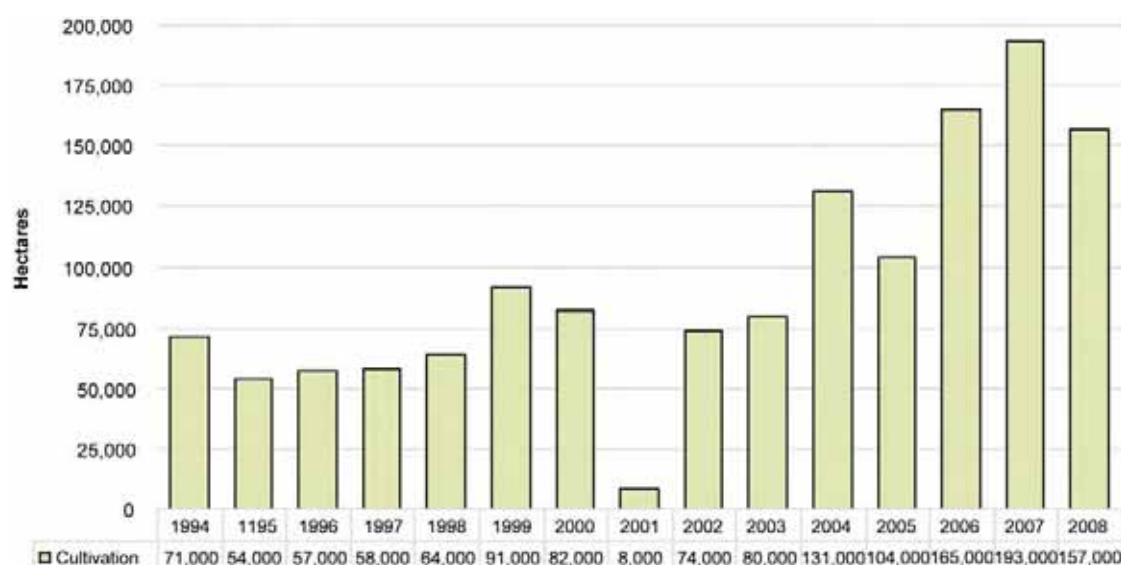
The total opium production in 2008 is estimated at 7,700 metric tons (mt), a 6% reduction compared to production in 2007. Almost all of the production (98%) takes place in the same seven provinces where the cultivation is concentrated and where the yield per hectare was relatively higher than in the rest of the country. All the other provinces contributed only 2% to the total opium production in the country.

The gross income for farmers who cultivated opium poppy was estimated at US\$ 730 million in 2008. This is a decrease from 2007, when farmgate income for opium was estimated at US\$ 1 billion.

Opium cultivation decreases by 19% in 2008

The area under opium cultivation in Afghanistan decreased by 19%, from 193,000 ha in 2007 to 157,000 ha in 2008, 98% of which was confined to seven provinces in the south and the west.

Figure 1: Opium cultivation in Afghanistan (ha), 1994-2008



The Opium Winter Assessment Survey 2008 (implemented in January/February 2008) anticipated a slight reduction in opium cultivation (UNODC, *Afghanistan Opium Winter Rapid Assessment Report*, February 2008). The full opium survey shows that cultivation reduced more than expected thanks to successful counter-narcotic efforts in the northern and eastern provinces of Afghanistan.

This decline was also a result of unfavourable weather conditions that caused extreme drought and crop failure in some provinces, especially those in which agriculture is rainfed.

In areas where the cultivation decline resulted from severe drought, there are real challenges for the government and international stakeholders to sustain the declining cultivation trend. It is urgent to mobilize support to meet the short-term and long-term needs of the farmers affected by the drastic weather conditions.

Eighteen provinces were found to be free of poppy cultivation. In the eastern and northern provinces, cultivation was reduced to negligible levels. The province of Nangarhar, which was once the top producing province, has become poppy-free for the first time since the systematic monitoring of opium started in Afghanistan in the early 1990s. The year 2008 also presents a stark contrast because Nangarhar cultivated as much as 18,739 ha only last year.

The regional divide of opium cultivation between the south and the rest of the country continued to sharpen in 2008. Most of the opium cultivation was confined to the south and the west, which are dominated by insurgency and organized criminal networks. This corresponds to the sharper polarization of the security situation between the lawless south and the relatively stable north. Hilmand still remains the dominant opium cultivating province (103,500 ha) followed by Kandahar, Uruzgan, Farah and Nimroz.

A major difference in the regional distribution of cultivation between 2007 and 2008 is that cultivation in the east (Nangarhar, Kunar and Laghman) dropped to insignificant levels in 2008. There was a total of 19,746 ha of opium cultivation in 2007, whereas in 2008 the eastern region is estimated to have cultivated only 1,150 ha.

Number of opium poppy-free provinces increases to 18 in 2008

The number of opium poppy-free provinces increased to 18 in 2008 compared to 13 in 2007 and six in 2006. These poppy-free⁷ provinces are shown in the table below.

Central region	Ghazni*, Khost*, Logar*, Nuristan*, Paktika*, Paktya*, Panjshir*, Parwan*, Wardak*
North region	Balkh*, Bamyan*, Jawzjan, Samangan*, Sari Pul
North-east region	Kunduz*, Takhar
East region	Nangarhar
West region	Ghor

* Poppy-free provinces in 2007 and 2008

Encouragingly, all the provinces that were poppy-free in 2007 remained poppy-free in 2008. Campaigns against opium cultivation, effective law enforcement implementation by the government and alternative development assistance to farmers contributed to the increase in the number of poppy-free provinces. Prevailing conditions of drought, as noted above, also played a part in making opium cultivation negligible in the rainfed areas of northern Afghanistan (Faryab and Badakhshan).

Nangarhar becomes poppy-free for the first time in the history of UN opium monitoring in Afghanistan

Nangarhar was traditionally a large poppy growing province, and in 2007 it was estimated to have 18,739 ha of opium cultivation. In 2008, Nangarhar province became poppy-free for the first time since the UN began opium cultivation monitoring in Afghanistan.

In 2004, opium cultivation in Nangarhar was 28,213 ha; in 2005, it fell to 1,093 ha. In 2006, cultivation increased to 4,872 ha but could only be found in very remote parts of the province.

Kunar and Laghman provinces also showed a considerable reduction (35% and 24%, respectively) in opium cultivation in 2008. In both provinces, cultivation (amounting to less than 500 ha each)

⁷ A region is defined as poppy-free when it is estimated to have less than 100 ha of opium cultivation.

was restricted to remote areas that are difficult to access. Kapisa also experienced a considerable reduction of 45% in opium cultivation. However, this is a province with a high security risk and a higher percentage of agricultural land when compared to Kunar and Laghman. These factors increase the challenges of sustaining the reduction next year.

The poppy-free status of Nangarhar and reduced cultivation in Kunar and Laghman show an effective provincial leadership in implementing control measures to stop opium cultivation in the eastern region

North and north-east Afghanistan show drastic reduction in opium cultivation

Northern Afghanistan also shows successes in terms of poppy-free status and reduced cultivation. The total reduction in opium cultivation in 2008 in the north and north-east regions is 84% and 96%, respectively, compared to 2007.

In north and north-east Afghanistan, the amount of opium cultivation is estimated to be very low, affecting only three provinces, namely Faryab (289 ha), Baghlan (475 ha) and Badakhshan (200 ha). The rest of the provinces in the northern region (Balkh, Bamyan, Jawzjan, Samangan, Saripul, Kunduz and Takhar) are poppy-free.

The drought in 2008 not only affected opium cultivation but other agricultural production as well. In particular, it caused the failure of the rainfed wheat crop, which resulted in serious difficulties for farmers. As a consequence, food prices have escalated in Afghanistan (also affecting the overall inflation rate)⁸. If emergency food and massive development aid are not extended to the northern, central and eastern parts of the country (especially Nangarhar), there is a serious risk of a backlash next year. Many farmers are losing the cash income they used to receive from opium, and at the same time, they have to buy wheat and other food items at very high prices. This situation poses considerable challenges in keeping the region poppy-free in the near future.

Ninety-eight per cent of opium cultivation is restricted to the south and south-west

The number of security incidents increased sharply in the last three years, especially in the south and south-west of Afghanistan. Over the same period and in the same regions, opium cultivation showed the same sharp increase. In 2008, 98% of opium cultivation was confined to seven provinces in the south and west, namely Hilmand, Kandahar, Uruzgan, Zabul, Farah and Nimroz. Security conditions are extremely poor in those provinces.

Hilmand remained the single largest opium cultivating province with 103,500 ha in 2008 (66% of the total cultivation in Afghanistan), almost at the same level as 2007. Between 2002 and 2008, cultivation in Hilmand province more than tripled with a lot of land outside the traditional agricultural areas reclaimed for the sole purpose of opium cultivation.

⁸ The inflation (change in the Afghan Consumer Price Index) increased from 3.5% in 2006 to 16.9% in 2007 and 27.1% over the first two quarters of 2008 (Source: IMF International Financial Statistics, October 2008).



Photo 1

Photo 1 shows an area on the right side of the canal that has been newly reclaimed as agricultural land for opium cultivation. Farmers in Hilmand appear to be able to afford the high expenses needed to reclaim land for opium cultivation.



Photo 2

Photo 2 shows agricultural land in Nad Ali district that is well-developed with ample irrigation facilities. This area is known for its intensive opium cultivation. The picture shows wheat and poppy in the sprouting stage. Wheat can be distinguished from opium because of its darker green colour.

In Kandahar province, opium cultivation was 14,623 ha in 2008 (a reduction of 12% from 2007) but remained significantly higher than in 2006. The increase in opium cultivation started in 2004 when only 4,959 ha were cultivated; since then, the area under cultivation has tripled. The total area under opium cultivation in Zabul increased by 45%, reaching 2,335 ha in 2008.

Table 1: Opium cultivation in Afghanistan by region, 2007-2008

Region	2007 (ha)	2008 (ha)	Change 2007-2008	2007 (ha) as % of total	2008 (ha) as % of total
Southern	133,546	132,760	-1%	69%	84%
Northern	4,882	766	-84%	3%	0.5%
Western	28,619	22,066	-23%	15%	14%
North-eastern	4,853	200	-96%	3%	0.1%
Eastern	20,581	715	-97%	11%	0.5%
Central	500	746	49%	0.3%	0.5%

In 2008, there was a 5% decrease in opium cultivation in Nimroz province (6,203 ha) compared to last year, however, cultivation in the province was three times higher than in 2006. The majority of the cultivation has always been located in Khash Rod district. Many new agricultural areas have been developed in the northern part of this district since 2007, and a vast majority of them have been used for opium cultivation.

Opium cultivation in Farah province amounted to 15,010 ha, with a 1% increase over 2007 (14,865 ha) when the total area under opium poppy almost doubled compared to 2006 (7,694 ha). No eradication was carried out in this province despite the high opium cultivation. In 2002, the total cultivation in this province was only 500 ha.

Table 2: Main opium cultivating provinces in Afghanistan (ha), 2008

Province	2003	2004	2005	2006	2007	2008	Change 2007-2008	% total in 2008
Hilmand	15,371	29,353	26,500	69,324	102,770	103,590	1%	66%
Kandahar	3,055	4,959	12,989	12,619	16,615	14,623	-14%	9%
Farah	1,700	2,288	10,240	7,694	14,865	15,010	1%	10%
Uruzgan	4,698	N/A	2,024	9,773	9,204	9,939	7%	6%
Nimroz	26	115	1,690	1,955	6,507	6,203	-5%	4%

Table 3: Opium cultivation (2004-2008) and eradication (2007-2008) in Afghanistan (ha), by region and province*

Province	Cultivation 2004 (ha)	Cultivation 2005 (ha)	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
Kabul	282	Poppy free	80	500	310	-190	-38%	14	20
Khost	838	Poppy free	133	Poppy free	Poppy free	0	0%	16	0
Logar	24	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Paktya	1,200	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Panjshir	Poppy free	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Parwan	1,310	Poppy free	124	Poppy free	Poppy free	0	0%	1	0
Wardak	1,017	106	Poppy free	Poppy free	Poppy free	0	0%	0	0
Ghazni	62	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Paktika	Poppy free	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Central Region	4,733	106	337	500	310	-190	-38%	31	20
Kapisa	522	115	282	835	436	-399	-48%	10	59
Kunar	4,366	1,059	932	446	290	-156	-35%	27	103
Laghman	2,756	274	710	561	425	-136	-24%	802	26
Nangarhar	28,213	1,093	4,872	18,739	Poppy free	-18,739	-100%	2,339	26
Nuristan	764	1,554	1,516	Poppy free	Poppy free	0	0%	0	3
Eastern Region	36,621	4,095	8,312	20,581	1,151	-19,430	-94%	3,178	217
Badakhshan	15,607	7,370	13,056	3,642	200	-3,442	-95%	1,311	774
Takhar	762	1,364	2,178	1,211	Poppy free	-1,211	-100%	781	0
Kunduz	224	275	102	Poppy free	Poppy free	0	0%	5	0
North-eastern Region	16,593	9,009	15,336	4,853	200	-4,653	-96%	2,097	774
Baghlan	2,444	2,563	2,742	671	475	-196	-29%	185	85
Balkh	2,495	10,837	7,232	Poppy free	Poppy free	0	0%	14	0
Bamyan	803	126	17	Poppy free	Poppy free	0	0%	0	0
Faryab	3,249	2,665	3,040	2,866	291	-2,575	-90%	337	0
Jawzjan	1,673	1,748	2,024	1,085	Poppy free	-1,085	-100%	122	0
Samangan	1,151	3,874	1,960	Poppy free	Poppy free	0	0%	0	0
Sari Pul	1,974	3,227	2,252	260	Poppy free	-260	-100%	114	0
Northern Region	13,789	25,040	19,267	4,882	766	-4,116	-84%	772	85
Hilmand	29,353	26,500	69,324	102,770	103,590	820	1%	4,003	2,537
Kandahar	4,959	12,989	12,619	16,615	14,623	-1,992	-12%	7,905	1,222
Uruzgan	11,080	2,024	9,703	9,204	9,939	735	8%	204	113
Zabul	2,977	2,053	3,210	1,611	2,335	724	45%	183	0
Day Kundi	Poppy free	2,581	7,044	3,346	2,273	-1,073	-32%	5	0
Southern Region	48,369	46,147	101,900	133,546	132,760	-786	-1%	12,300	3,872
Badghis	614	2,967	3,205	4,219	587	-3,632	-86%	232	0
Farah	2,288	10,240	7,694	14,865	15,010	145	1%	143	9
Ghor	4,983	2,689	4,679	1,503	Poppy free	-1,503	-100%	188	38
Hirat	2,531	1,924	2,287	1,525	266	-1,259	-83%	70	352
Nimroz	115	1,690	1,955	6,507	6,203	-304	-5%	35	113
Western Region	10,531	19,510	19,820	28,619	22,066	-6,553	-23%	668	511
Total (rounded)	131,000	104,000	165,000	193,000	157,000	-36,000	-19%	19,047	5,480

*Since 2007, the provinces with opium cultivation below 100 ha are considered poppy-free.

Potential opium production in Afghanistan declines to 7,700 mt in 2008

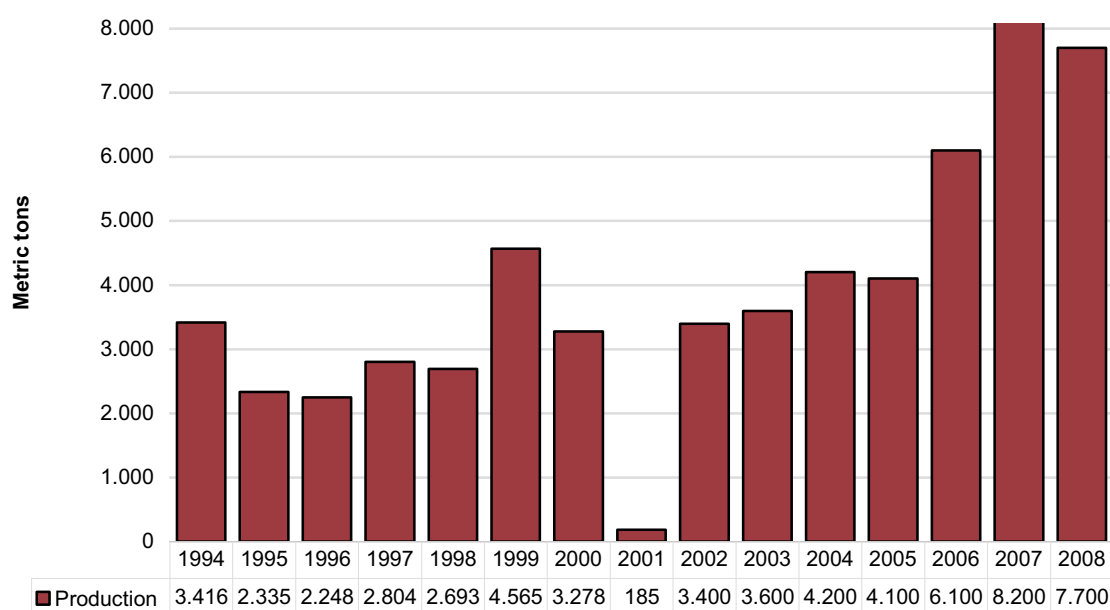
The average opium yield for Afghanistan in 2008 was 48.8 kg/ha compared to 42.5 kg/ha in 2007. This is the highest average yield estimated for Afghanistan since 2000.

The yield per hectare in the southern region is normally considerably higher than in the rest of the country. Prior to 2008, there was significant opium cultivation outside the southern region, which lowered the average national yield. In 2008, the region that accounted for 98% of the total national cultivation was also the one with the highest yield.

Although the weather conditions were unfavourable for a second crop (spring cultivation) throughout the whole country, the first crop (fall cultivation) in the south and south-west received adequate irrigation. These conditions naturally led to a reduced level of cultivation in 2008 and lower yields in the central and eastern regions, but they did not affect the yield in the south, where most of the cultivation was concentrated and where the yield actually increased.

Given the different distribution of the cultivation and yield, the 19% total decrease in opium cultivation resulted in a smaller 6% decrease in potential opium production, which is estimated in 2008 at 7,700 mt.

Figure 2: Potential opium production in Afghanistan (mt), 1994-2008



Almost 98% of the potential opium production took place in the south and south-west of Afghanistan in 2008, reflecting the distribution of the cultivation. The opium production in Hilmand alone (5,397 mt) was higher than Afghanistan's total production in 2005 (4,100 mt).

Table 4: Average opium yield in Afghanistan by region, 2007-2008

Region	2007 average yield (kg/ha)	2008 average yield (kg/ha)	Change
Central (Parwan, Paktya, Wardak, Khost, Kabul, Logar, Ghazni, Paktika, Panjshir)	51.9	36.2	-30%
East (Nangarhar, Kunar, Laghman, Nuristan, Kapisa)	45.2	39.3	-13%
North-east (Badakhshan, Takhar, Kunduz)	40.7	31.4	-23%
North (Bamyan, Jawzjan, Sari Pul, Baghlan, Faryab, Balkh, Samangan)	49.7	54.6	10%
South (Hilmand, Uruzgan, Kandahar, Zabul, Day Kundi)	42.2	52.1	23%
West (Ghor, Hirat, Farah, Nimroz, Badghis)	28.8	29.7	3%
Weighted national average	42.5	48.8	15%

Potential opium production in the southern region of Afghanistan increased in 2008 by 20%, reaching 6,917 mt, which is equivalent to 90% of the production in the whole country. In the western region, potential opium production decreased by 32% to 655 mt. Opium production decreased by 82% in the northern region, by 97% in the north-east and by 96% in the eastern region. The total amount of production in the north, north-east and east was only 93 mt, which is just over 1% of the total potential opium production of the country.

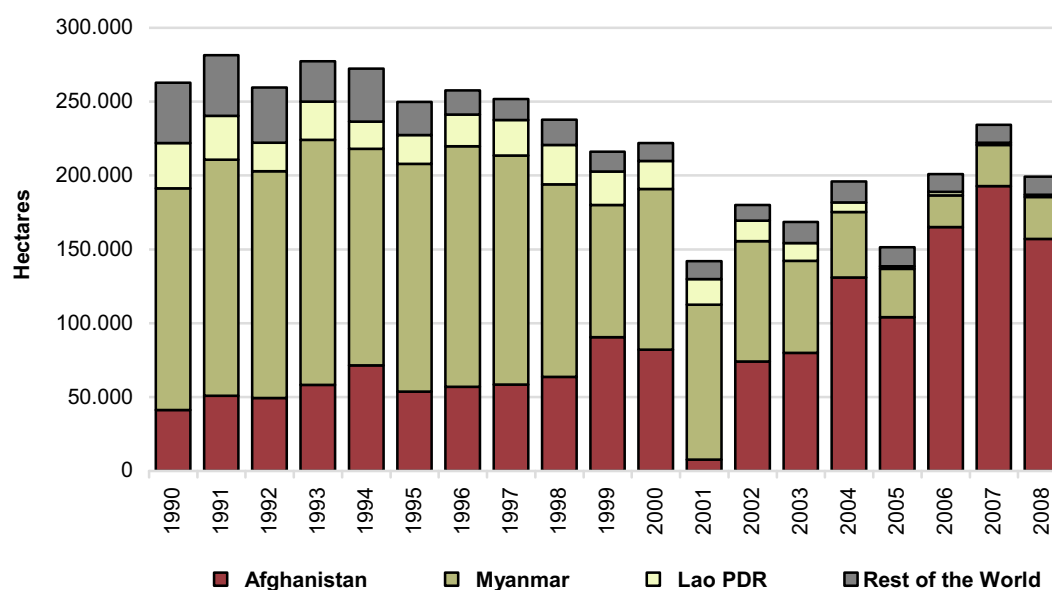
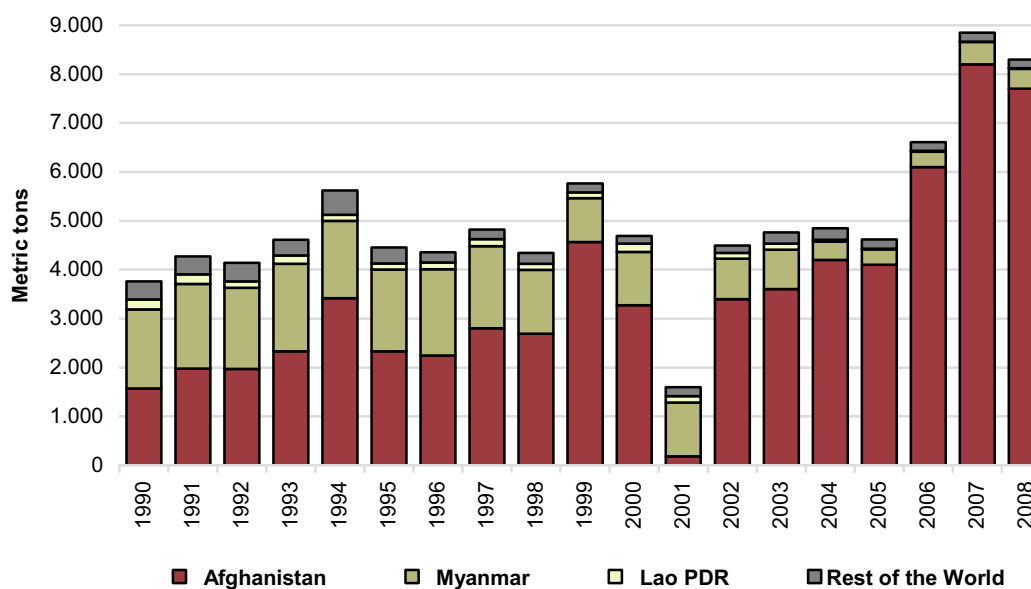
Figure 3: Global opium poppy cultivation (ha), 1990-2008**Figure 4: Global potential opium production (mt), 1990-2008**

Table 5: Potential opium production⁹ by region and by province (mt), 2007-2008

Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)	Region
Kabul	26	11	-15	-57%	Central
Khost	0	0	0	0%	Central
Logar	0	0	0	0%	Central
Paktya	0	0	0	0%	Central
Panjshir	0	0	0	0%	Central
Parwan	0	0	0	0%	Central
Wardak	0	0	0	0%	Central
Ghazni	0	0	0	0%	Central
Paktika	0	0	0	0%	Central
Central region	26	11	-15	-57%	
Kapisa	40	17	-23	-58%	East
Kunar	18	11	-7	-38%	East
Laghman	20	17	-3	-15%	East
Nangarhar	1,006	0	-1006	-100%	East
Nuristan	0	0	0	0%	East
Eastern region	1,084	45	-1039	-96%	
Badakhshan	152	6	-146	-96%	North-east
Takhar	43	0	-43	-100%	North-east
Kunduz	0	0	0	0%	North-east
North-eastern region	195	6	-189	-97%	
Baghlan	36	26	-10	-28%	North
Balkh	0	0	0	0%	North
Bamyan	0	0	0	0%	North
Faryab	135	16	-119	-88%	North
Jawzjan	54	0	-54	-100%	North
Samangan	0	0	0	0%	North
Sari Pul	9	0	-9	-100%	North
Northern region	233	42	-192	-82%	
Hilmand	4,399	5,397	998	23%	South
Kandahar	739	762	22	3%	South
Uruzgan	411	518	107	26%	South
Zabul	61	122	60	98%	South
Day Kundi	135	118	-17	-12%	South
Southern region	5,745	6,917	1172	20%	
Badghis	100	17	-83	-83%	West
Farah	409	446	37	9%	West
Ghor	44	0	-44	-100%	West
Hirat	33	8	-25	-76%	West
Nimroz	372	184	-188	-51%	West
Western region	959	655	-303	-32%	
Total (rounded)	8,200	7,700	-500	-6%	

Just 10% of the total population is involved in opium cultivation

The total number of households involved in growing opium poppy in 2008 was estimated at 366,000, a reduction of 28% compared to 2007. Of this number, 266,862 families (73%) were in the southern region (Hilmand, Kandahar, Uruzgan, Zabul and Day Kundi), and 18% were in the western region (Nimroz and Farah). The percentage of opium cultivating families is negligible in

⁹ Total national opium production is derived from the weighted average yield and total cultivation

the rest of the country. Given an average of 6.5 members per household¹⁰, this represents an estimated total of about 2.38 million persons, or 9.8 % of Afghanistan's total population of 24.5 million involved in growing poppy.¹¹

In terms of the average size of fields dedicated to opium cultivation per poppy-growing household, the southern region showed the largest (0.5 ha) compared to all other regions.

Table 6: Number of households involved in opium cultivation in Afghanistan, 2008

Region	Opium cultivation (ha)	Total no. of households growing opium poppy	Percentage of opium poppy-growing households over total number of households	Average size of opium poppy fields per each household growing poppy (ha)
Central	310	3,747	1%	0.08
Eastern	1,151	19,743	5%	0.06
North-eastern	200	6,218	2%	0.03
Northern	766	5,240	1%	0.15
Southern	132,760	266,862	73%	0.50
Western	22,066	64,674	18%	0.34
Total (rounded)	157,000	366,500	100%	0.43

Opium prices fall in 2008

The Ministry of Counter-Narcotics (MCN) and UNODC collect price data on fresh and dry opium through two sources: annual village surveys (price information collected on a yearly basis from farmers who grow poppy) and monthly price monitoring systems¹² (prices reported by traders and farmers on a monthly basis). Prices collected from both sources show declines from 2005 reaching into 2008 for the average price of dry opium, ranging from US\$ 85 (monthly prices reported by farmers) to US\$ 91 (monthly prices reported by traders) and US\$ 95 (reported by the farmers during the annual village survey).

Based on the annual village survey, the 2008 weighted average farmgate price of fresh opium at harvest time was US\$ 70/kg, which is 19% lower than in 2007, 26% lower than in 2006 and just one fifth of the price in 2001. Between 2007 and 2008, farmgate prices of dry opium also fell by 22%, reaching US\$ 95/kg (weighted price) at harvest time. The total farmgate income from opium in Afghanistan is calculated based on dry opium price at harvest time.

The decline in opium prices is even more significant once Afghanistan's rising inflation rate is taken into account (2006: 3.5%; 2007: 16.5%; first two quarters of 2008: 27.1%).¹³

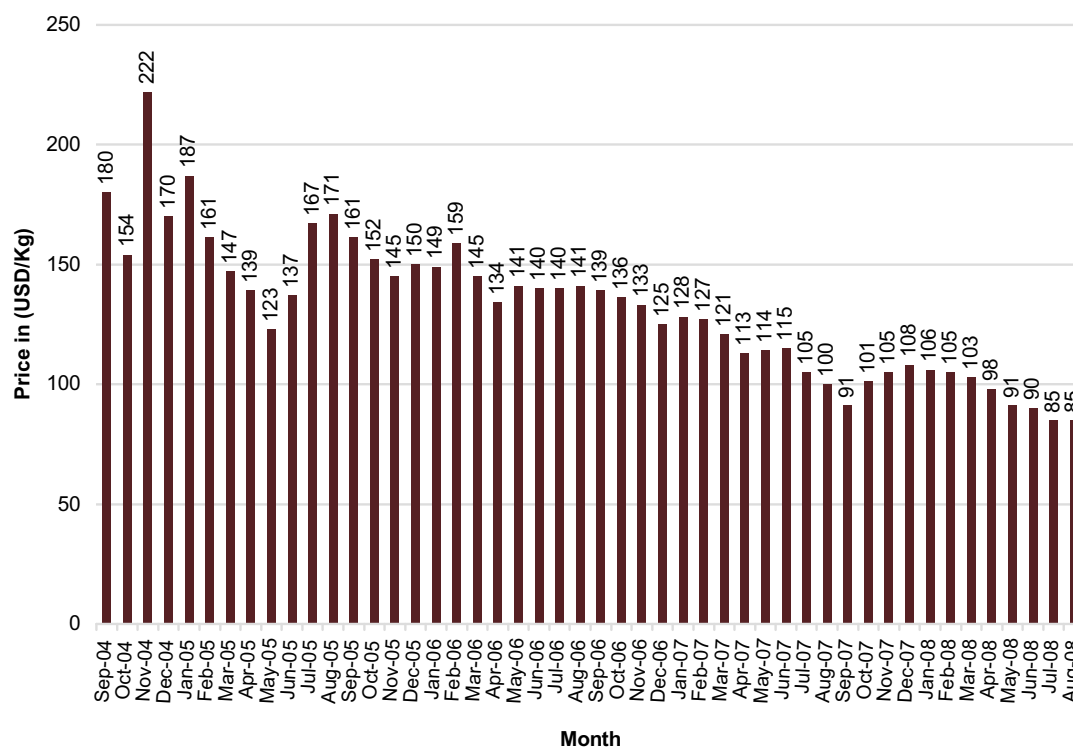
¹⁰ Source: Central Statistics Office, Government of Afghanistan.

¹¹ Source: Central Statistics Office, Government of Afghanistan.

¹² The Afghan Government (Ministry of Counter-Narcotics) and UNODC (MCN/UNODC) have monitored opium prices on a monthly basis in various provinces of Afghanistan since 1994.

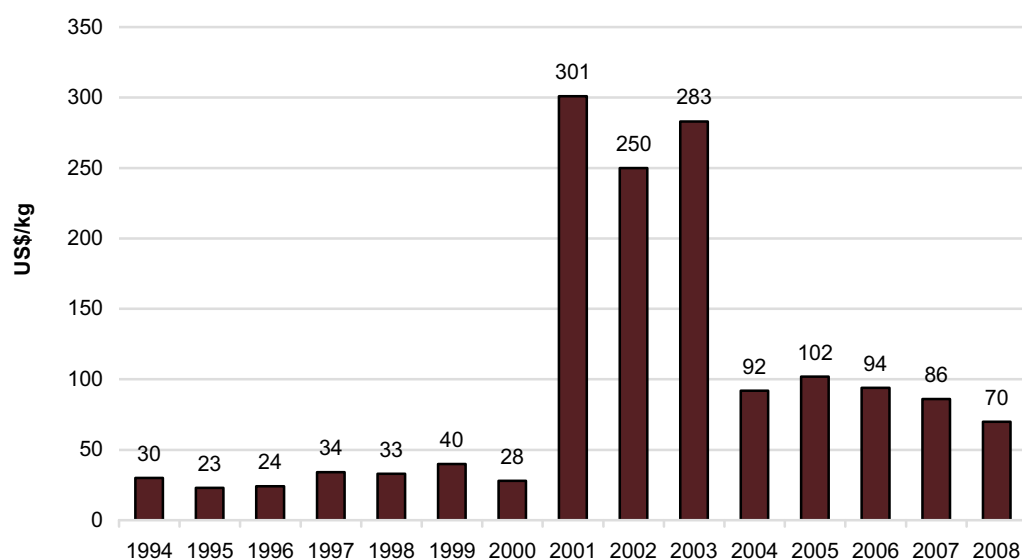
¹³ Over the same period, the average exchange rate of the Afghani per US\$ remained practically unchanged (2006: 49.93 Afghani; 2007: 49.96 Afghani; first two quarters of 2008: 49.65 Afghani). Source: IMF International Financial Statistics, October 2008.

Figure 5: Average farm-gate price of dry opium (US\$/kg) collected from farmers, September 2004 to August 2008



Source: MCN/UNODC Monthly Price Monitoring System

Figure 6: Fresh opium farmgate prices at harvest time (weighted by production) in Afghanistan (US\$/kg), 1994-2008



Sources: Afghanistan Opium Surveys 1994-2007 (Annual village survey)

Table 7: Regional average price of dry opium in August 2008 collected from traders (US\$/kg)

Region	Price of dry opium (US\$/kg)		
	Jul-08	Aug-08	Change
Eastern region (Kunar, Laghman, Nangarhar)	100	90	-10%
Southern region (Hilmand, Kandahar)	76	82	8%
Western region (Badghis, Farah, Ghor, Hirat, Nimroz)	102	106	4%
North-eastern region (Badakhshan, Takhar)	89	96	8%
Northern region (Balkh, Faryab, Kunduz)	91	82	-10%
Average	92	91	-1%

Source: MCN/UNODC Monthly Price Monitoring System

Figure 7: Regional average price of dry opium collected from traders, January 2005 to August 2008

Dry opium prices collected from traders using the monthly price monitoring system show decreasing trends since 2005, although prices in the western region have been higher than in other regions since July 2007. The price graph also reveals that prices in all regions are converging, which may be an indication of a centralized control mechanism for opium prices in Afghanistan.

One possible explanation for the general decreasing trend is that there is a surplus of opium due to the record production of 8,200 mt in 2007 and another significant production level of 7,700 mt in 2008. These levels are above the estimated global demand of illicit opium¹⁴, suggesting that the surplus production has been accumulated as stocks.

¹⁴ World Drug Report 2008, UNODC.

It could be argued that due to the production increases in 2006 and 2007 and the still high production in 2008, prices have not fallen as much as expected. A possible explanation could be that after the sharp decrease in opium cultivation in Myanmar and Laos in recent years, opium from Afghanistan appears to be increasingly trafficked to China, India and South-East Asia, which were traditionally supplied by opium from the Golden Triangle.

Total farmgate value of opium decreased by 27% to US\$ 730 million

Based on opium production and reported prices, the farmgate value of the opium harvest amounted to US\$ 730 million in 2008. The farmgate value of opium as a proportion of GDP decreased in 2008 to 7% compared to 12% in 2007¹⁵.

Slight decrease in opium income for Hilmand farmers

In 2008, farmers in Hilmand earned a total of US\$ 513 million from the farmgate value of opium. The total opium income for farmers in Hilmand in 2007 amounted to US\$ 528 million, an increase from the total US\$ 347 million estimated in 2006.

Several parts of the south and south-west are under the control of anti-government elements. Thus, some of the 10% agricultural tax that is generally levied might be providing revenue for these anti-government elements who, in turn, provide protection for opium poppy-growing areas.

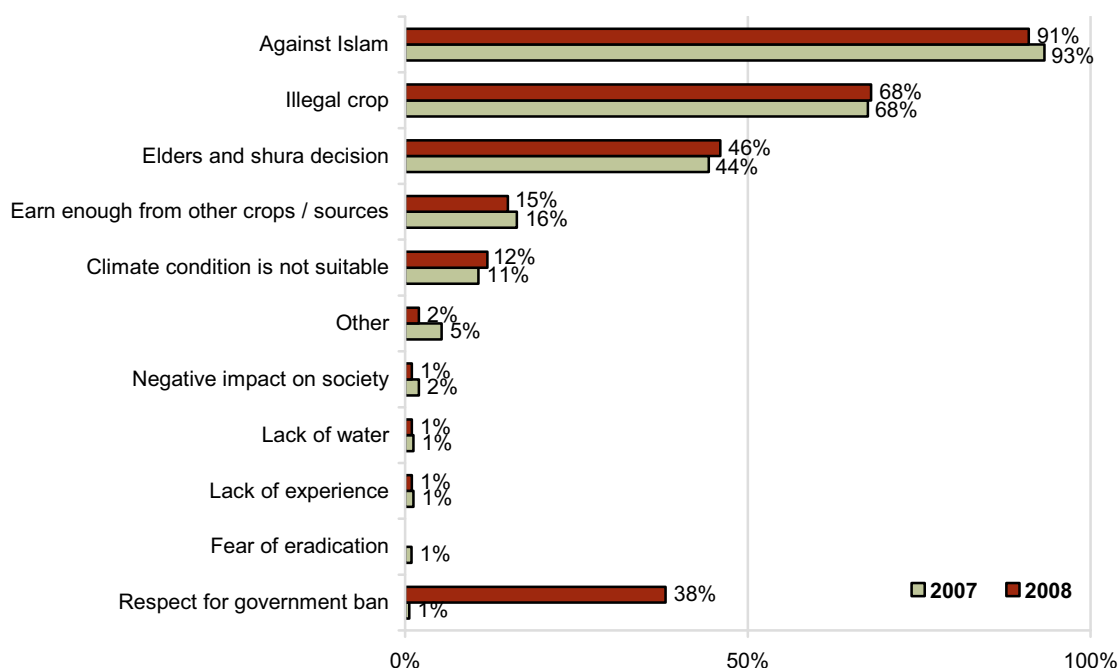
Reasons for cultivation/non-cultivation of opium

As part of the 2008 survey, 3,050 farmers in 1,529 villages across Afghanistan were asked about their reasons for cultivating or not cultivating opium poppy. Each farmer was allowed to provide more than one reason.

As in 2007, almost all farmers who never cultivated opium reported 'religion' as one of the reasons (91% of farmers in 2008 and 93% in 2007). A consistent number of farmers also reported 'illegality of the crop' (68% of farmers) and 'respect for a shura/elders decision' (46% of farmers). Based on these results, it could be argued that the majority of farmers who never cultivated opium poppy appear to be sensitive to the rule of law. In fact, few farmers cited reasons related to income or climate for not growing poppy. This also shows that the cultural/religious pressure for not cultivating opium poppy can indeed be very strong.

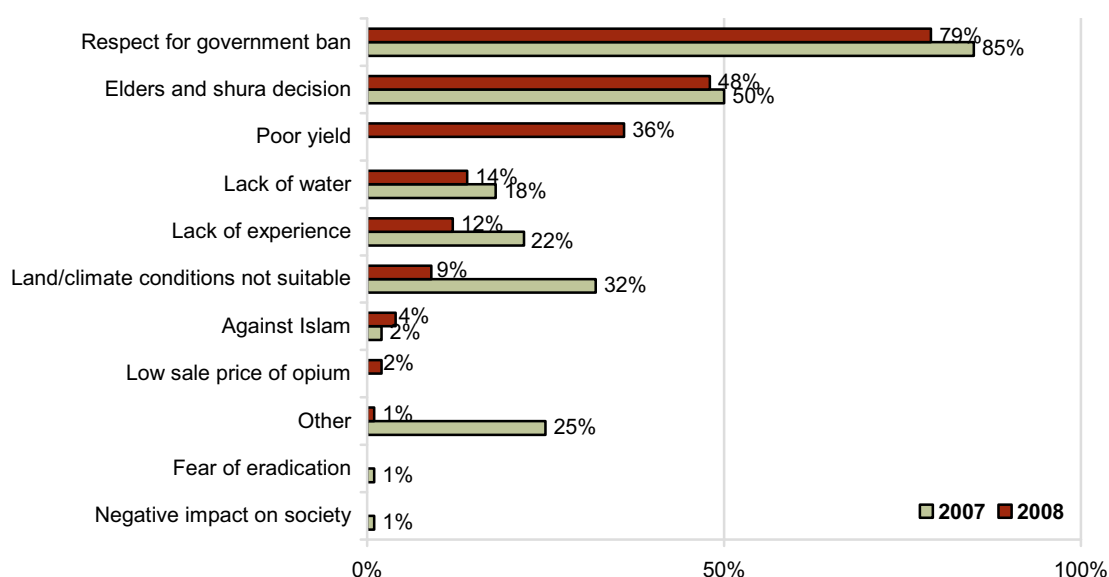
¹⁵ These percentages were calculated considering the 2007 GDP estimated by the Central Statistical Office of Afghanistan at US\$ 10.2 billion.

Figure 8: Reasons for never having cultivated opium poppy
(n=1488 farmers in 2007; n=1804 in 2008)¹⁶



Among the farmers that grew opium poppy in the past but stopped, 'respect for the government ban' was one of the reasons most commonly reported (79% of farmers), followed by 'respect for shura/elders decision' (48%), and poor yield (36%). To a lesser extent, farmers reported reasons related to weather or agricultural conditions.

Figure 9: Reasons for not having cultivated opium poppy in 2007 and 2008
(n=2261 in 2007; n=2521 in 2008)

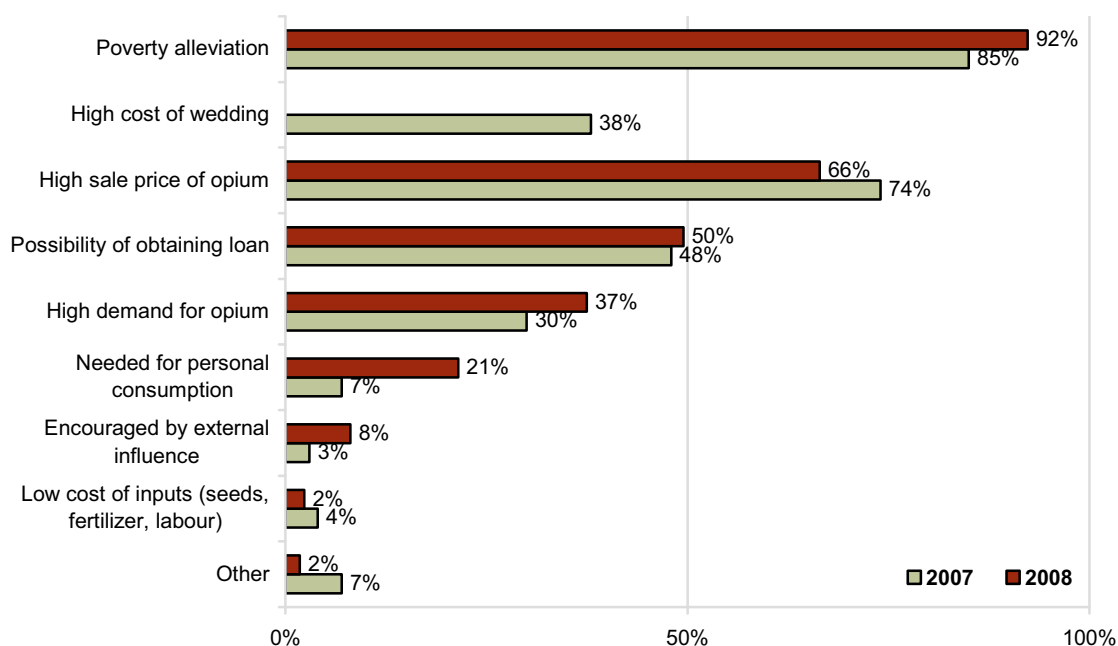


¹⁶ The percentages add up to more 100 because farmers reported more than one reason. The presentation of the data differs from previous years. This year the percentage of each reported reason is presented as the percentage of the total number of farmers. Previous years data were reported as the percentage of the total number of responses (total number of responses were higher than the number of farmers because farmers reported more than one response).

Shura decisions, respect for the government ban and religion are less important in the south of Afghanistan compared to the other regions. In the eastern region, farmers appear to be more concerned about respecting the government ban than in other regions.

One of the reasons reported by the majority of farmers for cultivating opium across the regions was 'poverty alleviation' (92% of farmers). Among the most common additional reasons provided were 'high sale price of opium' (66% of farmers) and 'possibility of obtaining loans' (50% of farmers). In southern and western provinces, high sale price and poverty alleviation were the dominant reasons for opium cultivation, while in the eastern region it was poverty alleviation.

Figure 10: Reasons for opium cultivation in 2008 (n=718 in 2007; n=508 in 2008)¹⁷



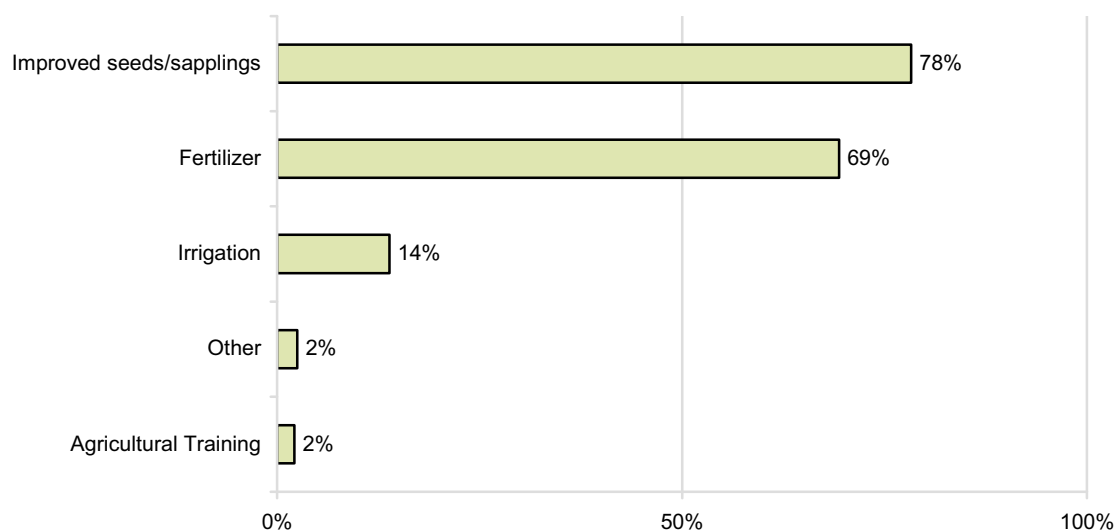
Agricultural assistance received by farmers

In addition to farmers, headmen were interviewed in each of the 1,529 villages included in the survey. According to the information that they provided, 281 out of the 1,529 surveyed villages (18.4%) received agricultural assistance. The type of assistance varied and included improved seeds/saplings (78% of villages), fertilizers (69% of villages) and irrigation facilities (14% of villages). Only 2% of villages received agricultural training.

The majority (72%) of the villages that received agricultural assistance did not opt for opium cultivation in 2008. However, the remaining 28% still cultivated opium despite receiving agricultural assistance.

¹⁷ See footnote 16.

Figure 11: Type of agricultural assistance delivered to villages as reported by headmen (n = 281 villages that received agricultural assistance)¹⁸



Income levels and opium cultivation

In the 2008 village survey, MCN/UNODC collected information on the 2007 annual household income of 3,050 farmers, both opium poppy-growing and non-growing. Results confirm the 2006 trend that farmers in the southern region have higher incomes than those living in other regions. The 2007 average annual income for opium poppy-growing farmers increased in southern and western Afghanistan while it decreased in the rest of the country compared to 2006. The average annual income of opium poppy-growing farmers in north-eastern and central Afghanistan was less than that of non-opium poppy growing farmers in 2007 due to the low level of cultivation and the decrease in prices. In these two regions, farmers grew opium mainly for personal consumption.

Similarly to 2007, the 2008 survey shows that the cultivation of opium was more widespread in regions where farmers have the highest levels of income.

Table 8: Annual household income by region in 2007¹⁹

Region	Average annual household income of opium poppy farmers in 2007 (US\$) 1	Average annual household income of non-opium poppy farmers in 2007 (US\$) 2	% household income difference between non-opium poppy farmers and opium poppy farmers as % of income of poppy farmers (2-1)/1
Central	2357	2674	+13%
Eastern	1817	1753	-4%
North-eastern	1970	2290	+16%
Northern	2270	1862	-18%
Southern	6194	3382	-45%
Western	2895	2273	-21%
Overall	5055	2370	-53%

¹⁸ The percentages add to more than 100 because the village may have received more than one type of assistance.

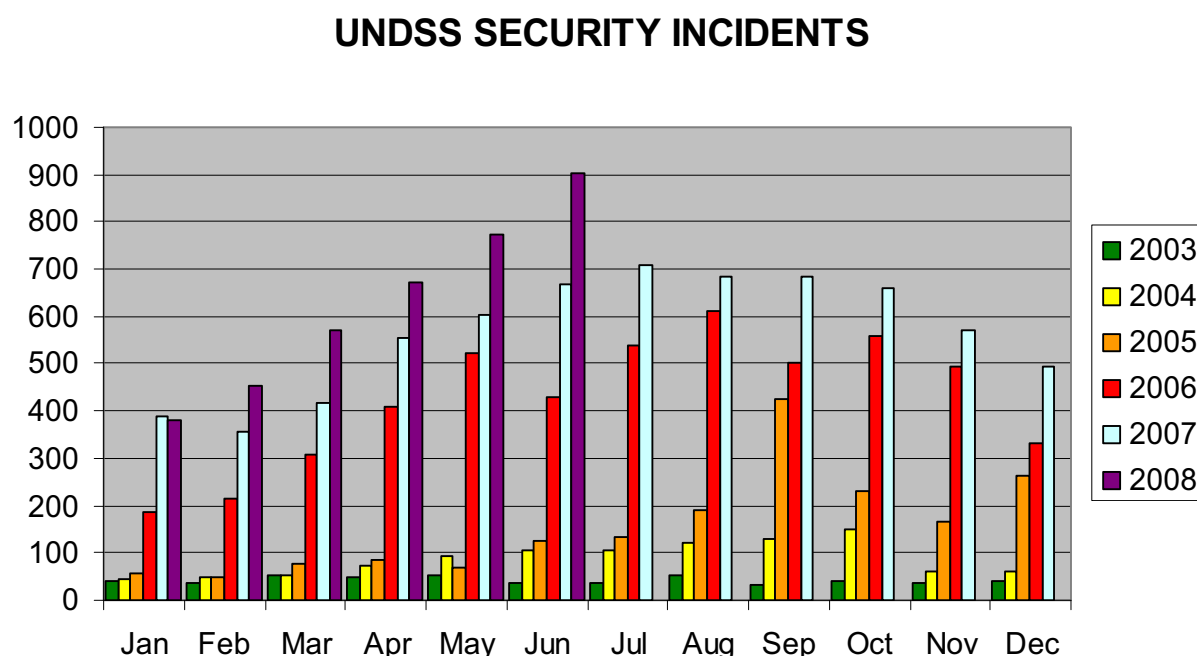
¹⁹ Caution should be used in comparing the incomes of growing and non-growing households and across regions given the different size and distribution of farmers in the samples.

Security and opium cultivation show strong correlation

In 2008, 98% of the opium cultivation was concentrated in Hilmand, Kandahar, Uruzgan, Day Kundi, Zabul, Farah and Nimroz, where security conditions are classified as high or extremely risky by the United Nations Department of Safety and Security (UNDSS). Anti-government elements as well as drug traders are very active in this region, and most districts are inaccessible to the UN and non-governmental organizations (NGOs). Provinces in the south are the stronghold of anti-government elements, while western provinces (Farah and Nimroz) are known to have organized criminal networks. The security map (source: UNDSS) shows the difference between southern and northern provinces in terms of security.

Security incidents in Afghanistan have been on the rise every year since 2003, especially in the south and south-western provinces. The number of security incidents increased sharply in 2006 in parallel with the increase in opium cultivation. A further sharp increase in security incidents has taken place in 2008.

Figure 12: Number of security incidents by month, January 2003 to June 2008



Source: UNDSS, Kabul

Opium eradication has become more risky

Eradication activities in 2008 were severely affected by resistance from insurgents. Since most of the opium cultivation remains confined to the south and south-western regions, which are dominated by a strong insurgency, eradication operations may become even more challenging in the future.

Security incidents associated with eradication activities in Hilmand, Kandahar, Hirat, Nimroz, Kapisa, Kabul and Nangarhar provinces included shooting and mine explosions resulting in the death of at least 78 people, most of whom were policemen. This is an increase of about 75% compared to the 19 deaths in 2007. The major incidents were in Nangarhar and Nimroz provinces.

One of the most serious incidents occurred in the Khogyani district of Nangarhar where 20 policemen were killed along with Fazal Ahmad, a MCN/UNODC surveyor whose job was to collect the data that fed into this report. Other incidents took place in the Khashrod district of Nimroz where 29 people died including the district police chief. Both attacks were carried out by suicide bombers. The Poppy Eradication Force (PEF) faced a large number of rocket attacks while carrying out eradication in Hilmand province.

The nature of the attacks changed between 2007 and 2008. In 2007, police deaths were the result of violence by farmers, whereas deaths in 2008 were the result of insurgent actions, including suicide attacks.

Eradication of 5,480 ha of opium verified

A total of 5,480 ha of eradicated opium poppy fields were verified by MCN/UNODC. This included governor-led eradication (GLE) (4,306 ha) and eradication led by the centrally controlled Poppy Eradication Force (PEF) (1,174 ha). It should be noted that the figure provided for GLE is a result of adjustments made to the initial figures reported by the field verifiers in the two provinces of Hilmand and Kandahar following the discovery of significant over-reporting in these two provinces. These adjustments were made using satellite images, which brought the figure of 6,326 ha initially reported by the field verifiers down to 3,842 ha. All figures from the centrally directed PEF were found accurate after a similar verification was done using satellite images.

Summary of eradication since 2005

The eradication and cultivation situation since 2005 is provided in the table below.

Table 9: Eradication and cultivation in Afghanistan (ha), 2005-2008

Year	2005	2006	2007	2008
GLE (ha)	4,000	13,050	15,898	4,306 ²⁰
PEF (ha)	210	2,250	3,149	1,174
Total (ha)	4,210	15,300	19,047	5,480
Cultivation (ha)	104,000	165,000	193,000	157,000
% opium poppy in insecure provinces of the south and west	56%	68%	80%	98%
Poppy-free provinces	8	6	13	18

Some of the key factors that could explain the drop in eradication carried out in 2008 are:

- There was a reduction in the number of provinces eradicating because of the number of poppy-free provinces and because of the increase in provinces in 2008 with negligible levels of cultivation. In 2007, 26 provincial governors conducted eradication; in 2008, only 17 provinces conducted eradication.
- Overall crop failure due to an extremely cold winter reduced the poppy crop in a number of provinces.
- There was an increased voluntary and/or forced self-eradication by opium poppy farmers. An active public information campaign and vigorous enforcement action by some provincial governors led to a substantial amount of self-eradication carried out by farmers either voluntarily or through coercion. These numbers cannot be counted in the official figures (because they are not verifiable), but the claims are in the order of 3,000-4,000 ha.
- Unlike in previous years, most of the cultivation was concentrated in a limited number of lawless provinces in the south (Hilmand, Kandahar, Uruzgan, Zabul and Daykundi) and west (Farah and Nimroz). Eradication in these provinces is more challenging due to security problems.

²⁰ The final figure adjusted using high resolution satellite images.

Table 10: Governor-led eradication by province (ha), 2008

Province	Eradication (ha) verified	No. of fields where eradication reported	No. of villages where eradication reported	Total standing poppy after eradication in the reported villages (ha)	Percentage of opium eradication in surveyed villages
Badakhshan	774	1374	145	125	86%
Baghlan	85	125	16	0	100%
Farah	9	15	9	670	1%
Ghor	38	170	38	11	78%
Hilmand	1416	2221	140	1449	49%
Hirat	352	606	55	140	72%
Jawzjan	0.05	1	1	0	100%
Kabul	20	95	6	118	14%
Kandahar	1222	2141	228	3199	28%
Kapisa	6	21	3	0	100%
Kunar	103	1124	58	18	85%
Laghman	26	106	7	0	100%
Nangarhar	26	227	18	7	79%
Nimroz	113	199	16	377	23%
Nuristan	3	28	1	0	87%
Uruzgan	113	221	21	636	15%
Zabul	0.14	2	1	0	100%
Grand total	4,306	8,676	763	6,749	39%

Although the highest eradication was reported in Hilmand (1,416 ha), this amount becomes almost negligible considering the amount of opium cultivation taking place in this province (103,590 ha). Eradication in Kandahar (1,222 ha) was proportionally higher considering the total cultivation of 14,623 ha. Government officials in Kandahar also forced farmers to eradicate their poppy in the early stages of cultivation. Eradication efforts in Badakhshan (714 ha), Hirat (322 ha) and Kunar (103 ha) provinces can be considered successful based on the low level of cultivation in 2008. In contrast, only 9 ha of opium poppy fields were eradicated in Farah province despite the high amount of cultivation in 2008.

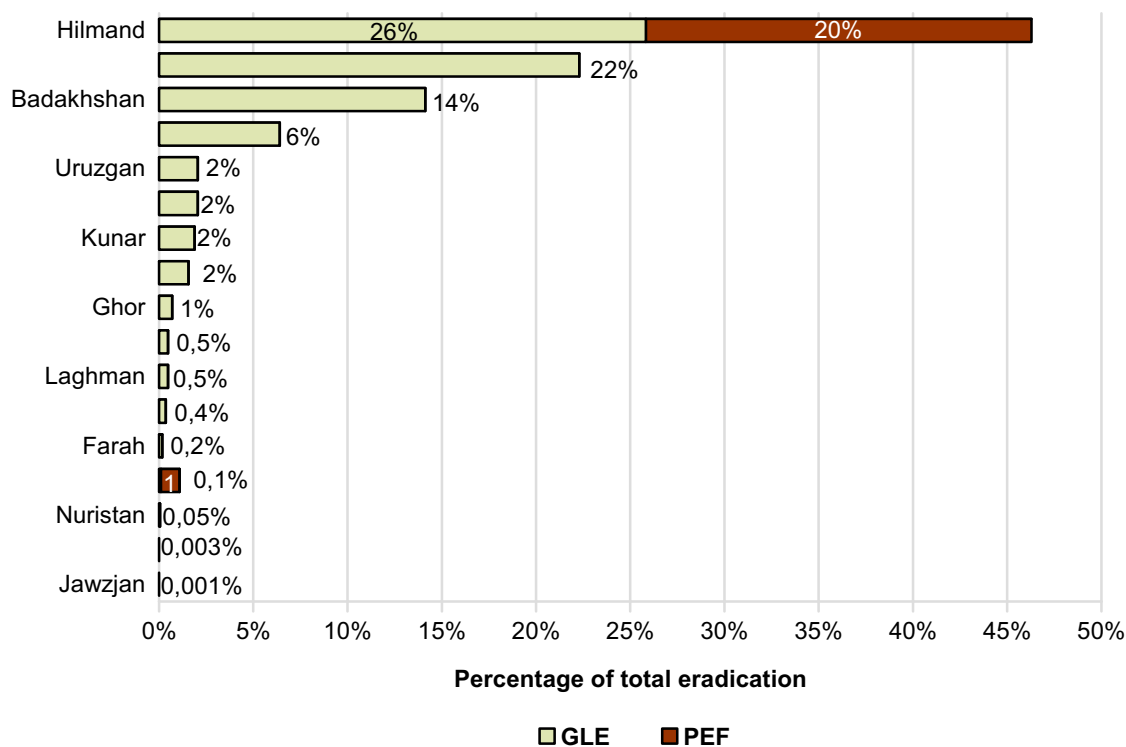
Eradication area within/outside target zones

GLE eradication target zones were defined by MCN for the five highest opium cultivating provinces (Farah, Hilmand, Kandahar, Nimroz and Uruzgan). Target zones are shown in the maps provided at the end of this report. Table 10 shows the total area eradicated within and outside the eradication target zones in each province.

Table 11: Area within/outside target zones (ha), 2008

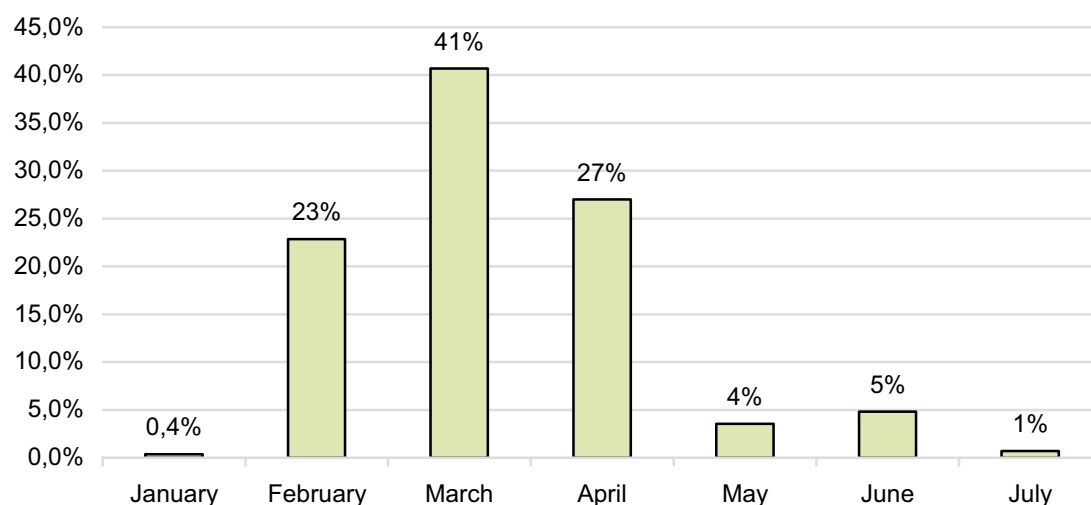
Province	Area within eradication target zone (ha)	Area outside eradication target zone (ha)	Total eradication verified (ha)
Farah	5	4	9
Hilmand	780	636	1,416
Kandahar	97	1,125	1,222
Nimroz	106	7	113
Uruzgan	54	60	114
Grand total	1,042	1,832	2,874

Figure 13: Percentage of total eradication (GLE and PEF) by province, 2008



Timing and percentage of eradication by month

Figure 12 shows the timing and proportions of the total governor-led eradication each month. Ninety-one per cent of eradication was carried out in the three months from February 2008 to April 2008. The amount of eradication was negligible between October (planting time) and January.

Figure 14: Total area eradicated each month, shown as a percentage

Cannabis cultivation is becoming as lucrative as opium poppy

MCN/UNODC did not carry out a comprehensive survey to monitor cannabis cultivation in 2008, therefore, no reliable estimates can be provided for the total area under cannabis cultivation. However, some data were collected from key informants and farmers in the annual village survey. This data show that there was cannabis cultivation in the 16 provinces of Badakhshan, Badghis, Baghlan, Paktya, Logar, Bamyan, Day Kundi, Farah, Hilmand, Kandahar, Khost, Kunduz, Laghman, Nangarhar, Uruzgan and Zabul. The highest cultivation levels were reported in Uruzgan, followed by Kandahar, Hilmand and Nangarhar.

The prices for cannabis were regularly collected by MCN/UNODCs' monthly price monitoring system. The average national price of cannabis at the end of August 2008 was reported at US\$ 55/kg with large variability across different provinces.

Farmers growing cannabis may earn the same net income per hectare as farmers who grow opium, or even more, because cultivating cannabis is less labour intensive than opium.

Though the opium survey does gather some data on cannabis cultivation, no estimates can be provided in this preliminary report. It is clear, however, that cultivating cannabis is becoming increasingly lucrative. When this is considered in conjunction with the fact that all the emphasis is put on reducing opium, there is a great risk of farmers switching to cannabis.

Drug trafficking

Opium markets, laboratories and drug business

Overall, the geographical distribution of Afghan opiate laboratories remained stable in recent years with the processing of morphine and heroin dispersed across the whole country. Some changes have been observed; laboratories are less concentrated in the northern provinces but more concentrated in the south where widespread opium cultivation and low or no government control makes the area an attractive target for both processors and traffickers. An example of this is the relocation of a dozen laboratories from Badakhshan to Hilmand where the highest concentration of laboratories is now observed. The total number of laboratories in the west is high, as it is in the southern region. While the southern region has both heroin and morphine laboratories, the western region hosts more morphine laboratories.

Looking at the distribution of opium markets in the country, it can be noted that western provinces are playing a more dominant role in the opium trade. Both the southern and eastern regions have only half as many markets compared to the west, while few markets operate in the north and central regions (see the heroin and opium trafficking map).

Drug flow

Although Nangarhar was poppy-free in 2008, it still remains a province where a large amount of opium/heroin/morphine is trafficked. Much of the heroin trafficked is controlled by tribes on either side of the Afghanistan-Pakistan border that move the heroin into Pakistan. Pakistan receives over a third of the heroin trafficked through Nangarhar.

Most of the opiates are trafficked through the north-east region into Central Asia due to proximity and strong cross-border ethnic links. Small quantities are also trafficked to other regions and neighbouring countries.

The northern region has very small amounts of opium cultivation and no laboratories were identified. Nevertheless, this region serves as a transit point for flows from the west and south towards the north, as well as from east to north. There were no reports of heroin being routed directly from the northern provinces across the short border with Uzbekistan (137 km). It is likely that the majority of opiates found in Uzbekistan come indirectly from Afghanistan through Tajikistan.

Almost three quarters of the southern region's heroin is exported to the western provinces. From there, most of the heroin goes to Iran where there is a significant domestic drug market and where some of the Afghan opiates are consumed. There remains a significant portion that travels through Turkey to Europe, with lesser amounts shipped to the Caucasus and Iraq. Despite the fact that four of the southern provinces share a common border with Pakistan, less of the southern region's heroin seems to be routed to Pakistan in 2008. However, there is evidence that some southern opiates travel into Iran through Pakistan's Baluchistan areas.

Potential export value declines to US\$ 3.4 billion

UNODC estimates suggest that Afghanistan's 'potential exports' of opiates (i.e. not taking possible changes of stocks in account) amounted to some 2,960 tons of opium and 630 tons of morphine and heroin in 2008, down from 3,320 tons of opium and 666 tons of morphine and heroin in 2007. The potential value of opium, morphine and heroin exports to the border areas of neighbouring countries were estimated at around US\$ 3.4 billion in 2008, down from US\$ 4.0 billion in 2007, reflecting the decline in opium production as well as falling opium prices in neighbouring countries. Expressed as a percentage of (licit) GDP, the size of the Afghan opium economy thus declined from a value equivalent to 49% of (licit) GDP in 2007 to 33% of (licit) GDP in 2008.

Out of the potential gross income of US\$ 3.4 billion, Afghan farmers earned US\$ 0.7 billion (21%) while Afghan traffickers and laboratory operators are estimated to have earned some US\$ 2.7 billion in 2008 (79%). These proportions remained roughly unchanged as compared to previous years.

Methodology

The methodology of the Afghanistan Opium Survey in 2008 covered various aspects, such as estimations of the extent of opium cultivation, yield and production, verification of opium poppy eradication, prices and the opium growth calendar. It also included socio-economic indicators the number of families involved in opium cultivation, the number of opium addicts in Afghanistan and the income from opium to farmers and traffickers. The survey methodology was based on a sampling approach that combined the use of satellite imagery and extensive field visits.

In 2008, high-resolution satellite images were acquired for 118 sample locations covering 21 provinces. All locations were covered at two different growth stages: the flowering or capsule stage and after the lancing of the opium poppy capsules. These images covered 7% of all

agricultural land (4,530 km² out of 62,217 km²) in the 21 provinces. A similar number of images were collected in 2007 for 24 provinces, covering 11% of agricultural land, and in 2006, 210 images collected at 105 locations were processed to provide coverage of 16% of agricultural land in 19 provinces. In the remaining 13 provinces, opium cultivation was estimated by surveyors on the basis of assessments of the extent of opium cultivation in sampled villages. The distribution of satellite images was based on the number of cells in the sampling frame and total arable land in each province. A group of 49 surveyors was engaged to collect the ground truth reference required to assist satellite image interpretations.

Additionally, some 134 surveyors visited 1,529 villages in 34 provinces to collect data on socio-economic indicators opium cultivation. Villages were stratified according to their elevation, and selection was done by using systematic random selection methods in each group. Selected villages were geographically and statistically well distributed in all 34 provinces. Surveyors conducted interviews with 3,050 farmers and 1,529 headmen. Traditionally poppy-free provinces – for example, Logar, Bayman and Pakya of the central region – were monitored for their poppy-free status through annual village surveys. In 2008, opium cultivation was estimated using satellite images, except for in Kabul province, where cultivation was estimated through the annual village survey. For yield estimation, the field survey was conducted on 569 fields in 198 villages. A total of 17,541 capsules were measured from 1,707 plots to collect the data required for the calculation of per hectare opium yield.

The eradication verification survey was implemented separately by 131 surveyors/verification inspectors who visited every field that was eradicated by GLE forces and PEF.

In 2008 (including the Rapid Assessment Survey, the Eradication Verification Survey and the Annual Opium Survey), over 350 surveyors collected ground data/information on opium cultivation, yield, eradication and socio-economic variables in Afghanistan.

For all of the surveys, experienced surveyors were selected from the UNODC surveyor pool, as in previous years, based on a written test, interviews and their previous performance. As part of the capacity building in the Afghan Government, trainings for surveyors were delivered jointly by MCN/UNODC local staff. MCN/UNODC survey coordinators monitored and supervised the surveys in their assigned regions.

COMMENTARY FROM THE EXECUTIVE DIRECTOR

In 2008 opium has become less important to the Afghan economy. Our summary report, released in August, showed a sharp drop in its physical dimensions: cultivation and production. This final Afghan Opium Survey 2008 assesses the complex nature of the opium economy in Afghanistan this year and prospects for 2009.

The Afghan drug economy. In 2007 the (farm gate) value of opium cultivation was one of the largest ever, at about \$1 billion. In 2008 it dropped by more than a quarter, to \$730 million. In 2007 the (potential) export value of opium, morphine and heroin (at border prices in neighbouring countries) was \$4 billion. This year's drug export was valued at \$3.4 billion. (Note that these export amounts are potential as they do not account for changes in domestic stocks, unknown to us).

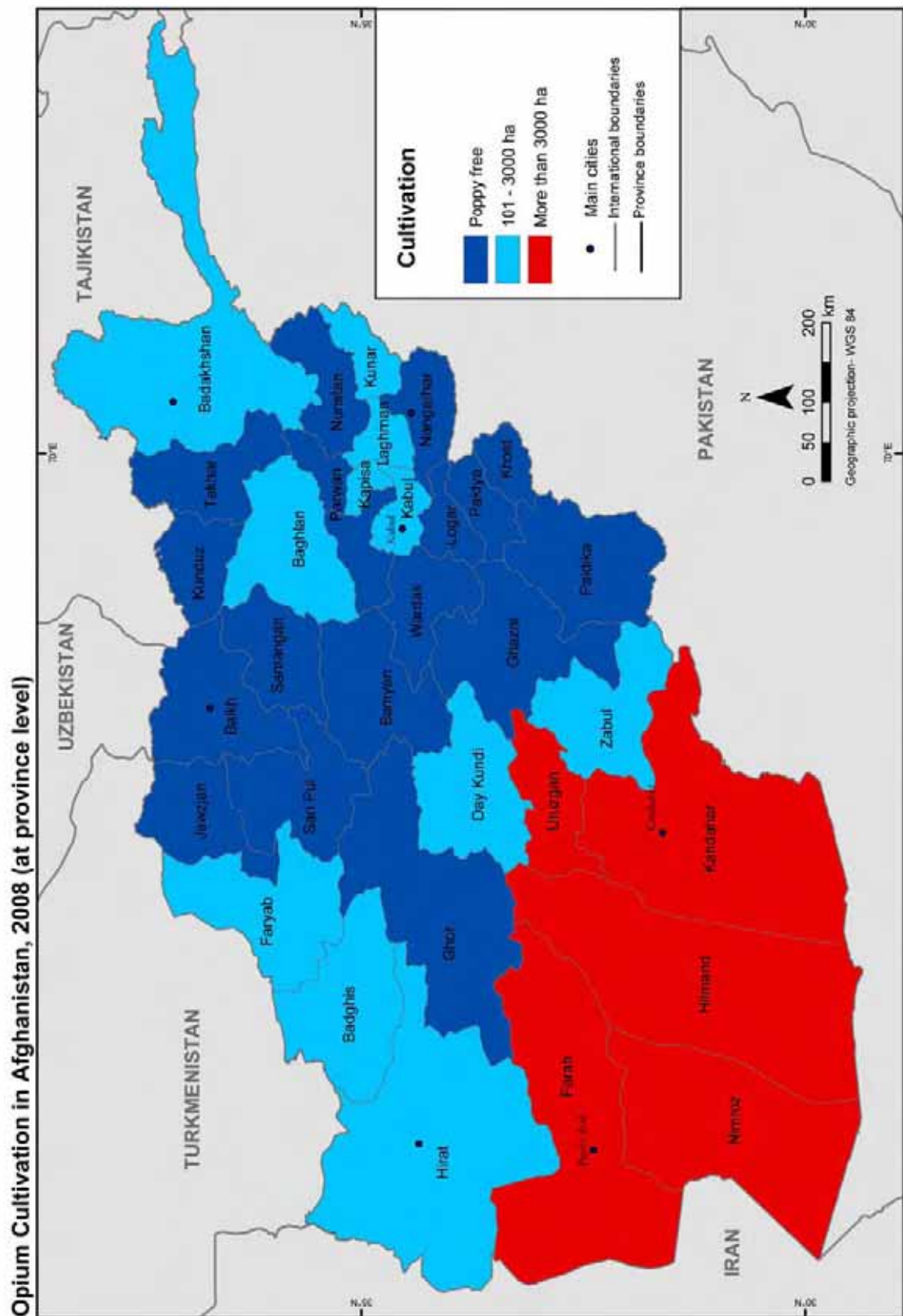
The Taliban war economy. In many parts of Afghanistan, authorities impose a charge (called *ushr*) on economic activity, traditionally set at 10% of income. Thus, opium farming may have generated \$50-\$70 million of such tax income in 2008. Furthermore, opium processing and trafficking may have raised an additional \$200-\$400 million. Who collects this money? Local strong men. In other words, by year end, war-lords, drug-lords and insurgents will have extracted almost half a billion dollars of tax revenue from drug farming, production and trafficking. Not surprisingly the insurgents' war machine has proven so resilient, despite the heavy pounding by Afghan and allied forces.

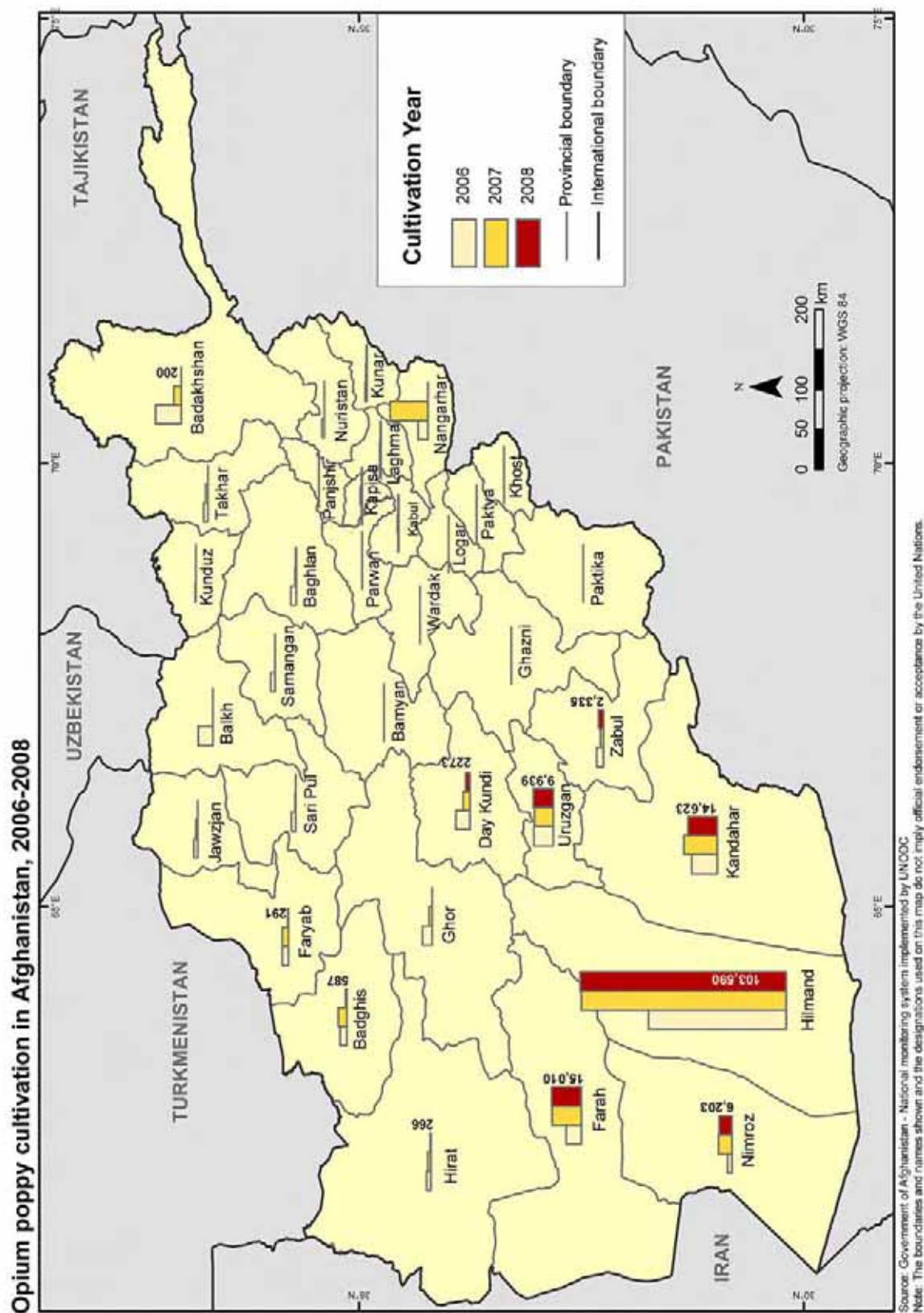
The downturn in the opium economy. Since 2007 opium cultivation declined by 19% to 157,000 hectares this year, for several reasons. First, as shown in our August Report, restraint at planting (but not eradication), has been successful. Pressure by governors, shuras and village elders has kept cultivation down in many provinces. Second, and most importantly, the dynamics of farm prices. As (Afghan) supply has once again exceeded (world) demand, prices for opium (both fresh and old) are down 20% in nominal terms (and much more at constant prices). Third, the terms of trade effect. While opium farmers' income has declined, the revenue from wheat has tripled since 2007 (partly due to drought). The gross income ratio of opium to wheat (per hectare) in 2007 was 10:1. This year it narrowed to 3:1. The net income ratio is down to 2:1. The Afghan government, and its international partners face a unique opportunity to reinforce these economic trends with counter-narcotic measures that can further reduce opium's appeal.

A smaller, more intensive drug problem. There is evidence that Afghanistan's opium problem is shrinking in size and concentrating geographically. First, Afghan opium is grown exclusively (98%) in seven south-west provinces, where insurgents control the territory and organized crime groups benefit from their protection. Second, in 2008 just 2.1% of Afghanistan's arable land was used to grow opium, as opposed to 2.5% in 2007. Third, opium is now cultivated by fewer, richer farmers: in 2008 opium was farmed by one million fewer people than in 2007. Fourth, the convergence of opium prices this year shows that the Afghan drug market is now unified. In crude medical terms, the opium chemotherapy applied throughout Afghanistan has shrunk the cancerous metastasis to the southern region, where surgery is now needed and feasible.

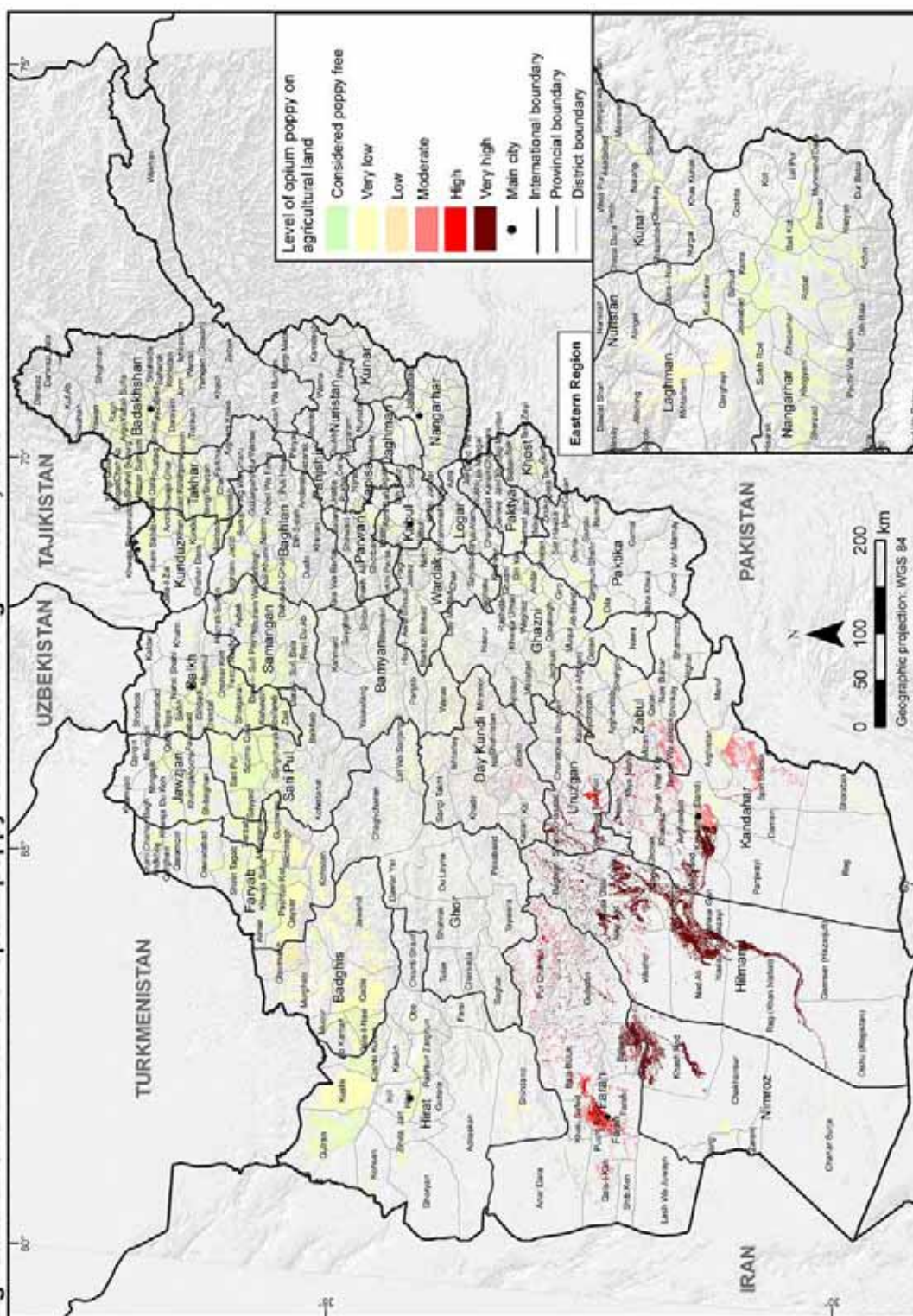
Prospects for 2009? The decline in opium cultivation may continue, first because of policy: Mohammad Gulab Mangal, Governor of Helmand, is taking a tough stance. Since his province produced 2/3 of all Afghan opium in 2008, any decline in cultivation in the districts he controls would have a major impact. Second, because of price trends: if food prices remain high, farmers will stick and/or shift to food crops. Of course, as high food prices impose hardship to cities (there were riots in Kabul this spring), they have to be offset by generously subsidized distribution of food in urban centres. The international community has a special responsibility and I call on all Afghan partners to be generous, and fast.

Where are the opium stocks? For a number of years now, Afghan opium production has exceeded (world) demand. The bottom should have fallen out of the opium market. It has not. Prices charged by farmers this past July (\$85/kg) were 20% lower than in 2007 and half the price in July 2005 (\$171/kg). This is significant, but not dramatic. As such price inelasticity can only be the result of stock build-ups, we should ask: where, why and by whom? First, our UNODC surveys show that farmers hold some stocks of dry opium, but not thousands of tons. Second,

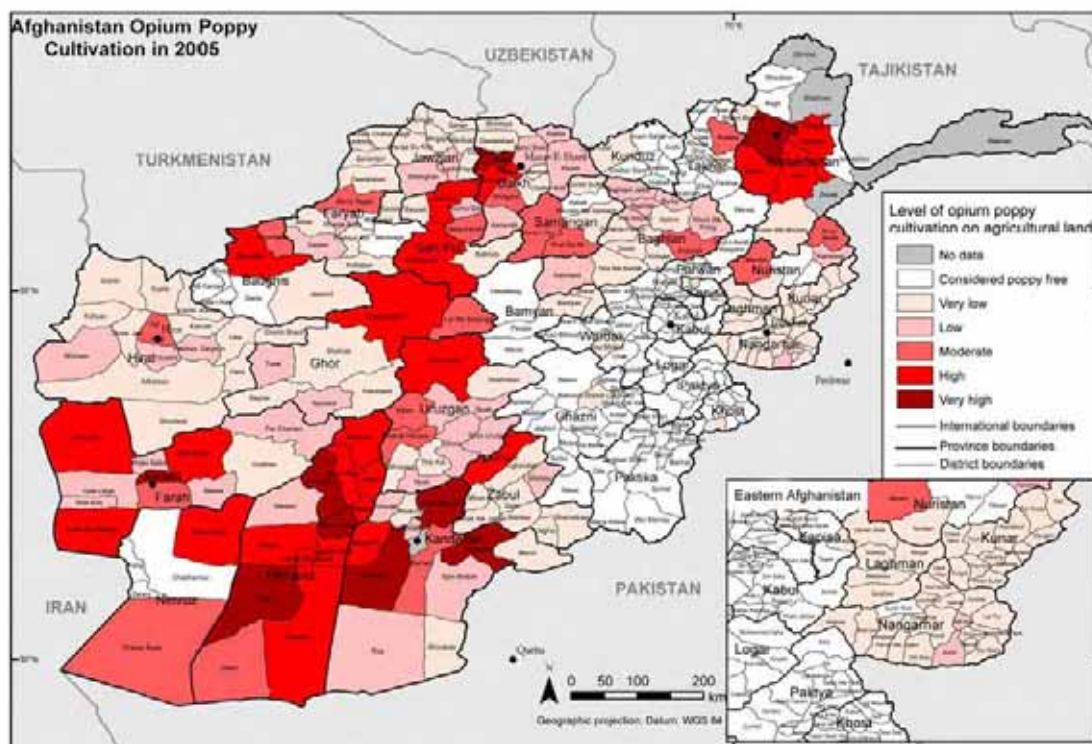
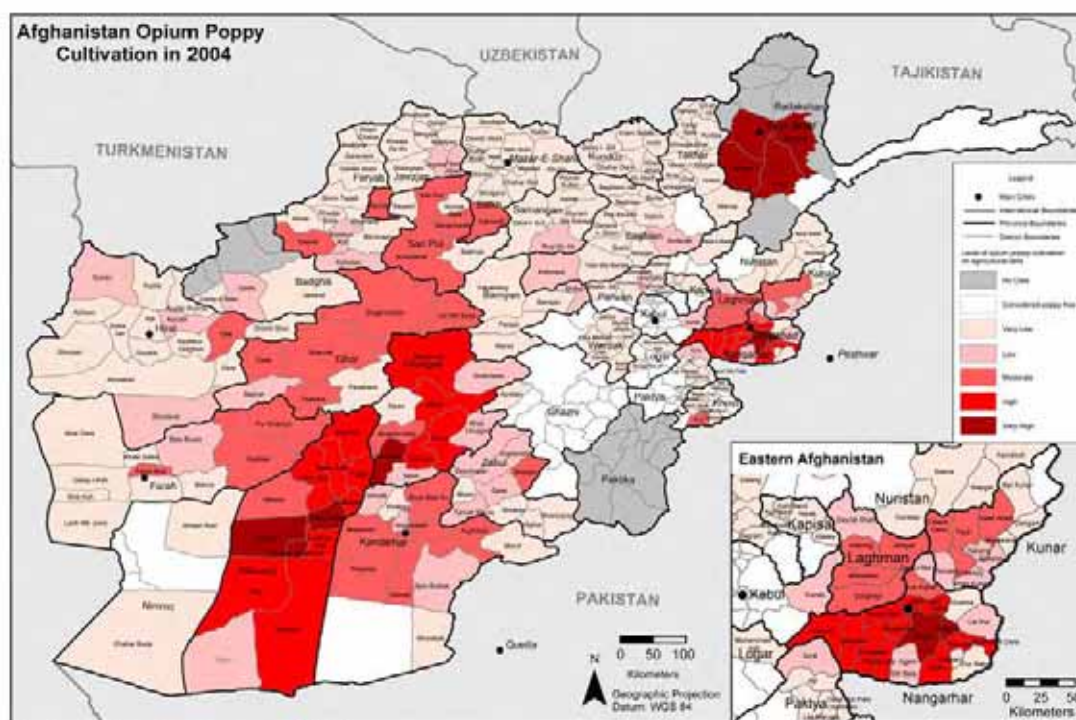


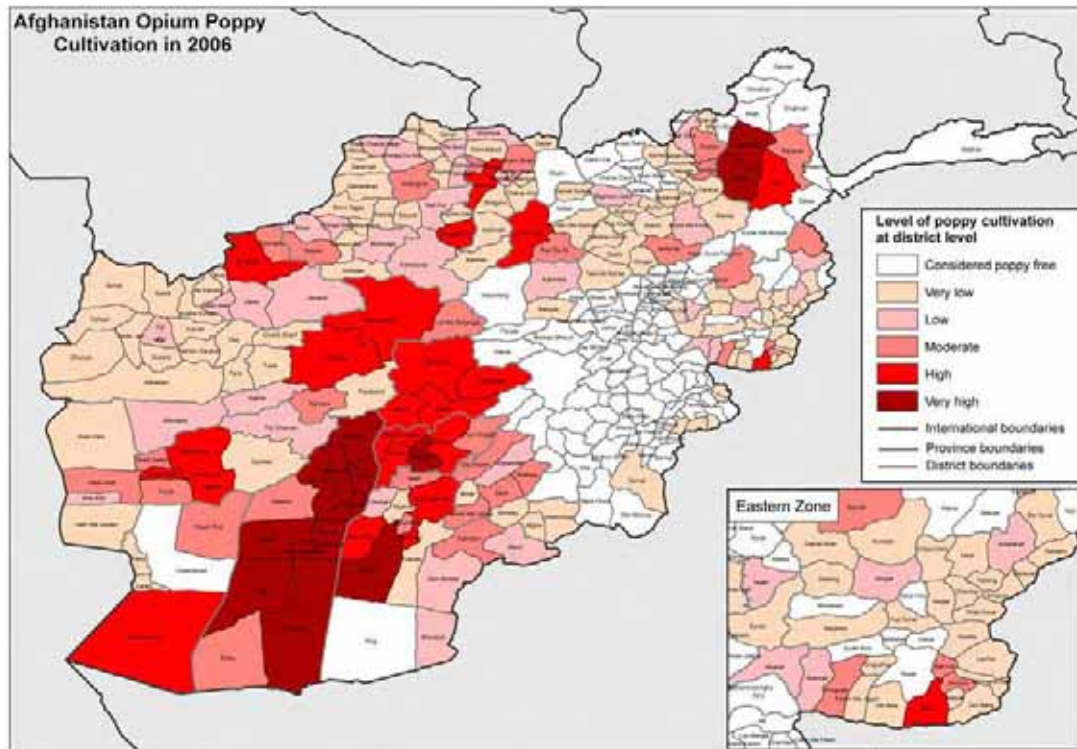


Agricultural land and level of opium poppy cultivation in Afghanistan, 2008

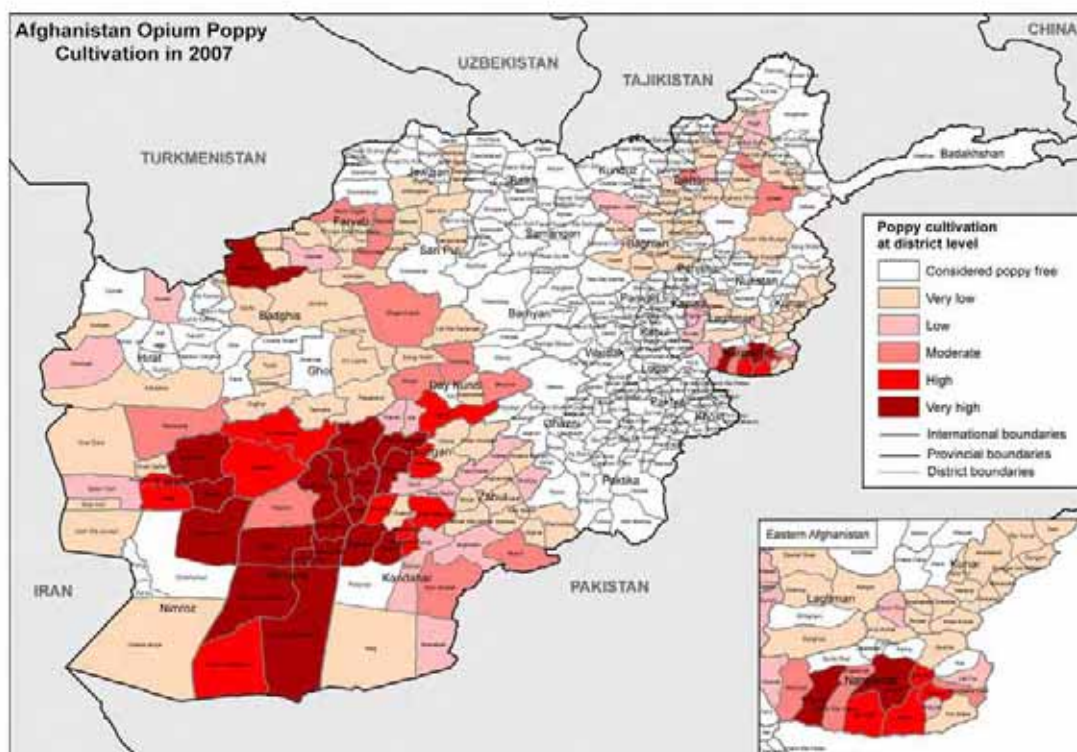


Source: Government of Afghanistan - National monitoring system implemented by UNODC
 Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

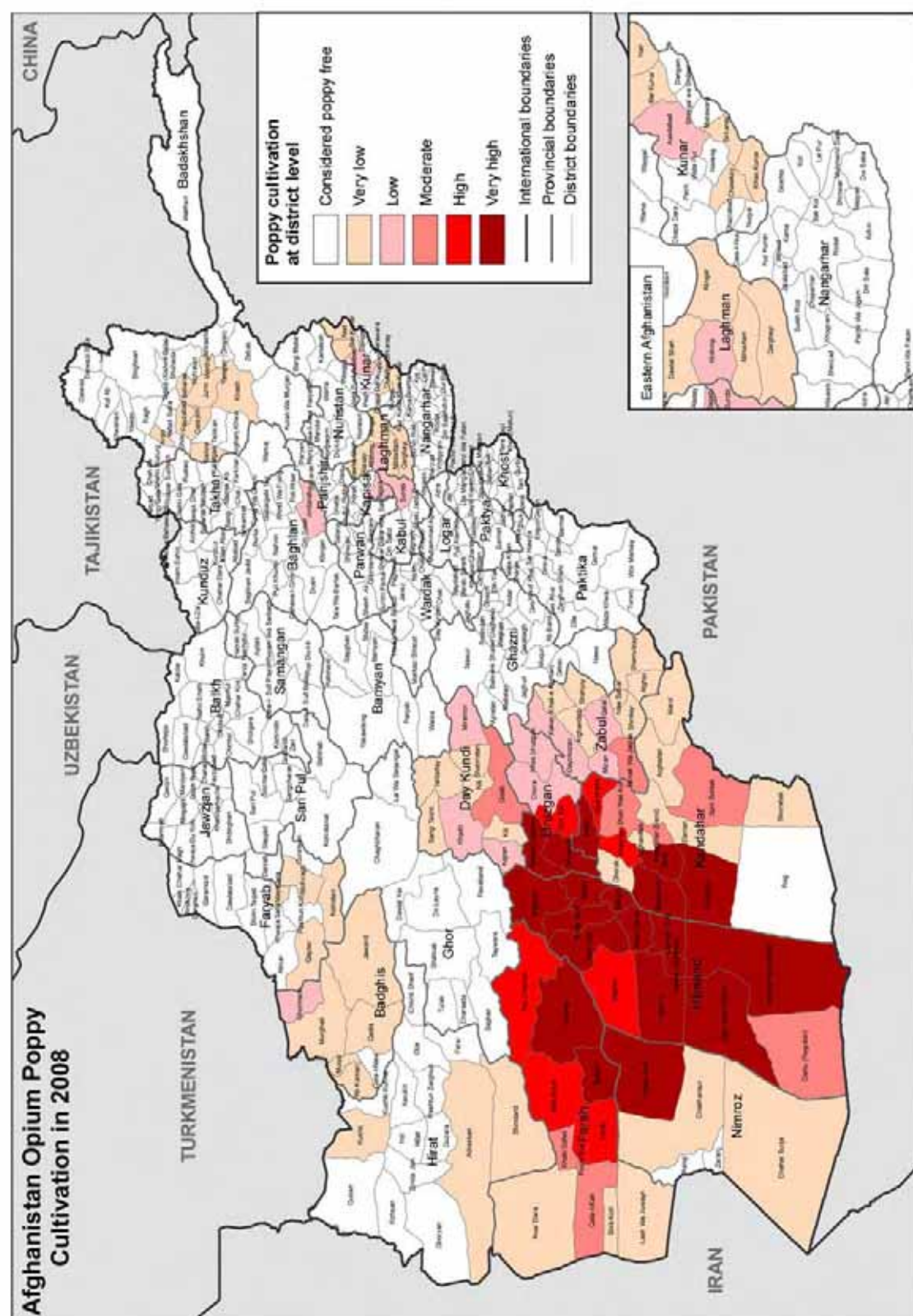




Source: Government of Afghanistan - National monitoring system implemented by UNODC
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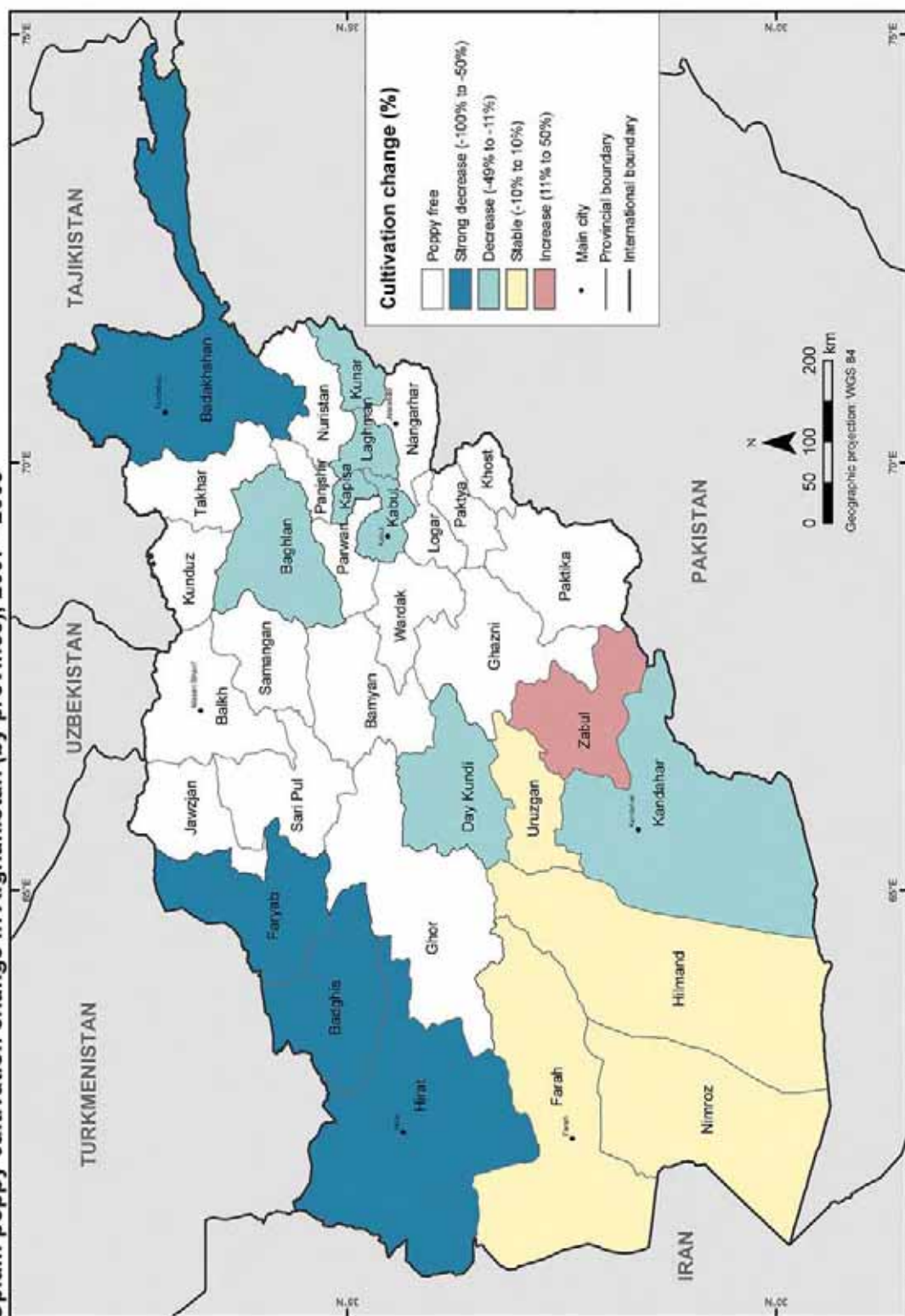


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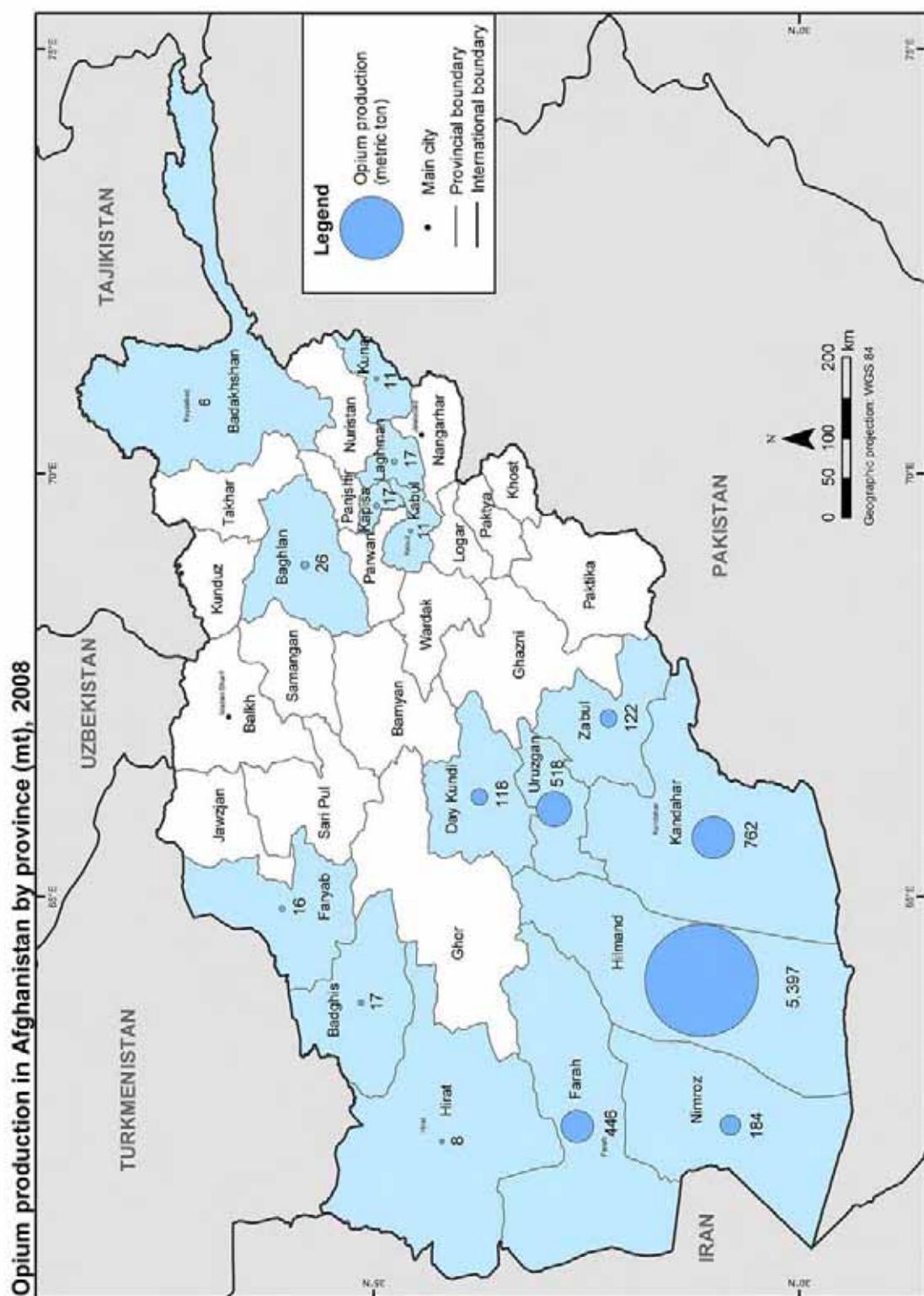


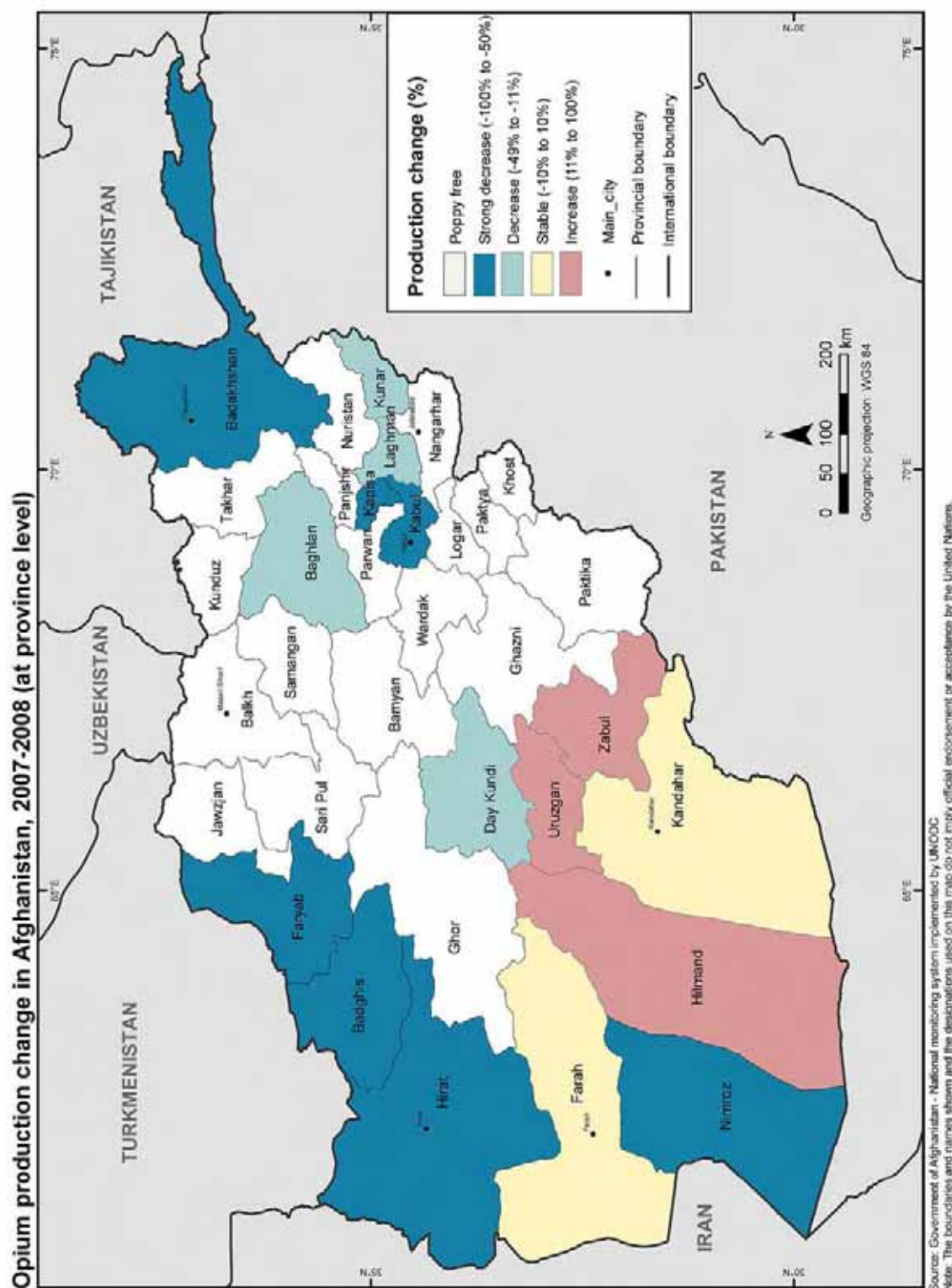
Source: Government of Afghanistan - National monitoring system implemented by UNODC.
Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Opium poppy cultivation change in Afghanistan (by province), 2007 - 2008



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

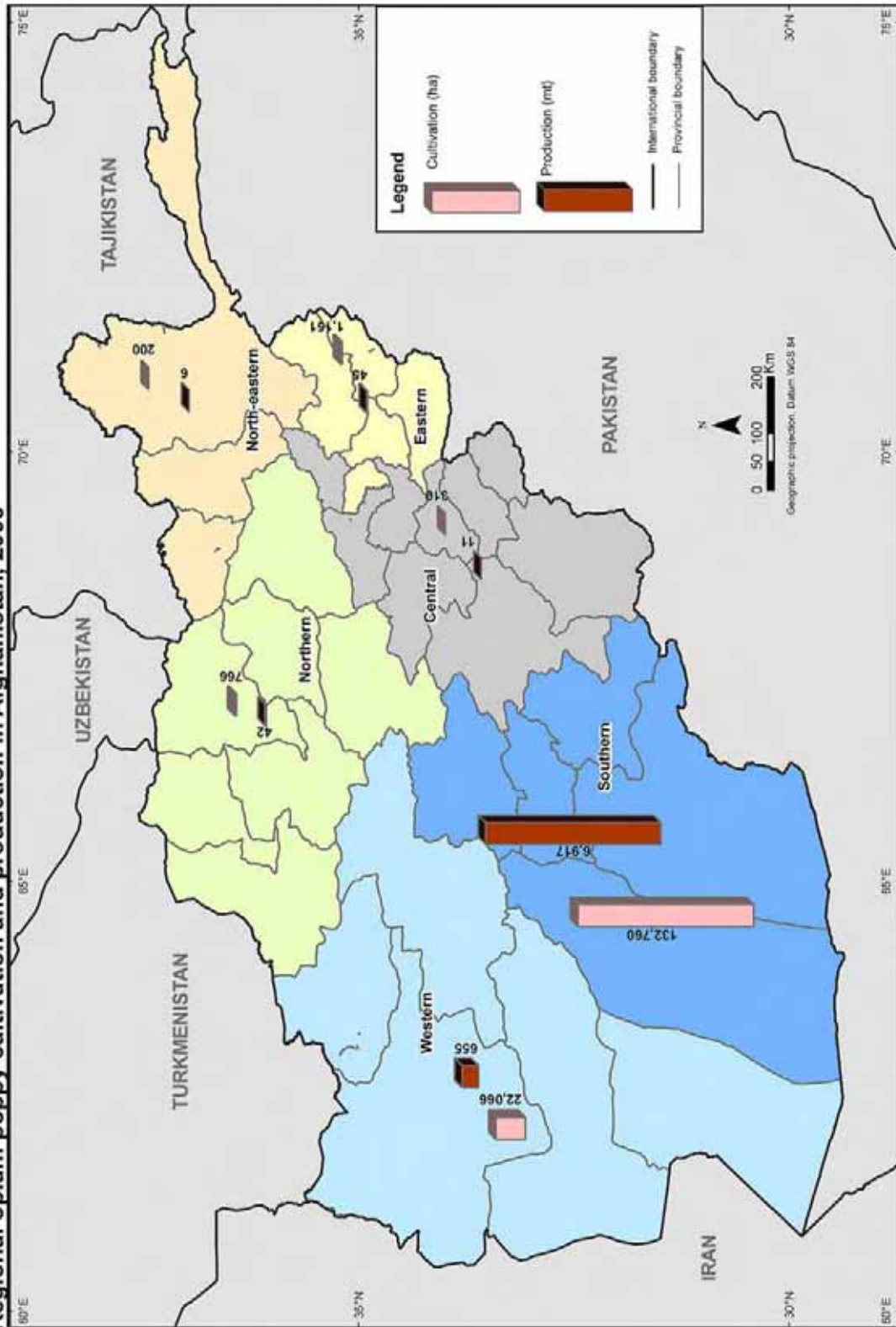




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Source: security map; UNODC.
 Soil cultivation: Government of Afghanistan. National monitoring system implemented by UNODC.
 Note: This border and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Regional opium poppy cultivation and production in Afghanistan, 2008



1 INTRODUCTION

The Afghanistan Opium Survey is implemented annually by the United Nations Office on Drugs and Crime (UNODC) and since 2003, in collaboration with the Afghan Government. The survey team collects and analyses information on the location and extent of opium cultivation, potential opium production and the socio-economic situation related to the problem. Since 2005, UNODC has been involved in the verification of opium eradication conducted by provincial governors and central 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 within the context of the elimination objective adopted at the United Nations General Assembly Special Session on Drugs in June 1998. Under ICMP, monitoring activities are currently supported by UNODC in the five other countries most affected by illicit opium and coca bush cultivation, namely Myanmar and the Lao People's Democratic Republic in Asia, Colombia, Peru and Bolivia in Latin America, and Morocco, which is one of the main areas of illicit cannabis cultivation.

The 2008 Afghanistan Opium Survey was implemented under project AD/AFG/F98, "Monitoring of opium production in Afghanistan", and project AD/GLO/C93, "Illicit crop monitoring programme support", with financial contributions from the Governments of the United Kingdom, the United States of America, Norway and Finland, Germany and from the European Commission.

2 FINDINGS

2.1 Opium cultivation

The total opium cultivation in 2008 in Afghanistan is estimated at 157,000 hectares (ha)²¹, a 19% reduction compared to 2007. The area under opium poppy cultivation was equivalent to 2.1% of agricultural land in 2008, down from 2.5% a year earlier²². Unlike in previous years, 98% of the total cultivation is confined to seven provinces with security problems; five of these provinces are in the south and two in the west.

Of the 34 provinces in the country, 18 have been found to be free of opium cultivation. In the eastern and northern provinces, cultivation was reduced to negligible levels. The province of Nangarhar, which was once the top producing province, has become poppy-free for the first time since the systematic monitoring of opium started in Afghanistan in the early 1990s. The situation in 2008 also presents a stark contrast because Nangarhar cultivated as much as 18,739 ha only last year. At the district level, 297 of Afghanistan's 398 districts were poppy-free in 2008.

The regional divide of opium cultivation between the south and the rest of the country continued to sharpen in 2008, with most of the opium cultivation confined to the south and west. Seven southern and western provinces contributed to 98% of Afghan opium cultivation and production: Hilmand, Kandahar, Uruzgan, Daykundi, Zabul, Farah and Nimroz. This clearly highlights the strong link between opium cultivation and the lack of security. Only a tiny portion of the total cultivation took place in the northern (Baghlan and Faryab), north-eastern (Badakhshan) and eastern (Kunar, Langhman and Kapisa) regions.

This information corresponds to the sharper polarization of the security situation between the lawless south and the relatively stable north. Hilmand still remains the dominant opium cultivating province (103,500 ha) followed by Farah, Kandahar, Uruzgan and Nimroz.

The total opium production in 2008 is estimated at 7,700 metric tons (mt), a 6% reduction compared to production in 2007. Almost all of the production (98%) takes place in the same seven provinces where the cultivation is concentrated and where the yield per hectare was relatively higher than in the rest of the country. All the other provinces contributed only 2% of total opium production in the country.

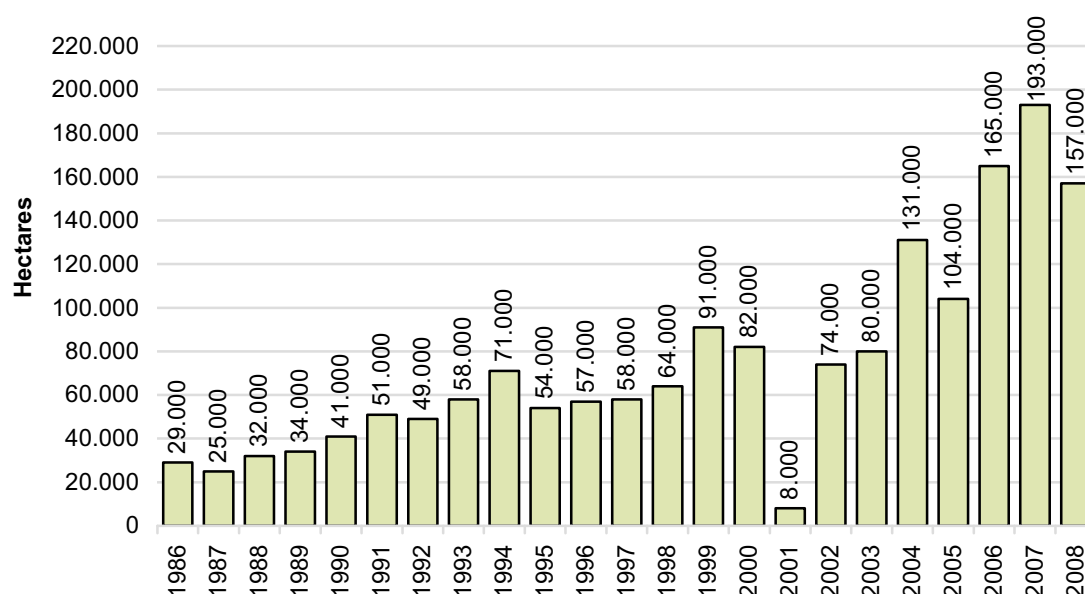
The gross income for farmers who cultivated opium is estimated at US\$ 730 million in 2008. This is a decrease from 2007, when farmgate income for opium was estimated at US\$ 1 billion.

Table 12: Number of provinces by opium cultivation trends, 2006-2008

Opium cultivation trend	Number of provinces		
	2006	2007	2008
Increase	14	8	1
Decrease	2	11	11
Stable	12	2	4
Poppy-free	6	13	18

²¹ 90% confidence interval: 130,000 - 190,000 ha.

²² The area available for agriculture has been updated by UNODC based on Landsat 7 ETM images. The total estimated agricultural area amounts to 7,665,473 hectares. This estimate replaced previous FAO estimates dating back to 1993.

Figure 15: Opium cultivation in Afghanistan (ha), 1986-2008

Sources: UNODC opium surveys for 1994-2008 and *Global Illicit Drug Trends 2001* (UNODC) for previous years.

The Opium Winter Assessment Survey 2008 anticipated a slight reduction in opium cultivation (UNODC, Afghanistan Opium Winter Rapid Assessment Report, February 2008). The full opium survey shows that cultivation decreased more than expected, thanks to successful counter-narcotic efforts in the northern and eastern provinces of Afghanistan. This decline was also a result of unfavourable weather conditions in the north and north-east regions that caused extreme drought and crop failure in some provinces, especially those in which agriculture is rainfed.

In areas where the reduction in cultivation was the result of the severe drought, there are real challenges for the government and international stakeholders to sustain this declining trend. The drought in 2008 affected not only opium cultivation but also other agricultural production. In particular, it caused the failure of the rainfed wheat crop, which resulted in serious difficulties for farmers. As a consequence, food prices have escalated in Afghanistan. There is an urgent need to mobilize support to meet the short - and long - term needs of the farmers affected by these drastic weather conditions.

A major difference in the regional distribution between 2007 and 2008 is that opium cultivation in the east (Nangarhar, Kunar and Laghman) dropped to insignificant levels in 2008. Compared to a total of 19,746 ha of opium cultivation in 2007, the eastern region is estimated to have cultivated only 1,150 ha in 2008.

Cultivation in the south remained stable, however, the southern region accounted for 84% of the opium cultivated in 2008 compared to 69% in 2007. As a result of the security problems in the south, since 2006 so-called anti-government elements (AGEs) are known to have encouraged farmers to cultivate opium poppy and even threatened them when they were reluctant to do so. The total area under opium cultivation in the southern region in 2008 (132,760 ha) was greater than the total Afghan opium cultivation in 2005 (104,000 ha). Eradication campaigns carried out by governors and the Poppy Eradication Force (PEF) did not prevent opium cultivation in that region.

Table 13: Opium cultivation by region (ha), 2007-2008

Region	2007 (ha)	2008 (ha)	Change 2007-2008	2007 (ha) as % of total	2008 (ha) as % of total
Southern	133,546	132,760	-1%	69%	84%
Northern	4,882	766	-84%	3%	0.5%
Western	28,619	22,066	-23%	15%	14%
North-eastern	4,853	200	-96%	3%	0.1%
Eastern	20,581	1,151	-94%	11%	0.7%
Central	500	310	-38%	0.3%	0.2%
Rounded total	193,000	157,000	-19%	100%	100%

Table 14: Main opium cultivation provinces (ha), 2008

Province	2003	2004	2005	2006	2007	2008	Change 2007-2008	% total in 2008	Cumulative %
Hilmand	15,371	29,353	26,500	69,324	102,770	103,590	1%	66%	66%
Kandahar	3,055	4,959	12,989	12,619	16,615	14,623	-14%	9%	75%
Farah	1,700	2,288	10,240	7,694	14,865	15,010	1%	10%	85%
Uruzgan	4,698	N/A	2,024	9,773	9,204	9,939	7%	6%	91%
Nimroz	26	115	1,690	1,955	6,507	6,203	-5%	4%	95%
Rest of the country	55150	94285	50557	63635	43020	7,888	-445%	5%	100%
Rounded total	80,000	131,000	104,000	165,000	193,000	157,000	-19%		

Figure 16: Global opium poppy cultivation (ha), 1990-2008

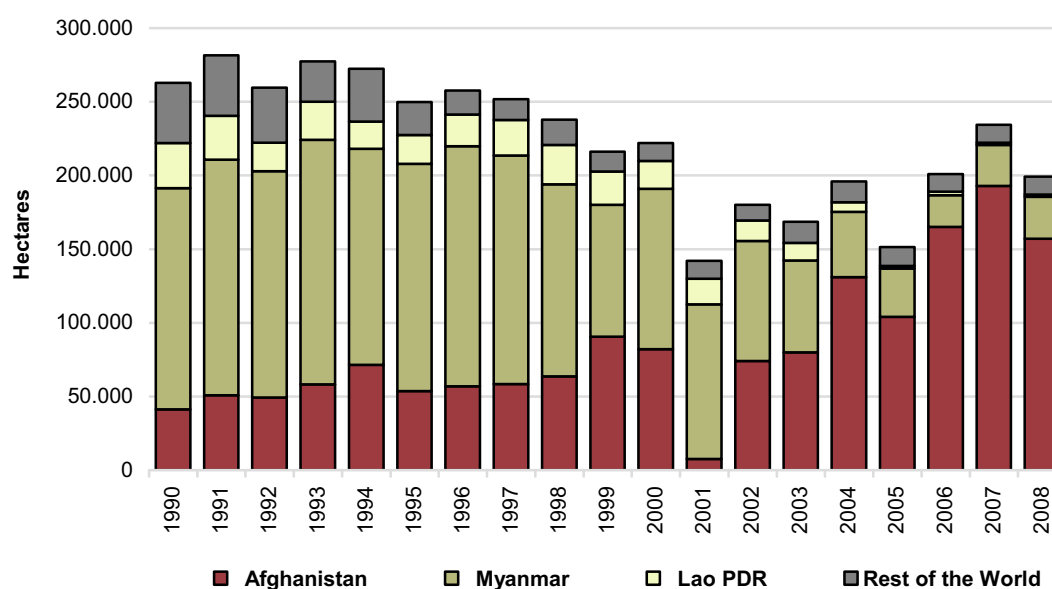


Table 15: Opium cultivation (2004-2008) and eradication (2007-2008) in Afghanistan

Province	Cultivation 2004 (ha)	Cultivation 2005 (ha)	Cultivation 2006 (ha)	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Change 2007-2008 (ha)	Change 2007-2008 (%)	Total area of eradication in 2007 (ha)	Total area of eradication in 2008 (ha)
Kabul	282	Poppy free	80	500	310	-190	-38%	14	20
Khost	838	Poppy free	133	Poppy free	Poppy free	0	0%	16	0
Logar	24	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Paktia	1,200	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Panjshir	Poppy free	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Parwan	1,310	Poppy free	124	Poppy free	Poppy free	0	0%	1	0
Wardak	1,017	106	Poppy free	Poppy free	Poppy free	0	0%	0	0
Ghazni	62	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Paktika	Poppy free	Poppy free	Poppy free	Poppy free	Poppy free	0	0%	0	0
Central region	4,733	106	337	500	310	-190	-38%	31	20
Kapisa	522	115	282	835	436	-399	-48%	10	59
Kunar	4,366	1,059	932	446	290	-156	-35%	27	103
Laghman	2,756	274	710	561	425	-136	-24%	802	26
Nangarhar	28,213	1,093	4,872	18,739	Poppy free	-18,739	-100%	2,339	26
Nuristan	764	1,554	1,516	Poppy free	Poppy free	0	0%	0	3
Eastern region	36,621	4,095	8,312	20,581	1,151	-19,430	-94%	3,178	217
Badakhshan	15,607	7,370	13,056	3,642	200	-3,442	-95%	1,311	774
Takhar	762	1,364	2,178	1,211	Poppy free	-1,211	-100%	781	0
Kunduz	224	275	102	Poppy free	Poppy free	0	0%	5	0
North-eastern region	16,593	9,009	15,336	4,853	200	-4,653	-96%	2,097	774
Baghlan	2,444	2,563	2,742	671	475	-196	-29%	185	85
Balkh	2,495	10,837	7,232	Poppy free	Poppy free	0	0%	14	0
Bamyan	803	126	17	Poppy free	Poppy free	0	0%	0	0
Faryab	3,249	2,665	3,040	2,866	291	-2,575	-90%	337	0
Jawzjan	1,673	1,748	2,024	1,085	Poppy free	-1,085	-100%	122	0
Samangan	1,151	3,874	1,960	Poppy free	Poppy free	0	0%	0	0
Sari Pul	1,974	3,227	2,252	260	Poppy free	-260	-100%	114	0
Northern region	13,789	25,040	19,267	4,882	766	-4,116	-84%	772	85
Hilmand	29,353	26,500	69,324	102,770	103,590	820	1%	4,003	2,537
Kandahar	4,959	12,989	12,619	16,615	14,623	-1,992	-12%	7,905	1,222
Uruzgan	11,080	2,024	9,703	9,204	9,939	735	8%	204	113
Zabul	2,977	2,053	3,210	1,611	2,335	724	45%	183	0
Day Kundi	0	2,581	7,044	3,346	2,273	-1,073	-32%	5	0
Southern region	48,369	46,147	101,900	133,546	132,760	-786	-1%	12,300	3,872
Badghis	614	2,967	3,205	4,219	587	-3,632	-86%	232	0
Farah	2,288	10,240	7,694	14,865	15,010	145	1%	143	9
Ghor	4,983	2,689	4,679	1,503	Poppy free	-1,503	-100%	188	38
Hirat	2,531	1,924	2,287	1,525	266	-1,259	-83%	70	352
Nimroz	115	1,690	1,955	6,507	6,203	-304	-5%	35	113
Western region	10,531	19,510	19,820	28,619	22,066	-6,553	-23%	668	511
Rounded total	131,000	104,000	165,000	193,000	157,000	-36,000	-19%	19,047	5,480

*Since 2007, the provinces below 100 ha of opium cultivation are considered as poppy-free provinces

Southern region

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

Opium cultivation and opium production in the southern provinces remained stable in 2008. A total of 132,760 ha of opium poppy were cultivated in the southern region, which is equivalent to 84% of the total cultivation in Afghanistan. A total of 6,917 metric tons of opium was produced, representing 90% of the entire production in Afghanistan in 2008.

Table 16: Opium cultivation and eradication in the southern region (ha), 2004-2008

Province	Cultivation (ha)					Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
	2004	2005	2006	2007	2008				
Hilmand	29,353	26,500	69,324	102,770	103,590	820	1%	4,003	2,537
Kandahar	4,959	12,989	12,619	16,615	14,623	-1,992	-12%	7,905	1,222
Uruzgan	11,080	2,024	9,703	9,204	9,939	735	8%	204	113
Zabul	2,977	2,053	3,210	1,611	2,335	724	45%	183	0
Day Kundi	0	2,581	7,044	3,346	2,273	-1,073	-32%	5	0
Southern region	48,369	46,147	101,900	133,546	132,760	-786	-1%	12,300	3,872

Table 17: Potential opium production in the southern region (mt), 2007-2008

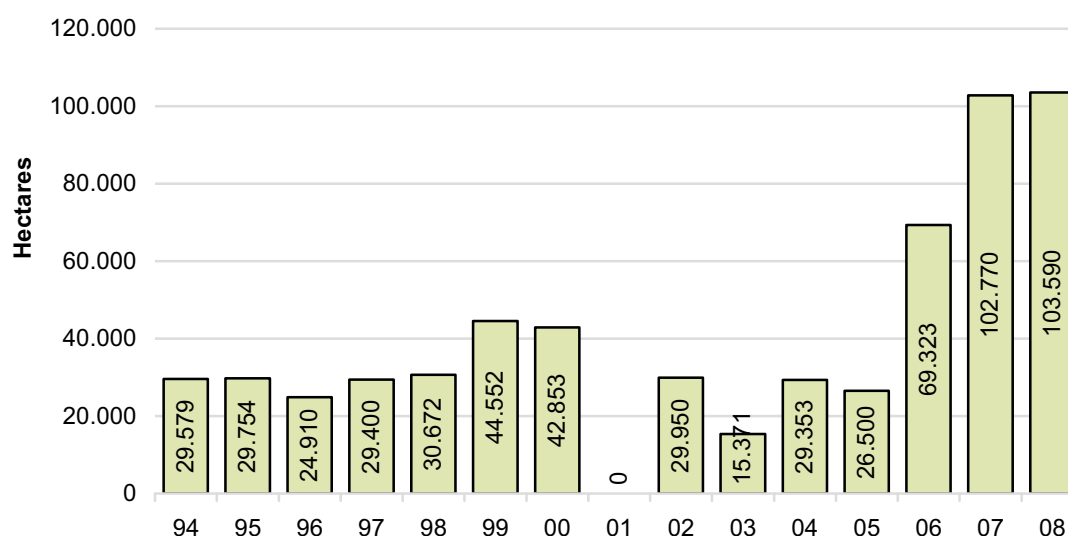
Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)
Hilmand	4,399	5,397	998	23%
Kandahar	739	762	22	3%
Uruzgan	411	518	107	26%
Day Kundi	135	118	-17	-12%
Zabul	61	122	60	98%
Southern region	5,745	6,917	1172	20%

Hilmand

Hilmand remains the single largest opium cultivating province with 103,500 ha (66% of the total cultivation in Afghanistan). This is the second consecutive year for a bumper cultivation of opium in the province. In 2007, opium cultivation in Hilmand was estimated at 102,770 ha, only 1% less than in 2008. Between 2002 and 2008, cultivation in Hilmand province more than tripled. A great deal of land in the province outside the traditional agricultural areas has been reclaimed for the sole purpose of opium cultivation. Hilmand accounted for 66% of the country's total opium cultivation in 2008 compared to 53% in 2007, 42% in 2006, 25% in 2005, 23% in 2004 and 19% in 2003.

Information gathered during field work provided indications that the levels of cultivation are higher in the districts of Nad Ali, Nawa-i-Barakzayi, Nahri Sarraj, Musa Qala, Garmser (Hazarjuft) and Lashkar Gah, but only 2% of the estimated opium cultivation was eradicated in 2008. One of the main reasons for the increase in cultivation was that during the planting season (October and November 2006), AGEs encouraged farmers to plant more opium poppy.

Potential opium production in 2008 increased by 23% to 5,397 metric tons, reaching 70% of overall 2008 opium production in Afghanistan. The increase in production (23%) is considerably higher than the increase in cultivation (1%) because of the sharp increase in the yield observed in this province in 2008.

Figure 17: Opium cultivation in Hilmand province (ha), 1994-2008

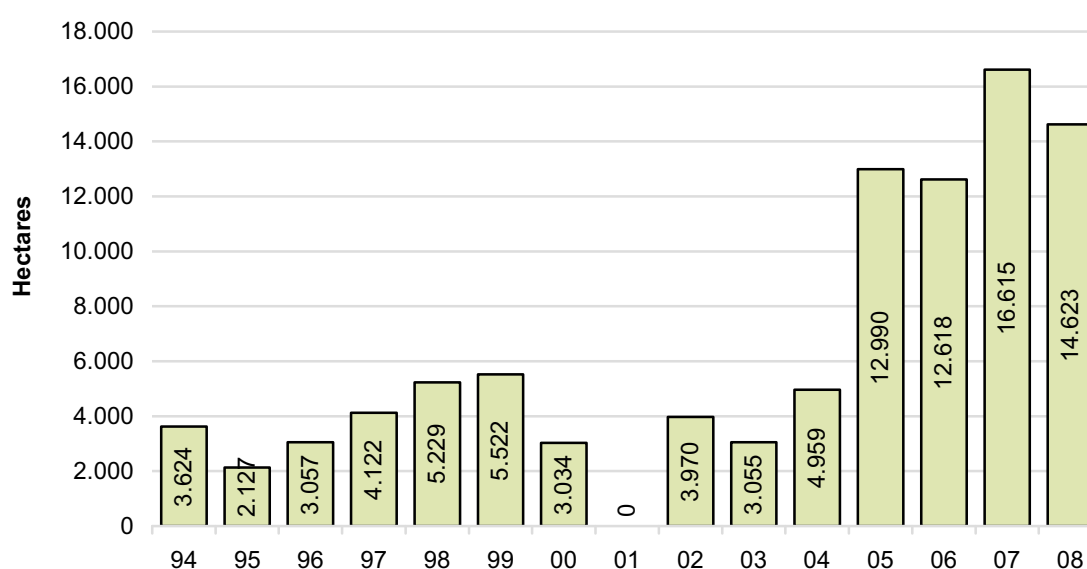
Kandahar

In Kandahar province, opium cultivation was 14,623 ha in 2008, a reduction of 12% from 2007, though cultivation was significantly higher than in 2006. The increase in opium cultivation started after 2004, when only 4,959 ha were cultivated. Since then, the area under opium poppy has tripled.

The main opium cultivation districts in 2008 were Maywand, Nesh, Zhari (Panjwayi), Miya Nishin and Khakrez.

Opium production increased by 3%, reaching 762 mt, which is equivalent to 10% of the total production in Afghanistan in 2008.

A total of 1,222 ha were eradicated, as verified by MCN and UNODC, which amounted to 8% of the estimated opium cultivation in Kandahar province.

Figure 18: Opium cultivation in Kandahar province (ha), 1994-2008

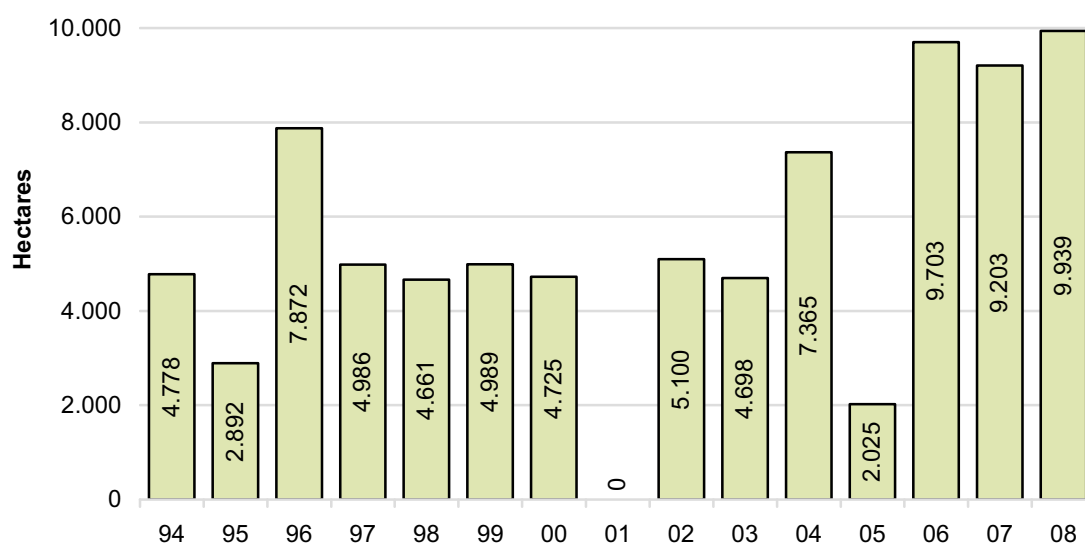
Uruzgan

Opium cultivation in Uruzgan province increased by 8% and accounted for a 6% of the total Afghan opium cultivation (9,939 ha). The overall cultivation could have been much higher than estimated if not for the severe cold, which negatively affected many opium poppy fields.

Higher levels of cultivation were noticed in Dihrawud, Shahidi Hassas and Tirin Kot districts, which are adjacent to Hilmand and Kandahar provinces. Cultivation in other districts was negligible due to the cold weather.

The increase in cultivation was the result of weak provincial governance and the increased presence of AGEs. Only 113 ha of opium crops were eradicated in this province.

Figure 19: Opium cultivation in Uruzgan province, 1994-2008



Day Kundi

Due to cold weather in the northern part of Day Kundi, opium cultivation decreased significantly (by 32%) to 2,273 ha compared to 3,346 ha in 2007 and 7,044 ha in 2006. Governor-led eradication forces did not conduct operations in this province. Security was very poor in most parts of southern Day Kundi.

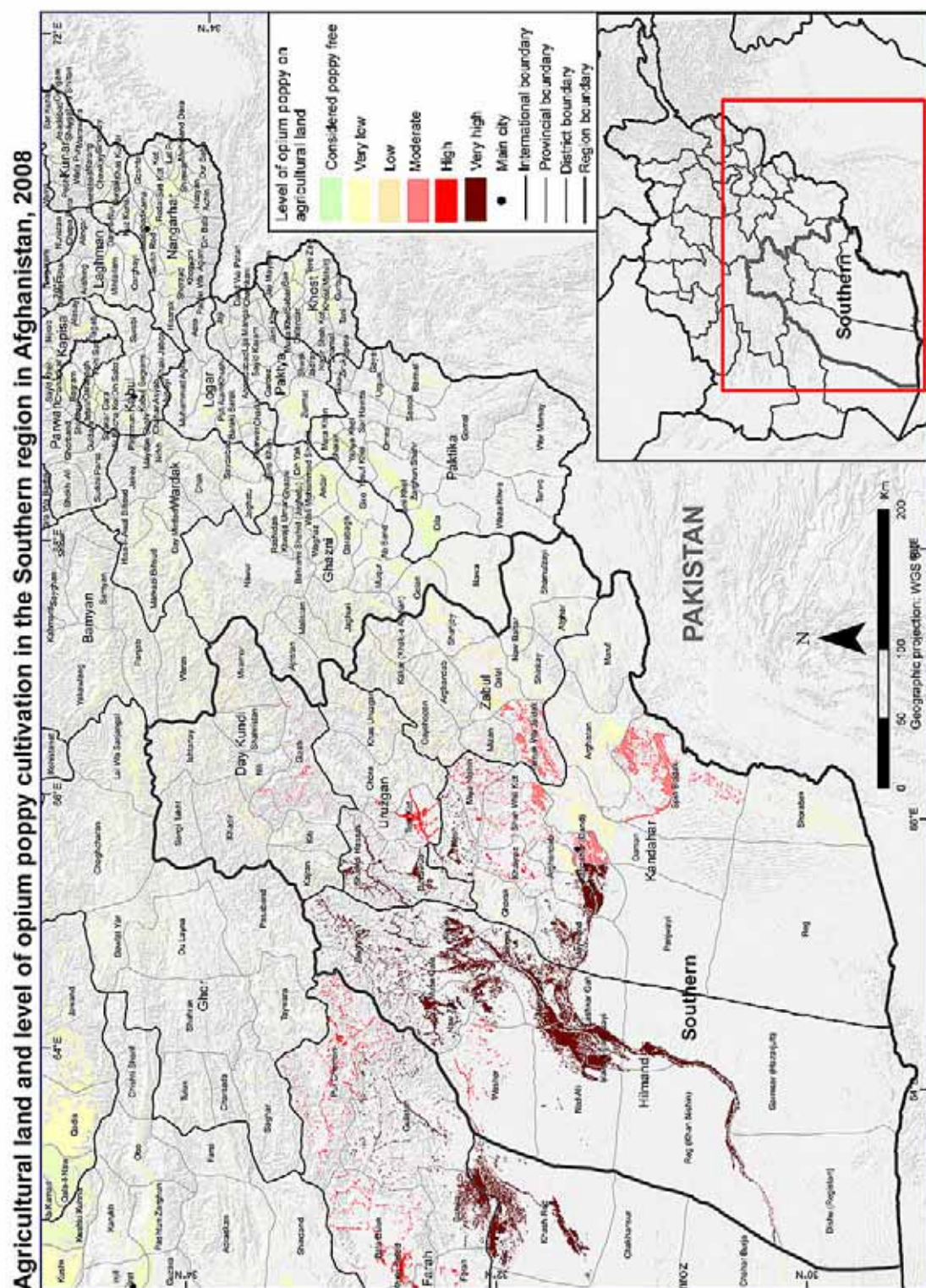
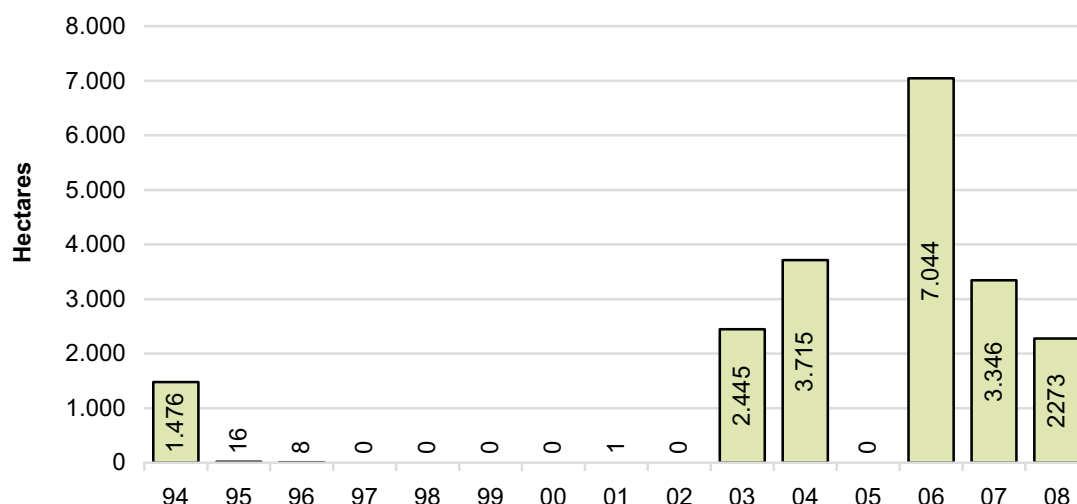


Figure 20: Opium cultivation in Day Kundi province, 1994-2008

**Zabul**

Opium cultivation in Zabul increased by 45% in 2008 from 1,611 ha in 2007 to 2,335 ha. Prior to 2007, cultivation in this province ranged from about 2000 to 3000 ha. Security in this province is degrading each year with the increased presence of AGEs.

Eastern region

(Kapisa, Kunar, Laghman, Nangarhar, Nuristan)

Opium cultivation in the eastern region decreased by 94% in 2008. Only 1,151 ha of opium poppy were cultivated in 2008 (1% of the total area cultivated in Afghanistan) compared to 20,581 ha in 2007, which accounted for 11% of the total opium cultivation in that year. Opium production decreased in 2008 by 96% to 45 mt, which is considerably lower than the 1,084 mt produced in 2007. The drastic reduction in opium cultivation is mainly due to the new poppy-free status of Nangarhar province, which cultivated 18,739 ha in 2007. The cultivation was reduced due to several factors, such as awareness campaigns and measures that forced farmers to eradicate their own opium cultivation. The poppy-free status of Nangarhar and reduced cultivation in Kunar and Laghman show effective provincial leadership in implementing control measures to stop opium cultivation in the eastern region.

Table 18: Opium cultivation and eradication in the eastern region (ha), 2004-2008

Province	Cultivation (ha)					Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
	2004	2005	2006	2007	2008				
Nangarhar	28,213	1,093	4,872	18,739	Poppy free	-18,739	-100%	2,339	26
Kapisa	522	115	282	835	436	-399	-48%	10	59
Laghman	2,756	274	710	561	290	-271	-48%	802	103
Kunar	4,366	1,059	932	446	425	-21	-5%	27	26
Nuristan	764	1,554	1,516	Poppy free	Poppy free	0	0%	0	3
Eastern region	36,621	4,095	8,312	20,581	1,151	-19,430	-94%	3,178	217

Table 19: Opium production in the eastern region (mt), 2007-2008

Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)
Kapisa	40	17	-23	-58%
Laghman	20	17	-3	-15%
Kunar	18	11	-7	-38%
Nangarhar	1,006	0	-1006	-100%
Nuristan	0	0	0	0%
Eastern region	1,084	45	-1039	-96%

Nangarhar

Traditionally, Nangarhar was a large poppy-growing province, and in 2007, it was estimated to have 18,739 ha of opium cultivation. In 2008, Nangarhar province became poppy-free for the first time since the UN began opium cultivation monitoring in Afghanistan. Opium cultivation in Nangarhar in 2004 was 28,213 ha; in 2005, it fell to 1,093 ha. However, in 2006 opium cultivation increased to 4,872 ha but could only be found in very remote parts of the province.

An important factor contributing to the sharp decrease in cultivation was that local shura leaders of important tribes in Nangarhar acted in accordance with the government's opium cultivation ban. The Governor of Nangarhar played a significant role in making the province poppy-free. Effective awareness campaigns for anti-poppy cultivation and forcing farmers to eradicate their own opium poppy fields were the reasons for this success. There were reports that several farmers were convicted on the charge of opium cultivation.

A total of 22 ha under opium cultivation were eradicated by governor-led eradication forces as verified by MCN/UNODC. Government sources claimed that 944 ha were self-eradicated by the farmers.

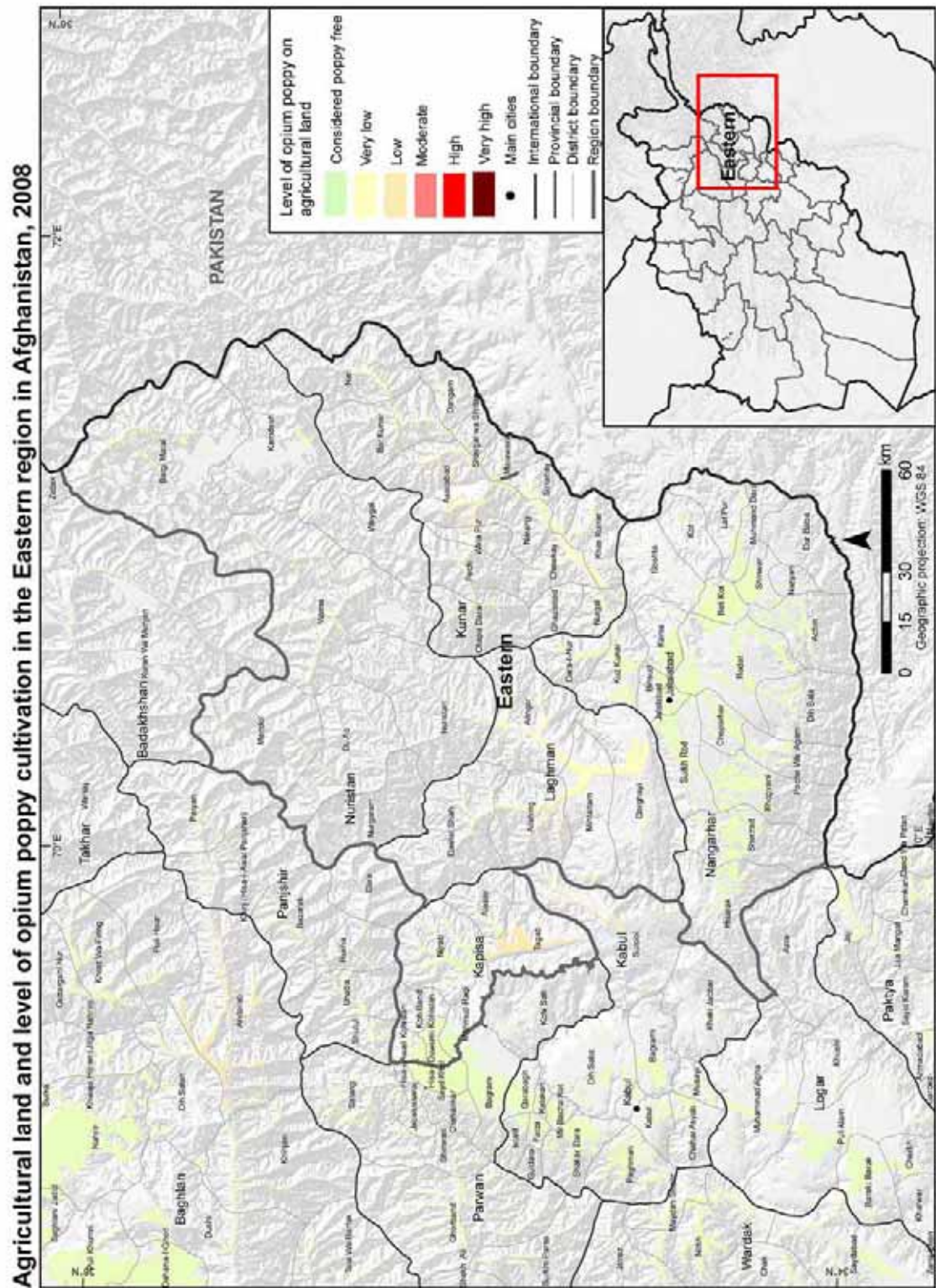
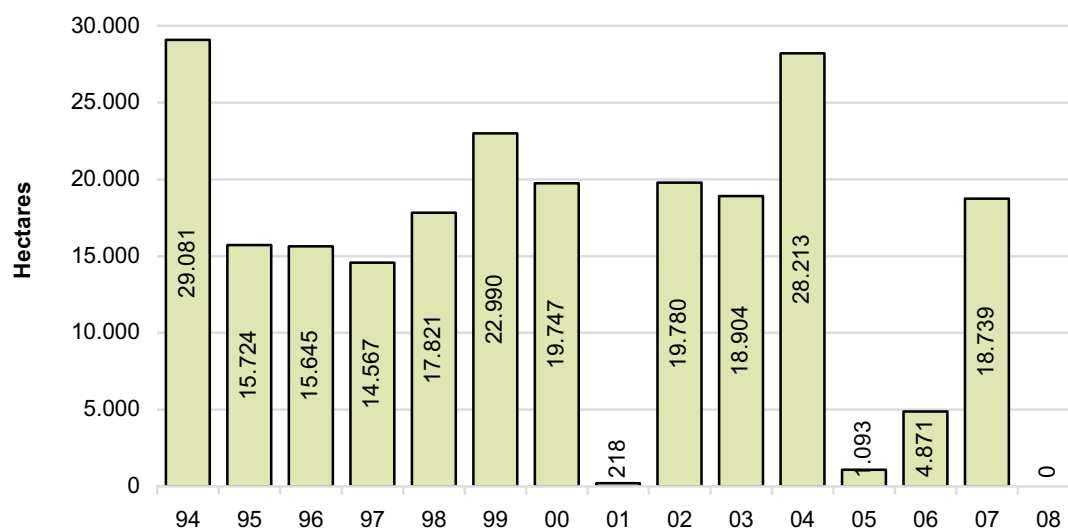
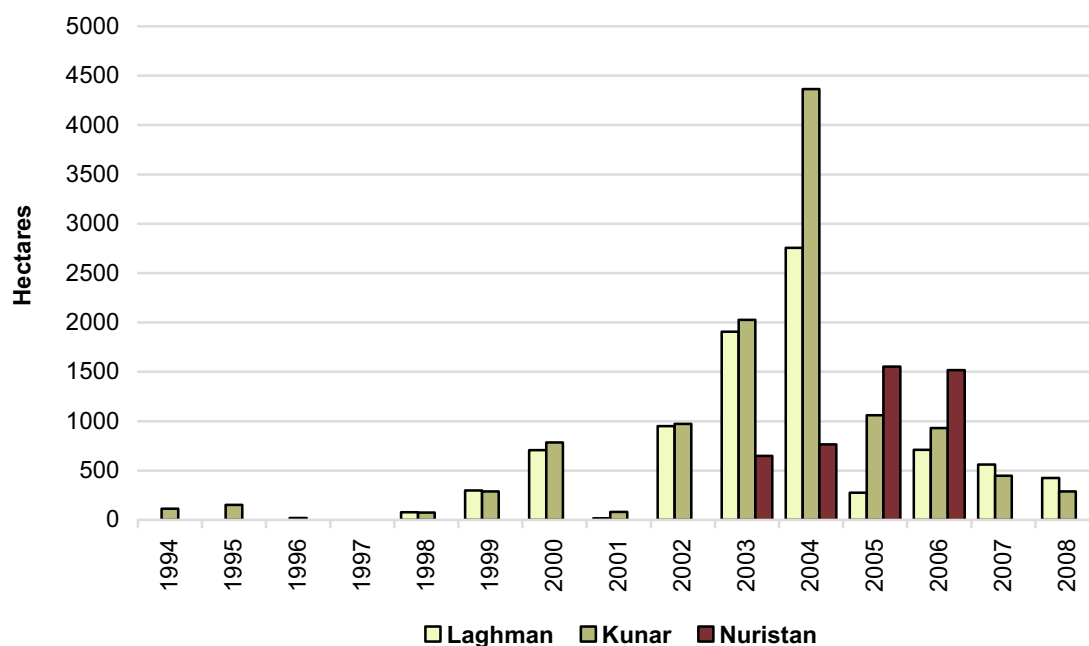


Figure 21: Opium cultivation in Nangarhar province (ha), 1994-2008

Laghman, Kunar, Kapisa and Nuristan

Kunar and Laghman provinces also showed a considerable reduction (35% and 24%, respectively) in opium cultivation in 2008. In both provinces, cultivation (amounting each to less than 500 ha) was restricted to remote areas that are difficult to access. Kapisa also experienced a considerable reduction of 45% in opium cultivation. However, this is a province with a high security risk and a higher percentage of agricultural land compared to Kunar and Laghman. These factors increase the challenges of sustaining the reduction next year in Kapisa. Nuristan again remained poppy-free in 2008.

Figure 22: Opium cultivation in Lagman, Kunar and Nuristan provinces (ha), 1994-2008

North-east region

(Badakhshan, Kunduz and Takhar)

Opium cultivation in the north-east reached negligible levels due to successful pre-cultivation campaigns and effective eradication. A total area of 200 ha of opium poppy was cultivated in 2008, while 4,853 ha was cultivated in 2007 and 15,234 ha in 2006. This represents a decrease of 96% in 2008 compared to cultivation in 2007. Opium production also decreased by 97% to 6 mt in 2008 compared to 195 mt in 2007. Cultivation was observed only in Badakhshan province; Kunduz and Takhar provinces are poppy-free.

Table 20: Opium cultivation and eradication in the north-eastern region (ha), 2004-2008

Province	Cultivation (ha)					Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
	2004	2005	2006	2007	2008				
Badakhshan	15,607	7,370	13,056	3,642	200	-3,442	-95%	1,311	774
Takhar	762	1,364	2,178	1,211	Poppy free	-1,211	-100%	781	0
Kunduz	224	275	102	Poppy free	Poppy free	0	0%	5	0
North-eastern region	16,593	9,009	15,336	4,853	200	-4,653	-96%	2,097	774

Table 21: Opium production in the north-eastern region (mt), 2007-2008

Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007- 2008 (mt)	Change 2007- 2008 (%)
Badakhshan	152	6	-146	-96%
Takhar	43	0	-43	-100%
Kunduz	0	0	0	0%
North-eastern region	195	6	-189	-97%

Badakhshan

In 2008, opium cultivation in Badakhshan decreased by 95% to 200 ha from 3,642 ha in 2007 and 13,056 ha in 2006. Cultivation was confined chiefly to rainfed areas and was badly affected by drought. No cultivation was observed in irrigated valleys.

The decrease in cultivation was partly attributable to effective pre-cultivation and eradication campaigns and severe drought in rainfed areas. Opium yield in Badakhshan was lower than the national average, resulting in a significant decrease in production (by 96%), which reached only 152 mt in 2008. Seven hundred seventy-four hectares of opium fields were eradicated in 2008.

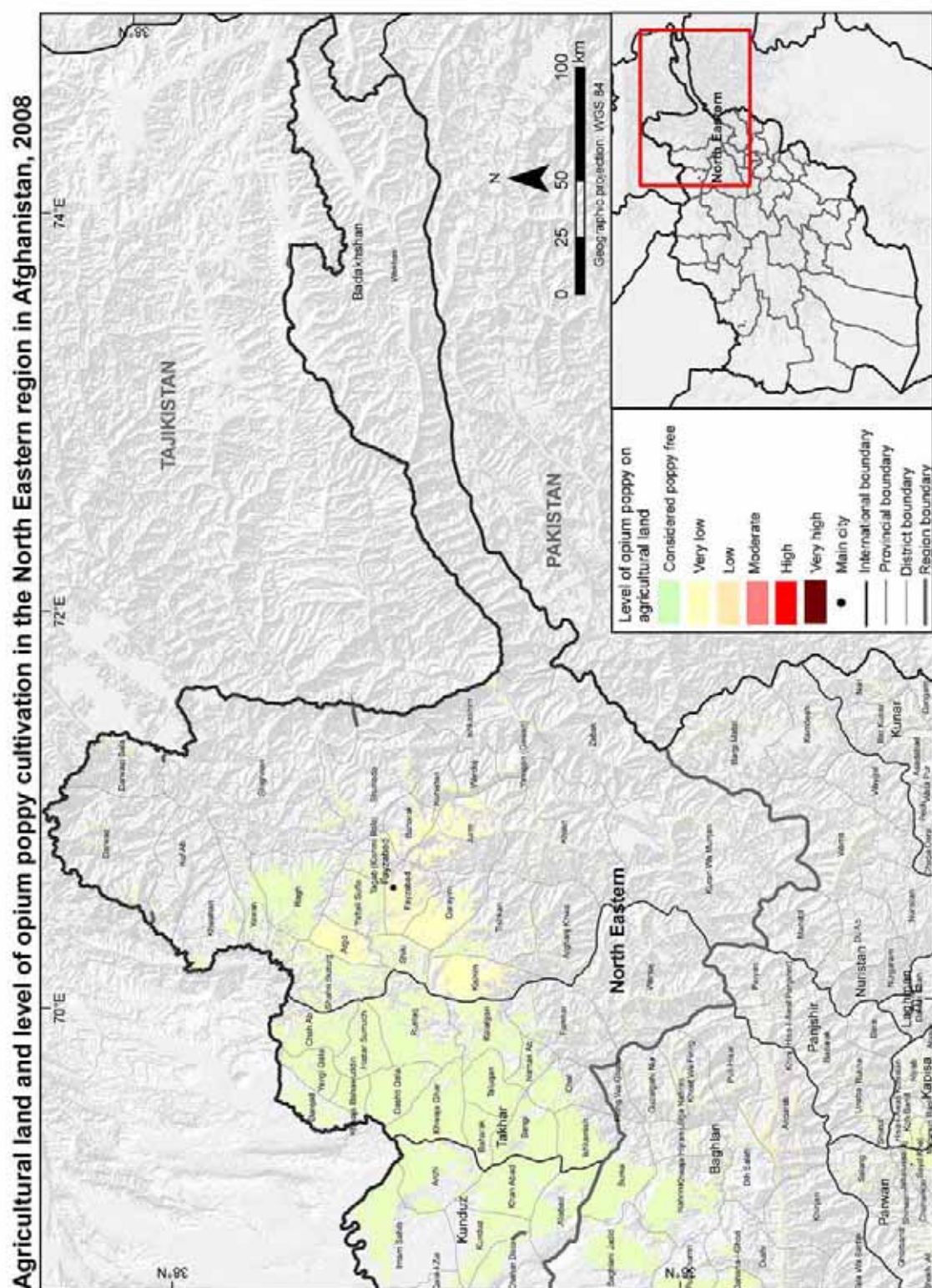
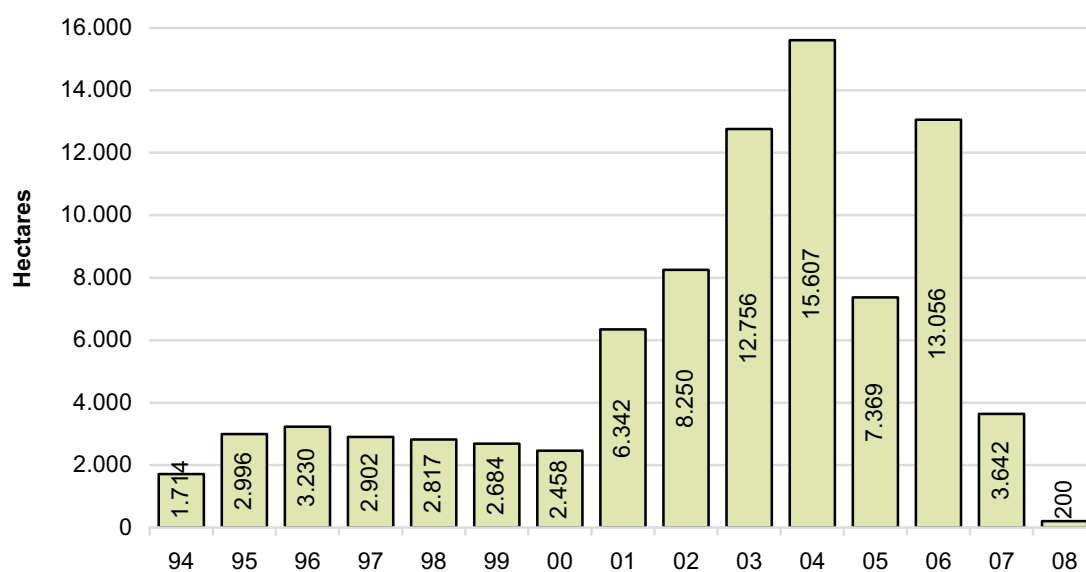
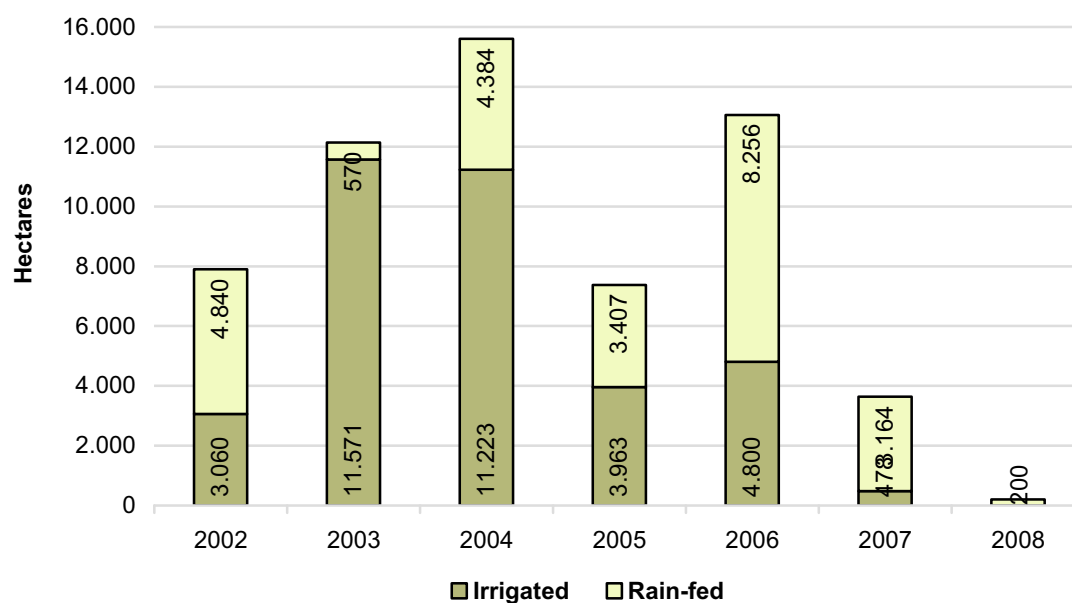


Figure 23: Opium cultivation in Badakhshan province (ha), 1994-2008**Figure 24: Distribution of irrigated and rainfed opium cultivation in Badakhshan (ha), 2002-2008**

Takhar

Takhar was poppy-free in 2008. In 2006 and 2007, opium cultivation in Takhar was 2,178 ha and 1,211 ha, respectively.

Kunduz

Kunduz was poppy-free in 2008. An insignificant amount cultivation was observed in this province during recent years, however, it has been poppy-free since 2007. The province is well known for growing varieties of crops from vegetables and fruits to cotton.

Northern region

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

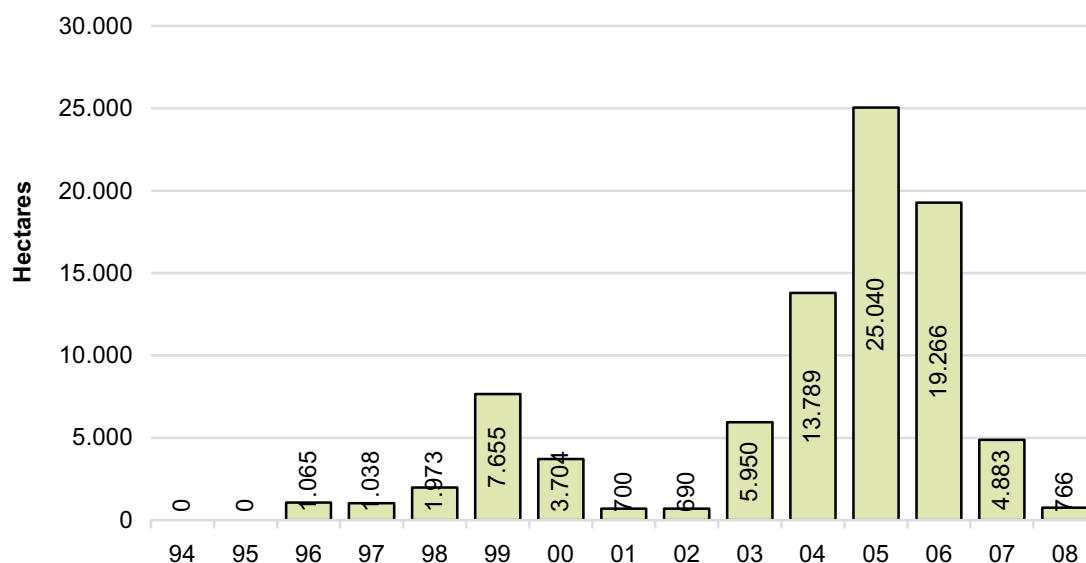
The total area under opium cultivation in the northern region sharply decreased from 4,882 ha in 2007 to 766 ha in 2008 – a decrease of 84%. Although 19,267 ha of opium poppy were cultivated in this region in 2006, cultivation fell that year for the first time in five years. In 2007, three provinces (Balkh, Bamyan and Samangan) became poppy-free. In 2008, Sari Pul province became poppy-free as well. Opium production also fell sharply by 82% to 42 mt compared to 233 mt in 2007. The decrease was attributable chiefly to an effective pre-cultivation campaign, which resulted in many provinces not cultivating opium. An area of 85 ha of opium poppy was eradicated in 2008, but this eradication was concentrated only in the Baghlan province.

Table 22: Opium cultivation and eradication in the northern region (ha), 2004-2008

Province	Cultivation (ha)					Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
	2004	2005	2006	2007	2008				
Faryab	3,249	2,665	3,040	2,866	291	-2,575	-90%	337	0
Jawzjan	1,673	1,748	2,024	1,085	0	-1,085	-100%	122	0
Baghlan	2,444	2,563	2,742	671	475	-196	-29%	185	85
Sari Pul	1,974	3,227	2,252	260	Poppy free	-260	-100%	114	0
Balkh	2,495	10,837	7,232	Poppy free	Poppy free	0	0%	14	0
Bamyan	803	126	17	Poppy free	Poppy free	0	0%	0	0
Samangan	1,151	3,874	1,960	Poppy free	Poppy free	0	0%	0	0
Northern region	13,789	25,040	19,267	4,882	766	-4,116	-84%	772	85

Table 23: Opium production in the northern region (mt), 2007-2008

Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)
Baghlan	36	26	-10	-28%
Faryab	135	16	-119	-88%
Jawzjan	54	0	-54	-100%
Sari Pul	9	0	-9	-100%
Balkh	0	0	0	0%
Bamyan	0	0	0	0%
Samangan	0	0	0	0%
Northern region	234	42	-191	-82%

Figure 25: Opium cultivation in the northern region (ha), 1994-2008**Balkh**

Balkh province remained poppy-free for a second year. This success was attributed to a governor-led pre-cultivation campaign. Opium cultivation was introduced in the province in 1996 (1,065 ha), but Balkh was not a major producer of opium until 2004. A high level of cultivation (10,837 ha) was recorded in 2005 and again in 2006 (7,232 ha).

Faryab

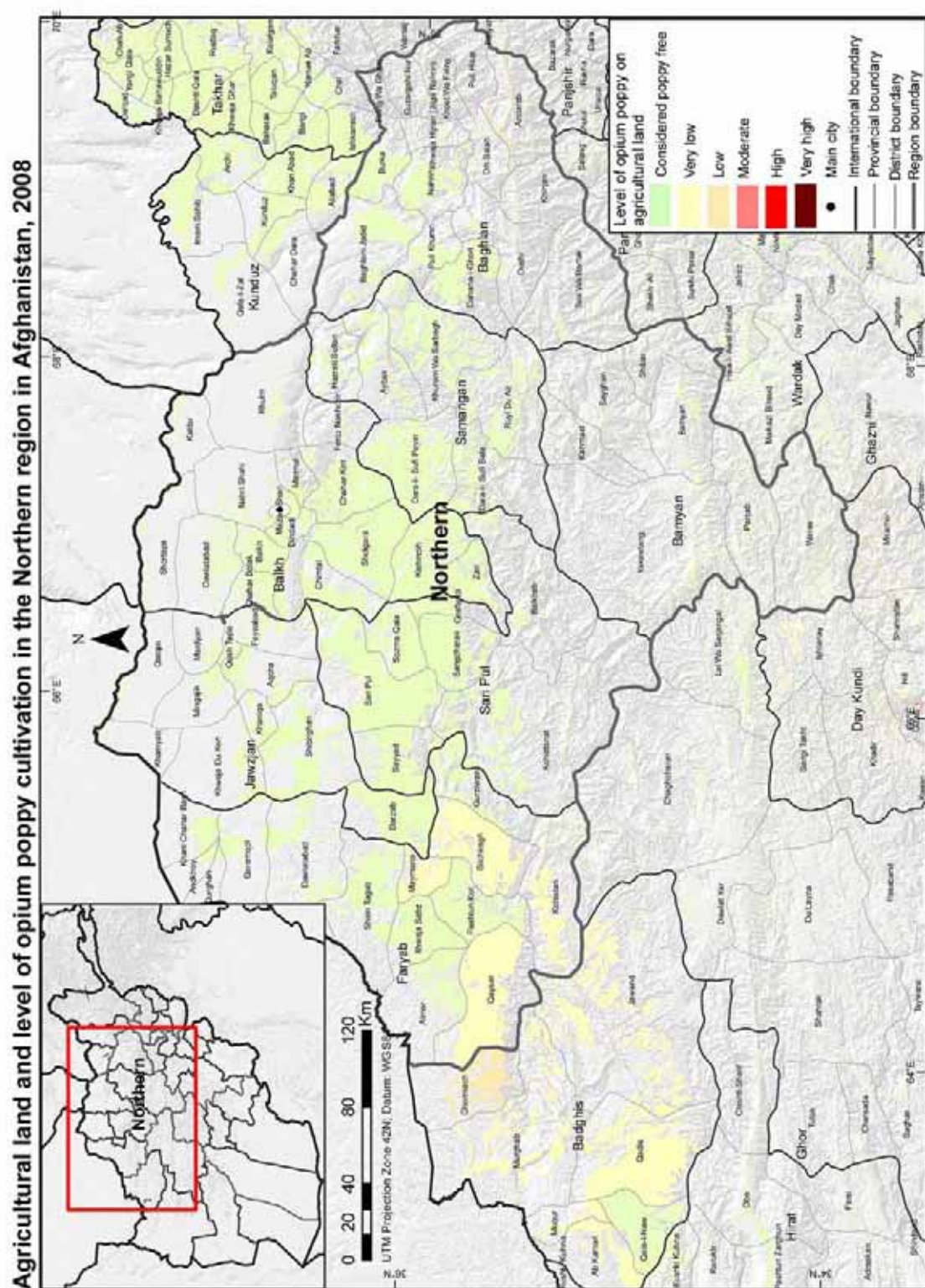
Opium cultivation in Faryab was reduced for the first time, declining by 90% to 291 ha in 2008 compared to 2,866 ha in 2007. Levels of opium cultivation in Faryab stabilized at around 3,000 ha after 2002. Cultivation decreased slightly from 3,040 ha in 2006 to 2,866 ha in 2007, following the eradication of 337 ha. This new success in 2008 shows an increased control in the province by the governor, unlike in previous years.

Samangan, Bamyan and Sari Pul

Samangan and Bamyan were poppy-free in 2007 and 2008, and Sari Pul was poppy-free in 2008. Cultivation in Bamyan was negligible in the past. Opium cultivation in Samangan province has ranged from 1,000 to 4,000 ha since 2004.

Jawzjan and Baghlan

Jawzjan province was found to be poppy-free in 2008. Baghlan was estimated to have 475 ha of cultivation in 2008, which was concentrated only in Andarab district. Cultivation in Baghlan province has been at lower levels since 2007. Cultivation in both provinces ranged from 1,500 to 3,000 ha between 2004 and 2006.



Central region

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

Opium cultivation decreased by 38% in 2008. The total area cultivated remained negligible (310 ha) and was limited to the Surobi district of Kabul province. All other provinces aside from Kabul were poppy-free in 2008.

Table 24: Opium cultivation and eradication in the central region (ha), 2004-2008

Province	Cultivation (ha)					Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
	2004	2005	2006	2007	2008				
Kabul	282	0	80	500	310	-190	-38%	14	20
Khost	838	0	133	Poppy free	Poppy free	0	0%	16	0
Logar	24	0	0	Poppy free	Poppy free	0	0%	0	0
Paktya	1,200	0	0	Poppy free	Poppy free	0	0%	0	0
Panjshir	0	0	0	Poppy free	Poppy free	0	0%	0	0
Parwan	1,310	0	124	Poppy free	Poppy free	0	0%	1	0
Wardak	1,017	106	0	Poppy free	Poppy free	0	0%	0	0
Ghazni	62	0	0	Poppy free	Poppy free	0	0%	0	0
Paktika	0	0	0	Poppy free	Poppy free	0	0%	0	0
Central region	4,733	106	337	500	310	-190	-38%	31	20

Table 25: Opium production in the central region (mt), 2006-2008

Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)
Kabul	26	11	-15	-57%
Khost	0	0	0	0%
Logar	0	0	0	0%
Paktya	0	0	0	0%
Panjshir	0	0	0	0%
Parwan	0	0	0	0%
Wardak	0	0	0	0%
Ghazni	0	0	0	0%
Paktika	0	0	0	0%
Central region	26	11	-15	-57%

Western region

(Farah, Ghor, Hirat, Nimroz, Badghis)

Opium cultivation decreased by 23% (to 22,066 ha) compared to 28,619 ha in 2007. The decrease is mainly due to a reduced level of cultivation in Hirat, Ghor (poppy-free) and Badghis provinces. Opium cultivation in Farah and Nimroz provinces did not change much compared to 2007, remaining at significantly higher levels. A smaller area was eradicated in 2008 (511 ha) due to unfavourable security conditions in Nimroz and a lack of political will in Farah.

Table 26: Opium cultivation and eradication in the western region (ha), 2004-2008

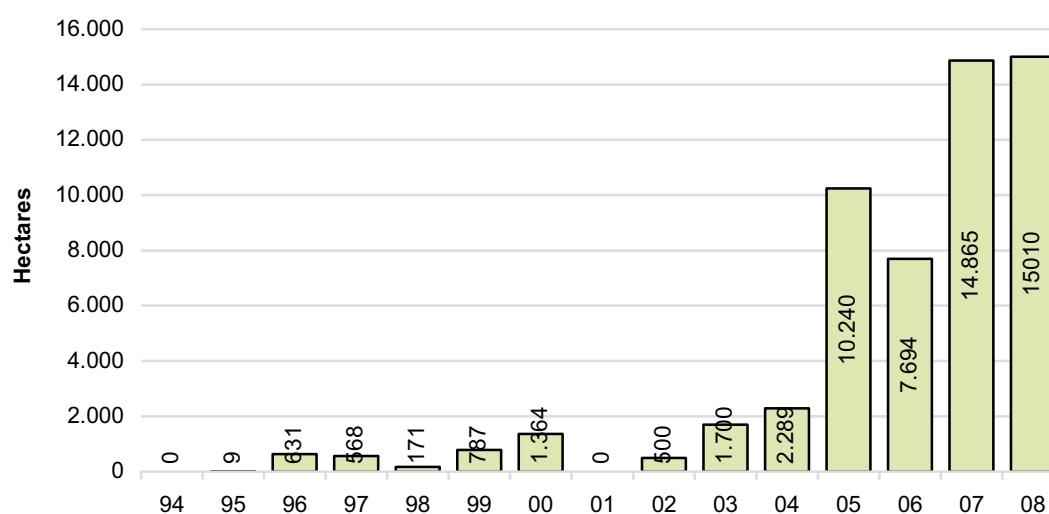
Province	Cultivation (ha)					Change 2007-2008 (ha)	Change 2007-2008 (%)	Eradication in 2007 (ha)	Eradication in 2008 (ha)
	2004	2005	2006	2007	2008				
Farah	2,288	10,240	7,694	14,865	15,010	145	1%	143	9
Nimroz	115	1,690	1,955	6,507	6,203	-304	-5%	35	113
Badghis	614	2,967	3,205	4,219	587	-3,632	-86%	232	0
Hirat	2,531	1,924	2,287	1,525	266	-1,259	-83%	70	352
Ghor	4,983	2,689	4,679	1,503	Poppy free	-1,503	-100%	188	38
Western region	10,531	19,510	19,820	28,619	22,066	-6,553	-23%	668	511

Table 27: Opium production in the western region (mt), 2007-2008

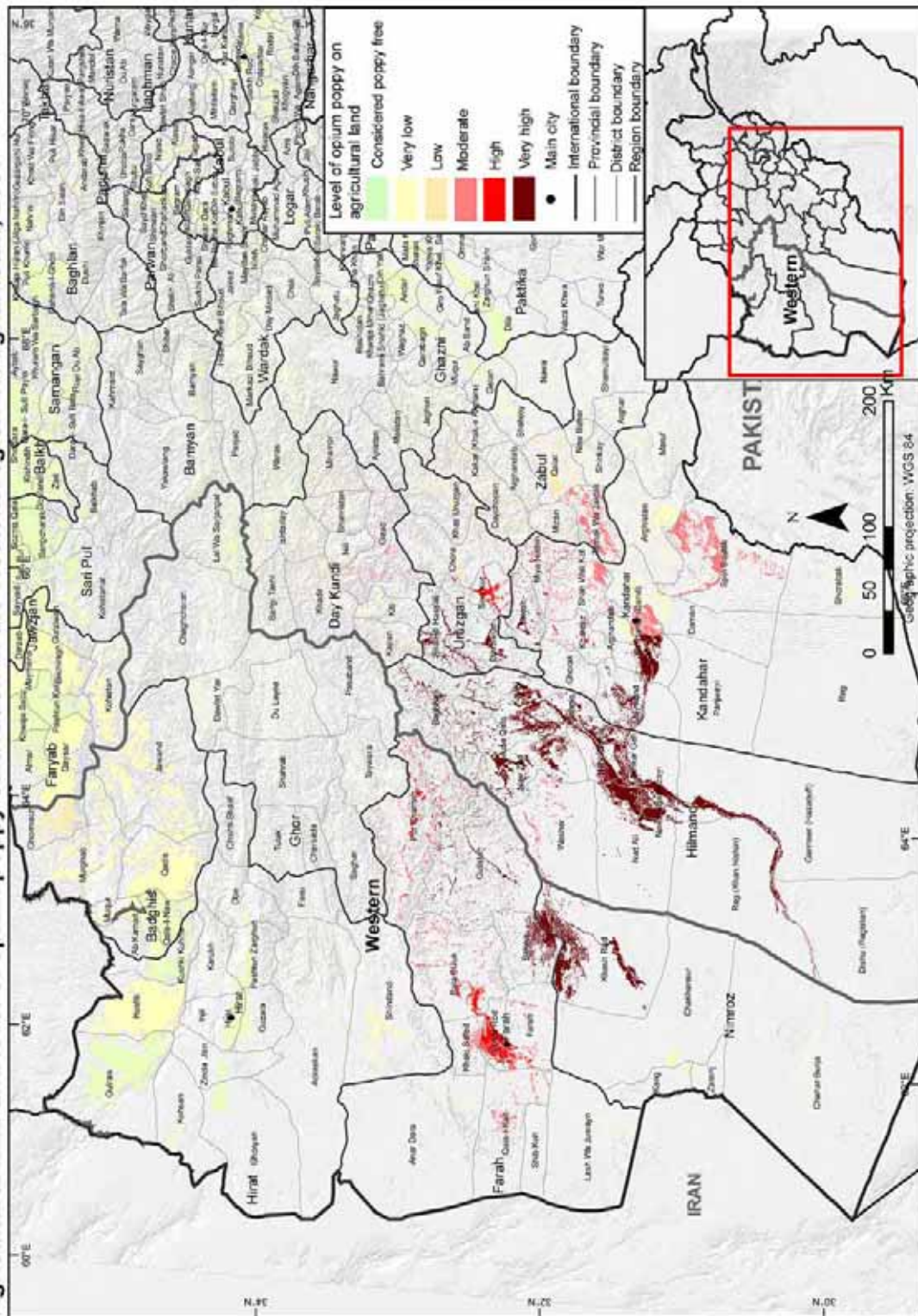
Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)
Farah	409	446	37	9%
Nimroz	372	184	-188	-51%
Badghis	100	17	-83	-83%
Ghor	44	0	-44	-100%
Hirat	33	8	-25	-76%
Western region	958	655	-304	-32%

Farah

Cultivation in Farah was stable in 2008 at 15,010 ha compared to 14,865 ha in 2007, indicating that cultivation in Farah almost doubled from 2006 (7,694 ha) to 2007. Opium production in the province increased by 9% in 2008 to 446 mt compared to 2007. Only 9 ha of opium poppy were eradicated in Farah province in 2008.

Figure 26: Opium cultivation in Farah province (ha), 1994-2008

Agricultural land and level of opium poppy cultivation in the Western region in Afghanistan, 2008



Source: MCN - UNODC Afghanistan Opium Survey 2008.

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

Nimroz

There was a 5% decrease in opium cultivation in Nimroz province (6,203 ha) in 2008 compared to last year when cultivation was three times as high as in 2006. The majority of the cultivation has always been located in Khash Rod district. Many new agricultural areas have been developed in the northern part of this district since 2007, and a vast majority of them were used for opium cultivation. Only 113 ha of opium poppy were eradicated in Nimroz in 2008. In 2004, the total area under opium cultivation in this province was only 115 ha.

Hirat and Ghor

Opium cultivation decreased by 83% in Hirat (266 ha) and 100% in Ghor (poppy-free) in 2008. Cultivation in Hirat took place mainly in the Khusk, Adraskan and Shindad districts.

Badghis

Opium cultivation in Badghis in 2008 decreased dramatically by 86% to 587 ha compared to 4,219 ha in 2007. A winter rapid assessment of opium cultivation conducted in January 2008 indicated an increase in opium cultivation. However, severe drought in Badghis province caused the failure of the entire rainfed crop in 2008, resulting in a large decrease in opium cultivation. An increase in cultivation has taken place since 2002, gradually reaching 3,205 ha in 2006. In 2008, no effort was made to eradicate opium poppy in this province.

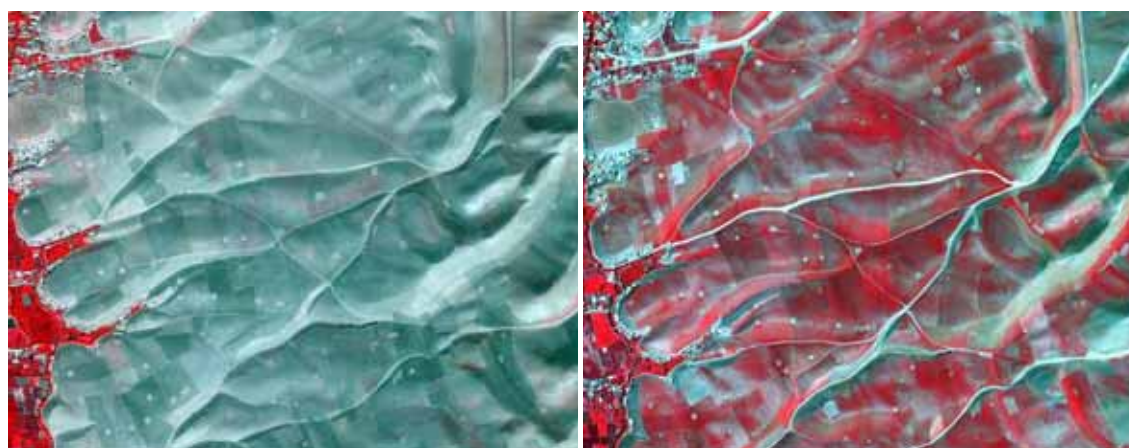


Image date: 14 May 2008

Image date: 10 May 2007

Images of Murgahb district (Badghis province) taken in 2007 and 2008 show the negative effects of the severe drought on the overall agricultural cultivation. The 2007 image shows intense cultivation (in red), while the same area in 2008 shows the failure of the crop in rainfed area.

2.2 Opium cultivation density

The area of land potentially available for crop cultivation in Afghanistan is 7.7 million hectares out of a total of 65 million hectares. This is based on the agricultural mapping carried out by UNODC using Landsat ETM data from 2007. Using these data, the area under opium cultivation in 2007 covered 2.05% of the total area of land potentially available for agriculture (both irrigated and rainfed).

Opium cultivation density with respect to available potential agricultural land (cultivated and currently fallow land) varies considerably from province to province. In 2008, the density was highest in Hilmand, the main opium-producing province, where one third of potential agricultural land (33%) was under opium cultivation. Opium cultivation density was also relatively high in the provinces of Uruzgan (16%), Farah (11%), Nimroz (9%) and Kandahar (5%). These same percentages are higher if the actual area under cultivation (active agriculture) is considered.

2.3 Opium yield

The average yield for Afghanistan in 2008 was 48.8 kg/ha compared to 42.5 kg/ha in 2007. This is the highest average yield estimated for Afghanistan since 2000. The yield per hectare in the southern region is normally considerably higher than in the rest of the country. Prior to 2008, there was also significant opium cultivation outside the southern region, which lowered the average national yield. In 2008, the region that accounted for 98% of the total national cultivation was the one with the highest yield.

Although the weather conditions were unfavourable for a second crop (spring cultivation) throughout the whole country, the first crop (fall cultivation) in the south and south-west received adequate irrigation. These conditions naturally led to a reduced level of cultivation in 2008 and lower yields in the central and eastern regions, but they did not affect the yield in the south, where most of the cultivation was concentrated and where the yield actually increased.

The average yield was higher in the southern region (52.1 kg/ha) due to good weather conditions at the time of capsule formation and the fact that opium poppy crops were not affected by disease. The lowest per hectare yield was found in the western region (29.7 kg/ha), where farmers reported losses due to drought.

Table 28: Opium yield by region in 2007 and 2008 (kg/ha)

Region	Average yield in 2007 (kg/ha)	Average yield in 2008 (kg/ha)	Change
Central (Parwan, Paktya, Wardak, Khost, Kabul, Logar, Ghazni, Paktika, Panjshir)	51.9	36.2	-30%
East (Nangarhar, Kunar, Laghman, Nuristan, Kapisa)	45.2	39.3	-13%
North-east (Badakhshan, Takhar, Kunduz)	40.7	31.4	-23%
North (Bamyan, Jawzjan, Sari Pul, Baghlan, Faryab, Balkh, Samangan)	49.7	54.6	10%
South (Hilmand, Uruzgan, Kandahar, Zabul, Day Kundi)	42.2	52.1	23%
West (Ghor, Hirat, Farah, Nimroz, Badghis)	28.8	29.7	3%
Weighted national average	42.5	48.8	15%

* In 2008, yield measurements were taken only in Kabul province because all other provinces were poppy-free.

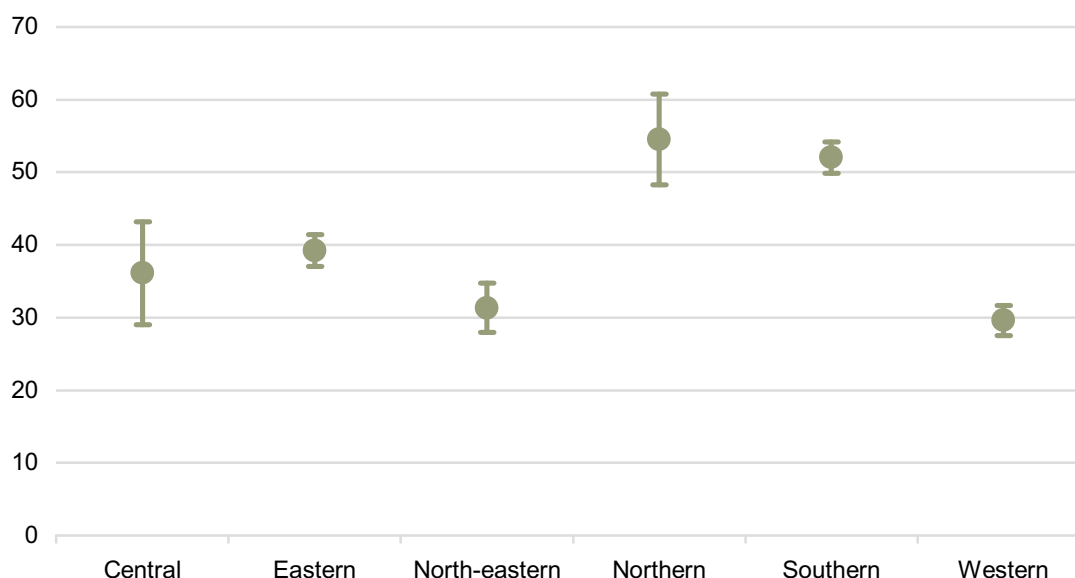
The yield data reported above were obtained through a yield survey carried out by MCN/UNODC. A total of 17,541 opium poppy capsules were measured in 198 villages. Surveyors selected three opium poppy fields in each sample village: one field of poor quality, one of medium quality and one of good quality. This practice is a change from 2007 when only one field per village was considered. The new method of measurement helped avoid any possible tendency on the part of the surveyors to select fields of a certain quality, and it improved the sample distribution. It should be noted that 'field quality' here refers to the relative quality of a field compared to other fields in a village, not to any absolute, quantifiable quality. The data collected in the yield survey were confirmed by the annual village survey (1,529 villages visited), which found similar yield figures based on reports by farmers.

Table 29: 90% confidence interval of opium yield by region in 2008 (kg/ha)

Region	Annual yield kg/ha	Upper bound	Lower bound
Central	36.1	44.7	27.6
Eastern	39.2	41.9	36.6
North-eastern	31.3	35.3	27.3
Northern	54.5	62.1	47.0
Southern	52.1	54.6	49.5
Western	29.6	32.1	27.1
Total for Afghanistan	43.9	45.7	42.2

A comprehensive statistical review toward assessing the quality and accuracy of the opium poppy yield data has been conducted this year. The relationship between opium poppy yield and agricultural practices, poppy variety, number of lancings, bias due to surveyors, and the impact of irrigation have been explored by carry out a statistical review of the data collected from March to June 2008.

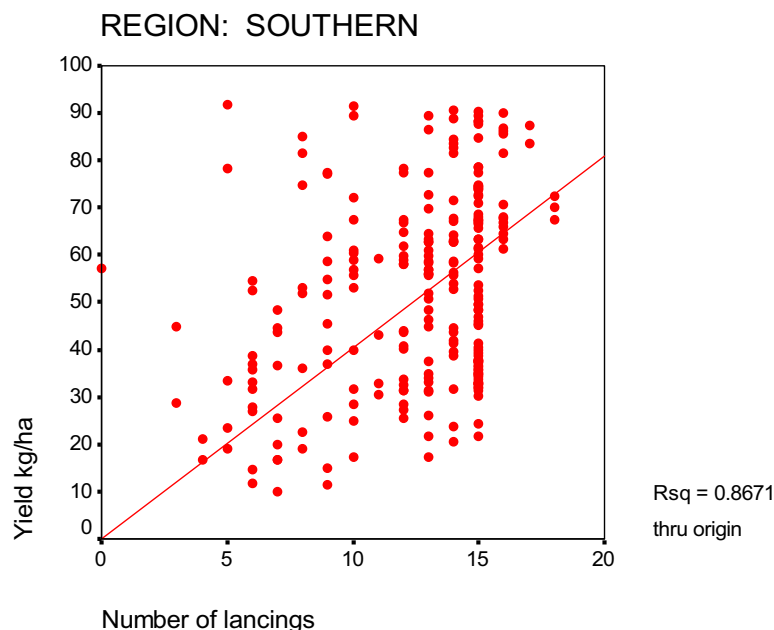
The average opium poppy yield in 2008 is estimated at 44 kg per hectare. The 90% confidence interval lies from 42.2 kg/ha to 45.7kg/ha. It can be observed in the figure below that the highest opium poppy yield was found in the Southern and Northern regions in Afghanistan. At the provincial level, the highest yield estimation was reported in Hilmand, Baghlan and Faryab.

Figure 27: Opium yield regional averages framed by their confidence intervals in 2008 (kg/ha)

The data collected by questionnaire showed that most of the farmers applied fertilizers at their fields, whereas the use of fungicides and insecticides was hardly or never reported among the 496 field/farmer observations. Due to the fact that most of the farmers apply fertilizers, its impact on improving the yields could not be verified.

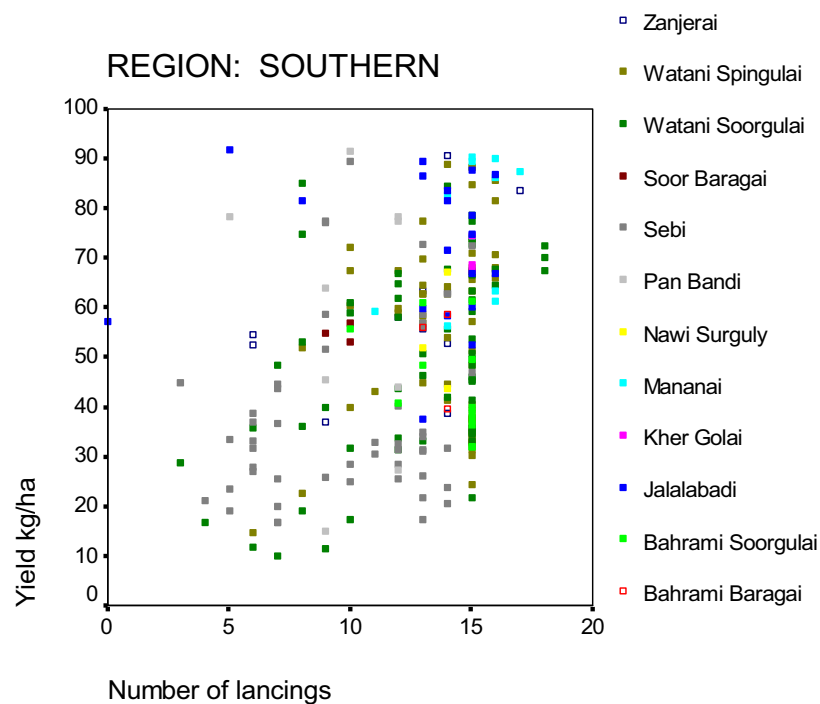
It was also found a statistical significant positive relationship between opium poppy yield and number of lancings in some regions. In this respect, it was found that in Southern region, the number of lancing significantly increased this year to up to 8 times per capsule in some fields, it is double as compare to last year (4 times).

Figure 28: Scatter plot between number of lancing of poppy capsules and estimated yield in southern Afghanistan

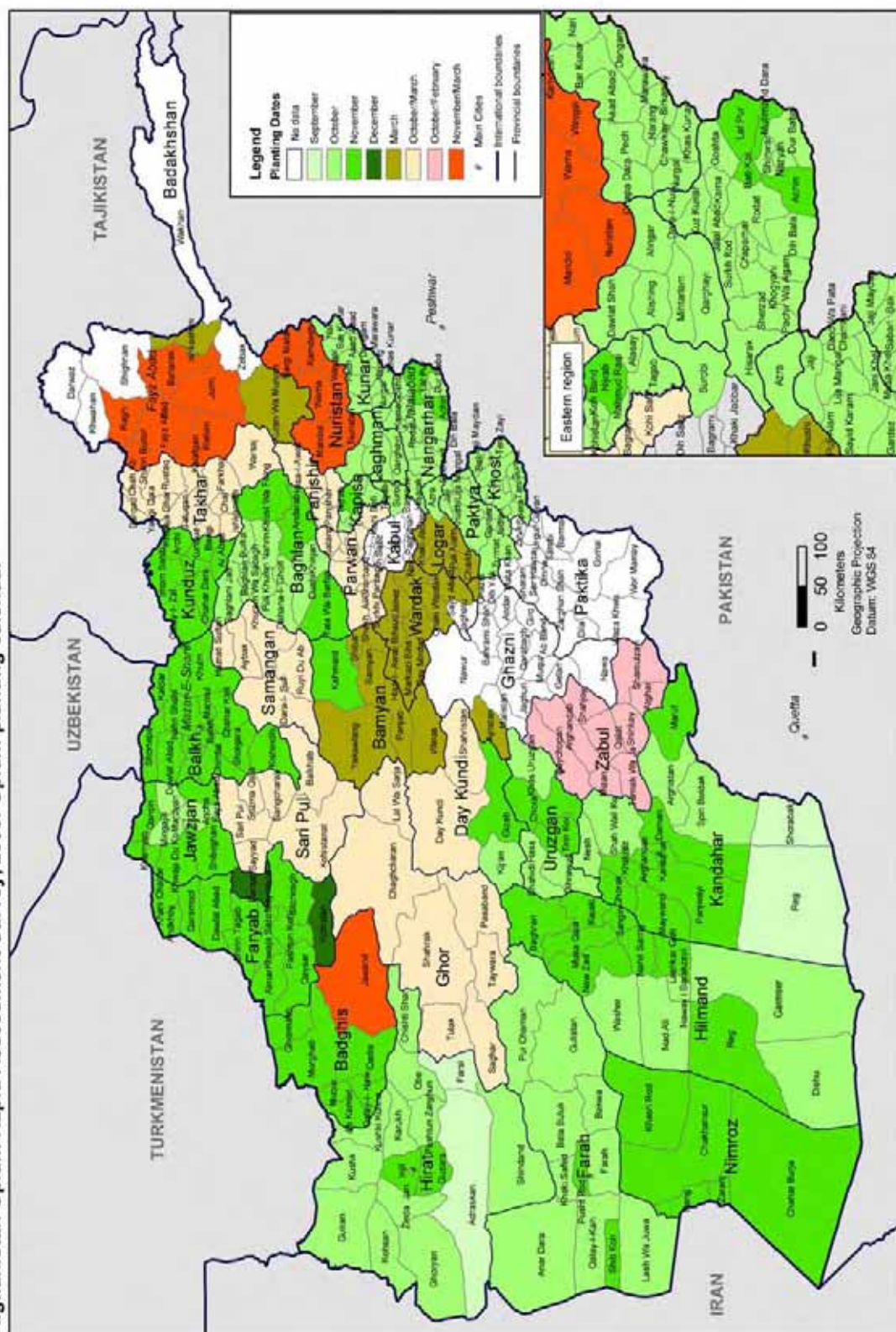


There was not indication leading us to suspect any deficiency for a particular surveyor in terms of the quality of data reported. Finally, it was also researched the relationship between opium poppy yield and poppy variety; However no significant correlation could be established based on the data collected given the large amount of variability on yield for each of the poppy varieties.

Figure 29: Scatter plot between number of lancing of poppy capsules and estimated yield, labelled by poppy variety in southern Afghanistan



Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.



Source: MCH - UNODC Afghanistan Opium Rapid Assessment Survey, 2008 (http://www.unodc.org/unodc/en/crop_monitoring.html). The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Lancing

Lancing is the incision of opium capsules during harvest using a sharp instrument, causing the opium latex to ooze out of the capsule. Depending on the type of capsules and the practices used by farmers to extract opium, there could be one or more lancing per capsule. The number of lancements was minimal (single lancing) in Badghis where crops were badly affected by drought. In Hilmand, capsules were lanced an average of four times. In general, the average number of lancements are between three and five per capsule. At the country level, lancing was carried out four times per capsule on average. The highest number of lancements (six times) was observed in Kunar province.

Table 30: Average number of opium poppy capsule lancements in 2008

Province	Average number of lancements
Badakhshan	3
Badghis	1
Baghlan	5
Day Kundi	4
Farah	2
Faryab	1
Hilmand	4
Hirat	2
Kabul	4
Kandahar	3
Kapisa	5
Khost	5
Kunar	6
Laghman	5
Nimroz	3
Sari Pul	1
Takhar	4
Uruzgan	5
Zabul	4
National average	4

Harvest conditions

During harvest time in 2008, an ample workforce was available to lance opium capsules, unlike the shortage of labourers reported in 2007. Farmers in the southern region reported a high yield with every lancing. The opium crop was healthy and no diseases were reported during the entire cultivation cycle.

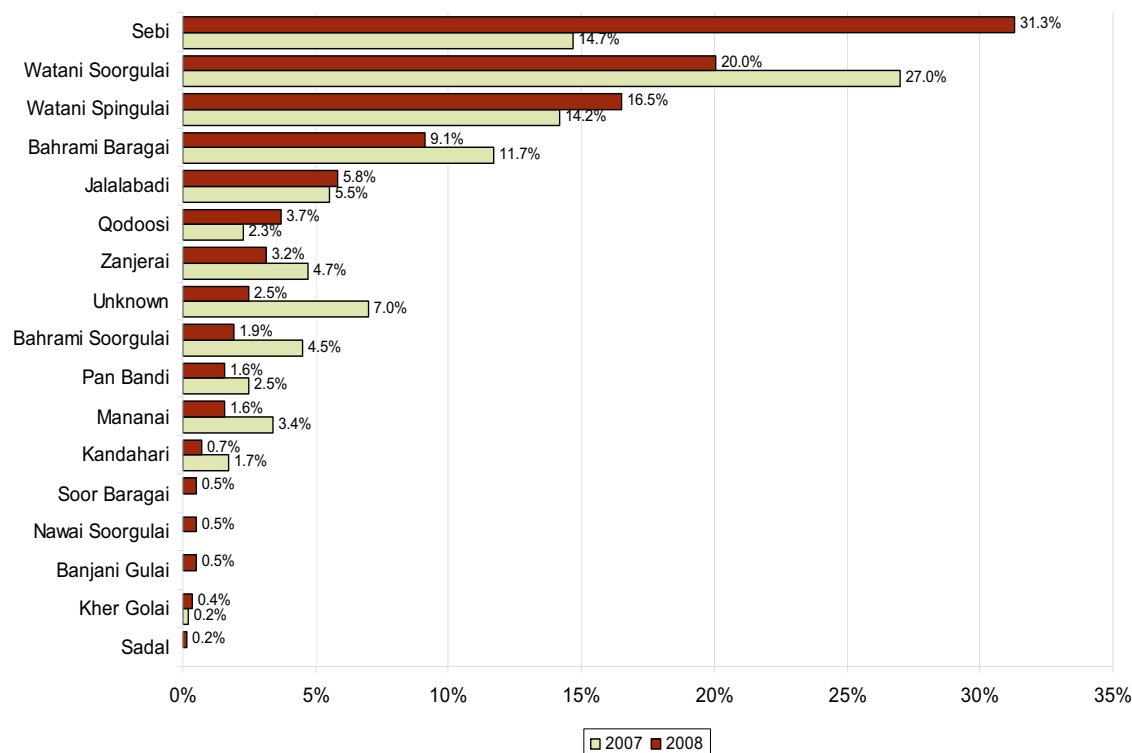
Opium poppy varieties

During the yield survey, information was collected in 198 villages on the opium poppy varieties planted by farmers. Farmers make a selection of varieties depending on soil conditions, weather conditions that govern the maturation date, resistance to disease and the need for inputs such as water, fertilizer and labour requirements. During the yield survey in 2008, Sebi remained the variety planted by most farmers (31%); however, the proportion of this variety was much lower than in 2007 (15%). The second most common variety planted in 2008 was Watani Soorgulai

(20%), which was the most preferred variety in 2007 (27%). This was closely followed by Watani Spingulai in 2008 (17%).

Farmers in Hilmand, Farah and Nimroz mainly chose to cultivate Sebi. Watani Soorgulai was the most preferred variety in Kandahar, whereas Watani Spingulai was the most preferred variety in Uruzgan.

Figure 30: Opium poppy varieties cultivated by farmers in 2007 and 2008



A separate study to draw up an inventory of opium poppy varieties in Afghanistan was carried out in 2007 with the assistance of botanists. The results are summarized in the Afghanistan Opium Survey 2007 published by UNODC.

Opium stocks

The 2008 annual village survey asked farmers for the first time about stocks of opium. Results show that farmers in the southern (Hilmand, Kandahar, Uruzgan, Zabul, Day Kundi), north-eastern (Badakhshan), eastern (Nangarhar, Kunar, Laghman) and western regions (Farah, Ghor, Badghis) have opium stocks from previous years. Farmers in the southern region have higher amounts of opium stocks than in any other region. In Hilmand province, in particular, farmers are likely to have about 10 times more stocks than the farmers in Kandahar province. Opium stocks in other provinces in the south and south-west also are significant, however, quantities in the eastern and north-eastern regions are not. The large quantities of stocks may be due to opium production in the last few years that is higher than world demand. This keeps prices low, and farmers may keep stocks in anticipation of better prices.

2.4 Eradication

Eradication by province

In 2008, total eradication (including governor-led and PEF-led eradication) was 5,480 ha.

Table 31: Eradication figures (by province), 2008

Province	Eradication (ha) verified	No. of fields where eradication reported	No. of villages where eradication reported	Total standing opium poppy after eradication in the reported villages (ha)	Percentage of opium eradication in surveyed villages
Badakhshan	774	1374	145	125	86%
Baghlan	85	125	16	0	100%
Farah	9	15	9	670	1%
Ghor	38	170	38	11	78%
Hilmand	2537	2221	140	1449	64%
Hirat	352	606	55	140	72%
Jawzjan	0.05	1	1	0	100%
Kabul	20	95	6	118	14%
Kandahar	1222	2141	228	3199	28%
Kapisa	59	21	3	0	100%
Kunar	103	1124	58	18	85%
Laghman	26	106	7	0	100%
Nangarhar	26	227	18	7	79%
Nimroz	113	199	16	377	23%
Nuristan	3	28	1	0	87%
Uruzgan	113	221	21	636	15%
Zabul	0.14	2	1	0	100%
Grand total	5,480	8,676	763	6,749	45%

*Figures for Hilmand and Kapisa include eradication carried out by PEF.

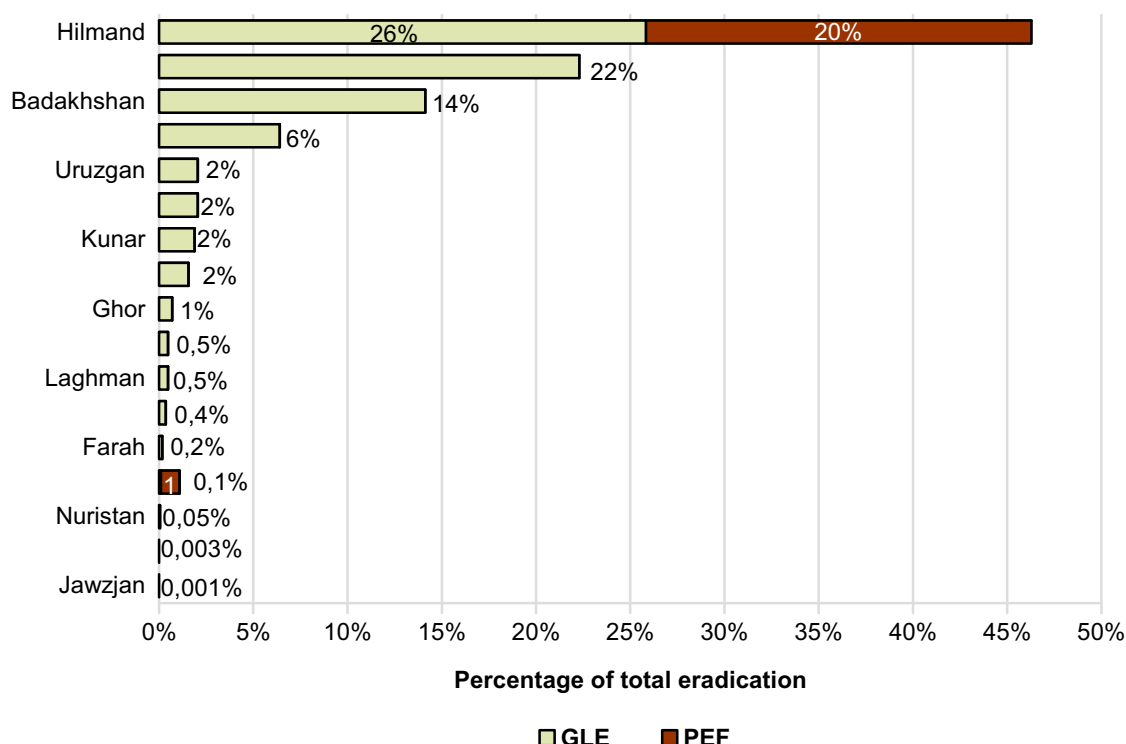
Note: Eradication figures by district are provided in Annex III.

UNODC and MCN jointly verified a total of 4,306 ha of governor-led opium eradication and 1,174 ha of eradication led by PEF. Verifiers visited 763 villages to measure eradicated fields.

The PEF carried out a total of 1,121 ha of eradication in Hilmand province and 53 ha of eradication in Kapisa province. UNODC deployed verifiers with PEF and verified the entire PEF-led eradication.

The percentage of crops eradicated (governor-led and PEF-led) is shown in the figure below. Governor-led eradication was highest in Hilmand province (20%), followed by Kandahar (14%) and Badakhshan (14%). PEF contributed 21% to total eradication: 20% in Hilmand and 1% in Kapisa.

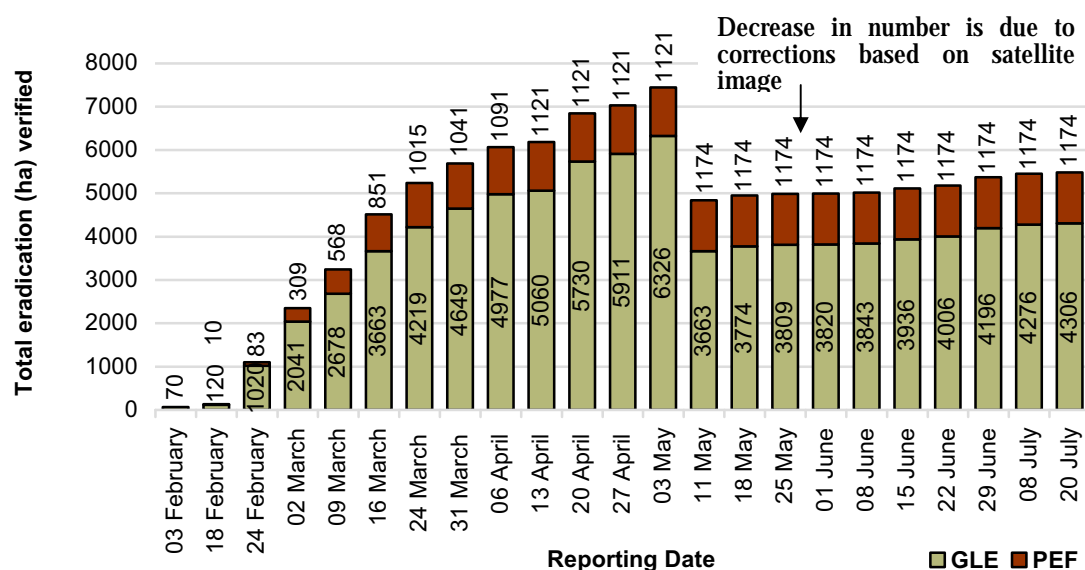
Figure 31: Percentage of total eradication (governor-led and PEF-led eradication) by province, 2008



In each village where eradication was performed, an assessment was made of how much opium cultivation was left uneradicated. On average, 65% of cultivated opium poppy was left after eradication teams had carried out their activities in the 763 villages visited by verifiers in 2008, though there was considerable regional variation. Although this assessment is based on ocular judgement by surveyors, it provides useful information to comment on the proportion of crop eradicated in each province and the density of opium cultivation, among other things.

The figure below shows the total eradication reported at the time of release of the final periodic report. As the graph shows, the figures that were over-estimated in earlier reports were subsequently corrected using a suitable verification mechanism. Significant over-reporting was noticed from Hilmand and Kandahar provinces, which was corrected using high-resolution satellite images.

Figure 32: Total number of ha of opium eradicated at the time of release of the periodic report (governor-led and PEF eradication)



PEF: PEF-led eradication; GLE: governor-led eradication

Summary of eradication 2005-2008

The eradication and cultivation situation since 2005 is provided in the table below.

Table 32: Eradication and cultivation situation at a glance since 2005

Year	2005	2006	2007	2008
GLE (ha)	4,000	13,050	15,898	4,306
PEF (ha)	210	2,250	3,149	1,174
Total (ha)	4,210	15,300	19,510	5,480
Cultivation (ha)	104,000	165,000	193,000	157,000
% poppy in insecure provinces of the south and west	56%	68%	80%	98%
Poppy-free provinces	8	6	13	18

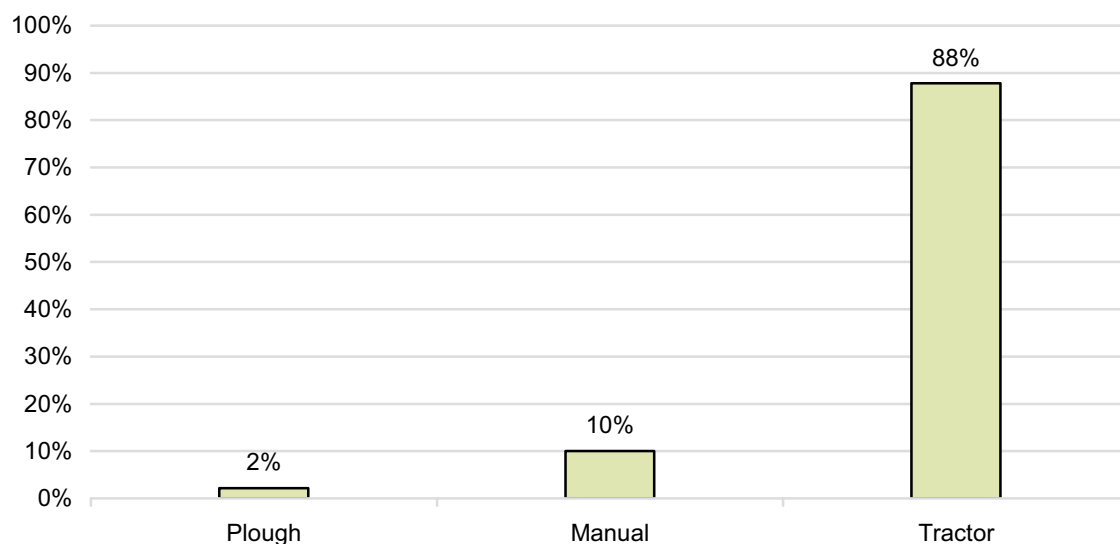
Some of the key factors that could explain the drop in eradication carried out in 2008 are:

- A reduction in the number of provinces eradicating because the number of poppy-free provinces and provinces with negligible levels of cultivation increased in 2008. In 2007, 26 provincial governors conducted eradication; only 17 provinces conducted eradication in 2008.
- Overall crop failure due to an extremely cold winter, which reduced the opium poppy crop in a number of provinces.
- Increased voluntary and/or forced self-eradication by opium poppy farmers. An active public information campaign and vigorous enforcement action by some provincial governors led to a substantial amount of self-eradication carried out by farmers either voluntarily or through coercion. These numbers cannot be counted in the official figures (because they are not verifiable) but the claims are in the order of 3,000-4,000 ha.
- Unlike previous years, most of the cultivation was concentrated in a limited number of lawless provinces in the south (Hilmand, Kandahar, Uruzgan, Zabul and Daykundi) and west (Farah and Nimroz). Eradication in these provinces is more challenging due to security problems.

Methods of eradication

Methods of governor-led eradication included tractors, animal-drawn ploughs and manual eradication (using sticks or sickles). Eighty-eight per cent of governor-led eradication was carried out by tractor.

Figure 33: Area of opium eradicated, by method



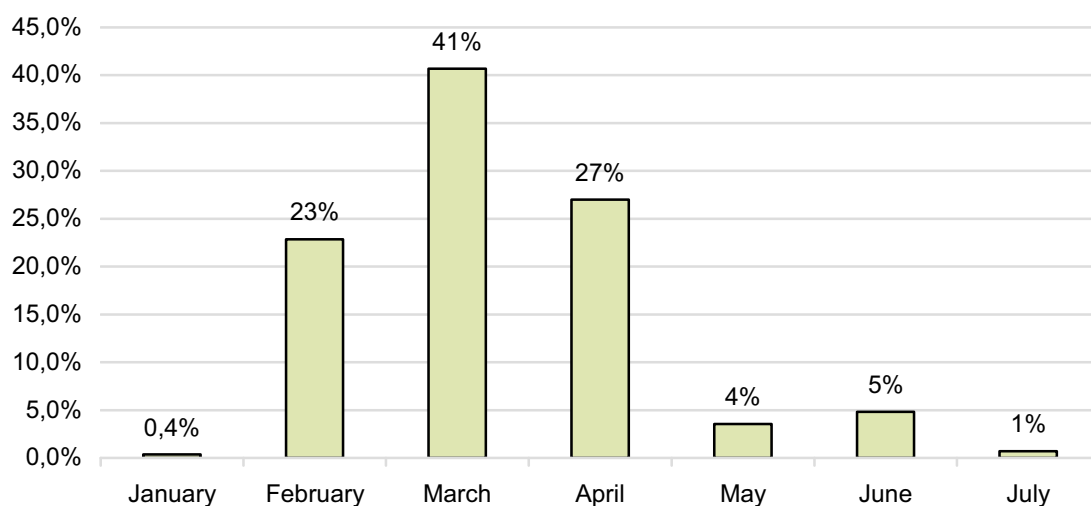
Afghanistan: Verified locations of Governor-led eradication, 2008



Timing and percentage of eradication by month

The graph below shows the timing and percentage of governor-led eradication each month. Eradication activities were carried out chiefly in February (23%), March 2007 (41%) and April 2007 (27%). Only 0.4% of eradication activities were carried out during the early months of cultivation (i.e. between October and January).

Figure 34: Total area eradicated each month, shown as a percentage



Governors began eradication activities in 17 provinces mostly in February 2008, and those activities were concluded in all target provinces by the end of July 2008. The table below shows the start and end dates of eradication activities in each province. Eradication was suspended several times in all provinces during these periods.

Table 33: Start and end dates of governor-led eradication during opium cultivation calendar

Province	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Jun-08	Jul-08	Eradication (Ha)
Badakhshan			26-Mar				15-Jul	774
Baghlan			30-Mar		9-May			85
Farah	27-Jan			13-Apr				9
Ghor					3-May		4-Jul	38
Hilmand	30-Jan			16-Apr				1,416
Hirat			24-Mar	29-Apr				352
Jawzjan				10-11 Apr				0.05
Kabul				21-26 Apr				20
Kandahar			1-Mar	21-Apr				1,222
Kapisa				21-23 Apr				6
Kunar		6-Feb			20-May			103
Laghman				14-Apr	8-May			26
Nangarhar				7-30 Apr				26
Nimroz			25-Mar	17-Apr				113
Nuristan			25-Mar					3
Uruzgan				2-Apr	7-May			113
Zabul					14-15 May			0.14

Eradication versus security

Eradication activities in 2008 were severely affected by resistance from insurgents. Since most of the opium cultivation remains confined to the south and south-west regions, which are dominated by strong insurgency, eradication operations in the future may become even more challenging.

Security incidents associated with eradication activities in Hilmand, Kandahar, Hirat, Nimroz, Kapisa, Kabul and Nangarhar provinces included shootings and mine explosions, resulting in the death of at least 78 people, most of whom were policemen. This is a large increase in casualties compared to the 19 deaths in 2007. The major incidents occurred in Nangarhar and Nimroz provinces.

One of the most serious incidents took place in Khogyani district of Nangarhar, where 20 policemen were killed together with Fazal Ahmad, a MCN/UNODC surveyor whose job was to collect the data that fed into this report. Other incidents occurred in Khashrod district of Nimroz, where 29 people died along with the district police chief. Both attacks were carried out by suicide bombers. The Poppy Eradication Force (PEF) faced a large number of rocket attacks while carrying out eradication in Hilmand province.

The nature of the attacks changed between 2007 and 2008. In 2007, police deaths were the result of violence by farmers, whereas deaths in 2008 were the result of insurgent actions, including suicide attacks.



Passenger car exploded by roadside mine while PEF convoy passed by (Hilmand Province)

Quality control of field reports using satellite images

Since eradication verification was done under insecure and stressful situations, the possibility of false reporting could not be ruled out. Therefore, cross-checking of field data by using high-resolution satellite images was required. UNODC procured satellite images to validate the authenticity of the GLE and PEF field reports from Hilmand and Kandahar provinces.

Correction of GLE reports in Hilmand province based on satellite image analysis

Gross over-reporting was noticed when GLE verification reports from Hilmand were compared with satellite image interpretation. Such over-reporting was anticipated considering the current political situation, pressure from local authorities and difficulty in supervising field operations in the prevailing security conditions. Satellite images (1M IKONOS) covering approximately 75% of the GLE area were acquired after eradication. GPS points of eradicated opium poppy fields were overlaid on the IKONOS images and the actual area of eradicated fields was interpreted. The area reported from the field (associated with GPS points) and the area measured on satellite images were compared for each field.

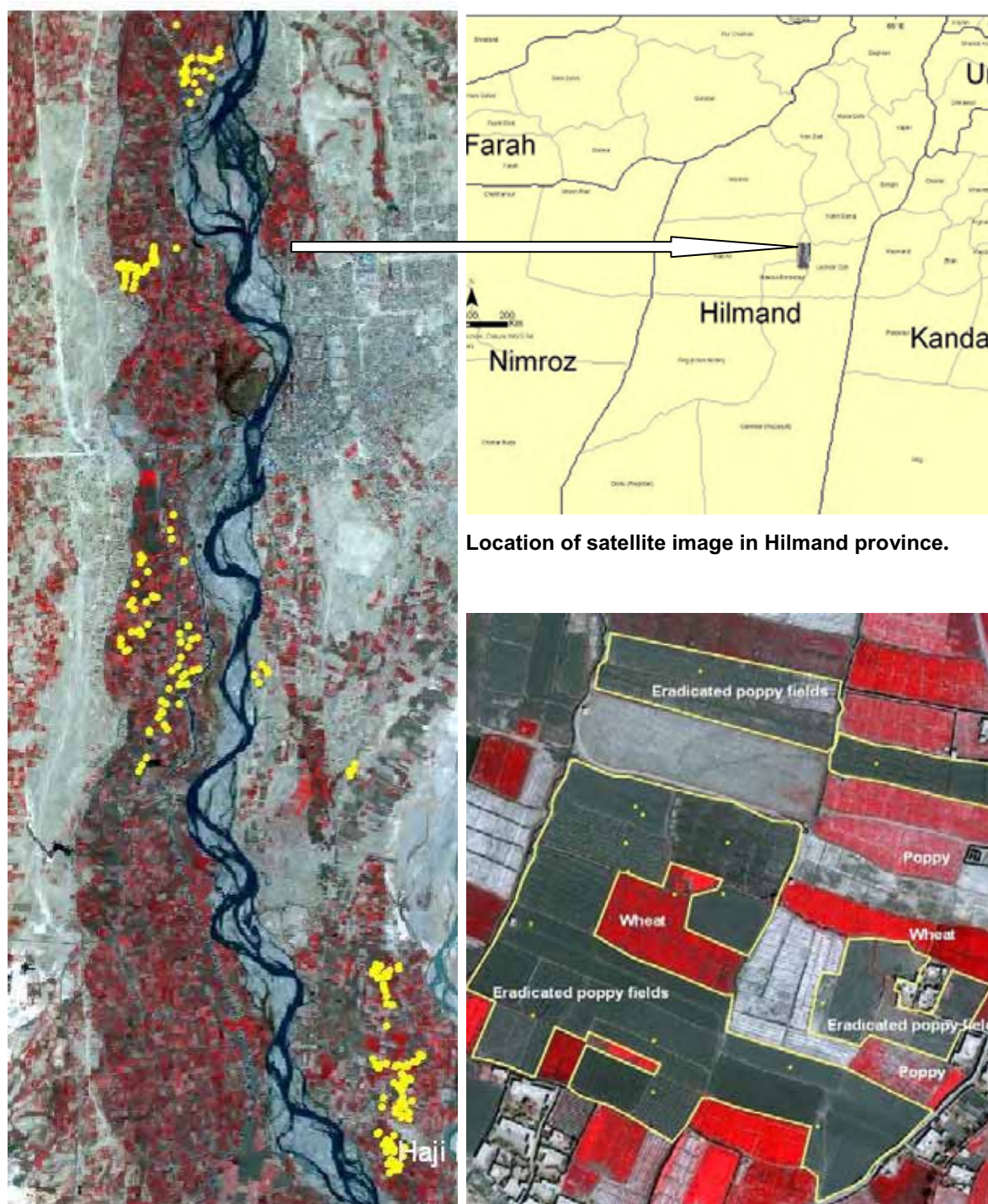
In order to calculate the amount of over-reporting and the correction factor, a weighted average (ratio of area measured by GPS and area measured using satellite imagery) was calculated. The field observations were 3.26 times more than the area measured using satellite images. The final eradication figure for Hilmand province was derived using 3.26 as a correction factor.

Comparison of GLE reports in Kandahar province based on satellite image analysis

Eradication in Kandahar was also over-reported by 2.26 times. The over-reporting in Kandahar was calculated in the same way as for Hilmand province. The final eradication figure for Kandahar province is derived using 2.26 as a correction factor.

Snapshots of the satellite data over Hilmand and Kandahar are provided below.

Hilmand province



Location of satellite image in Hilmand province.

Overview of IKONS image overlaid with GPS points of eradicated fields.

Interpretation of eradicated fields for validation of field data.



Hilmand – Image acquired on 9 March 2008

Village name: Bolan
Ismayel Kalay, Lashkar
Gah district, Hilmand

Date of eradication:
6 Feb 2008

Sum of area given with
GPS point (measured in
field): 14.91 ha
(yellow text)

Actual eradication as
seen on satellite data:
0.43 ha (white text)

Observations:

Many GPS points
in one field.

Vast difference in what
is seen on satellite data
and the reporting from
the field.



Kandahar – Image acquired on 16 April 2008

Village name: Mard
Kala, Dand district,
Kandahar

Sum of area given with
GPS point (measured
in field): 13.8 ha
(white text)

Actual eradication as
seen on satellite data:
14 ha (yellow text)

Observations:

- Report confirmed
with satellite
imagery



Village name: Salihan,
Panjwayi district,
Kandahar

Sum of area given with
GPS point (measured
in field): 8.85 ha
(white text)

Actual eradication as
seen on satellite data:
1.54 ha (yellow text)

Observations:

- Over-reporting
noted in several
parts in Kandahar.

Kandahar – Image acquired on 16 April 2008

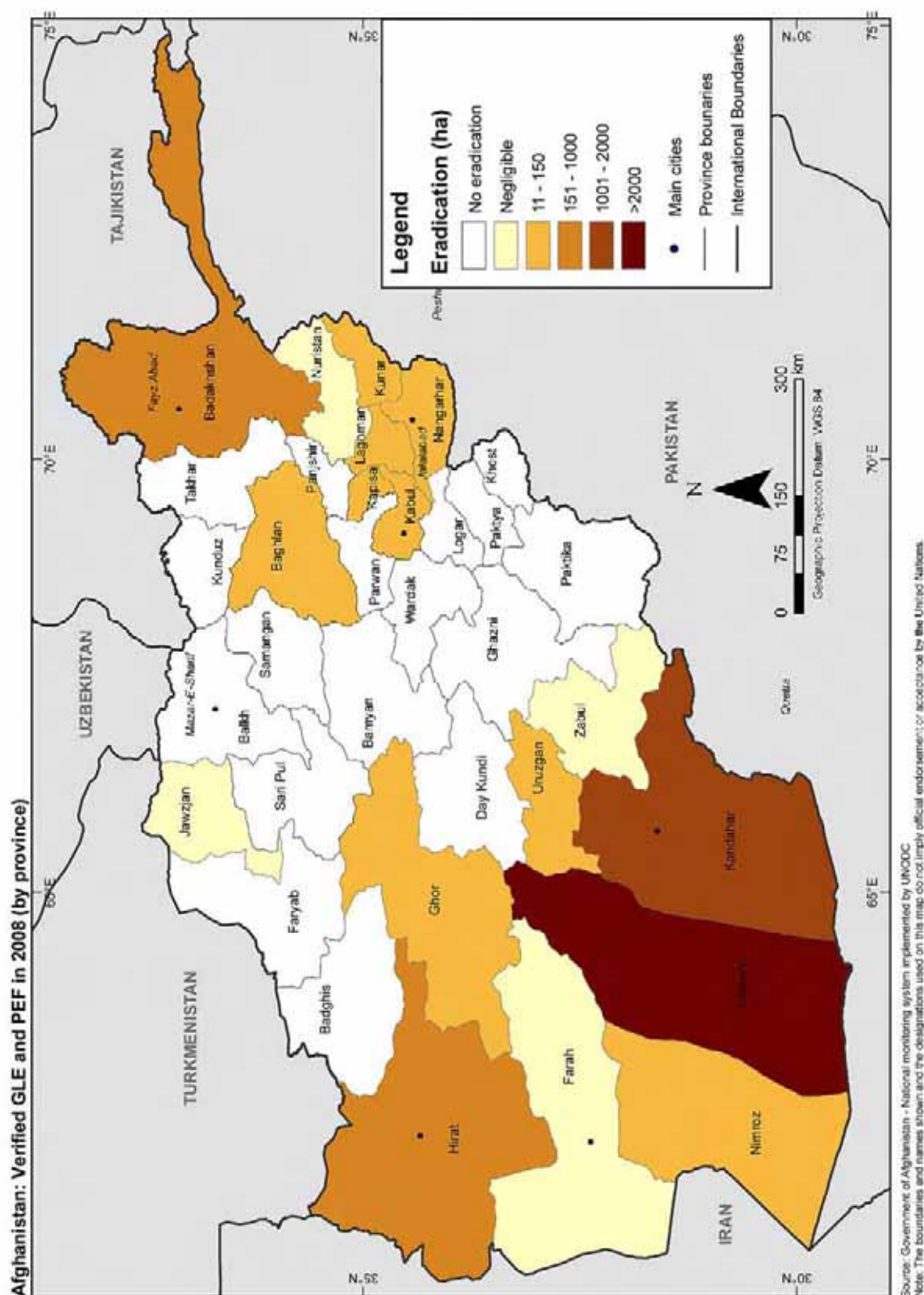
Comparison of opium eradication in 2007 and 2008

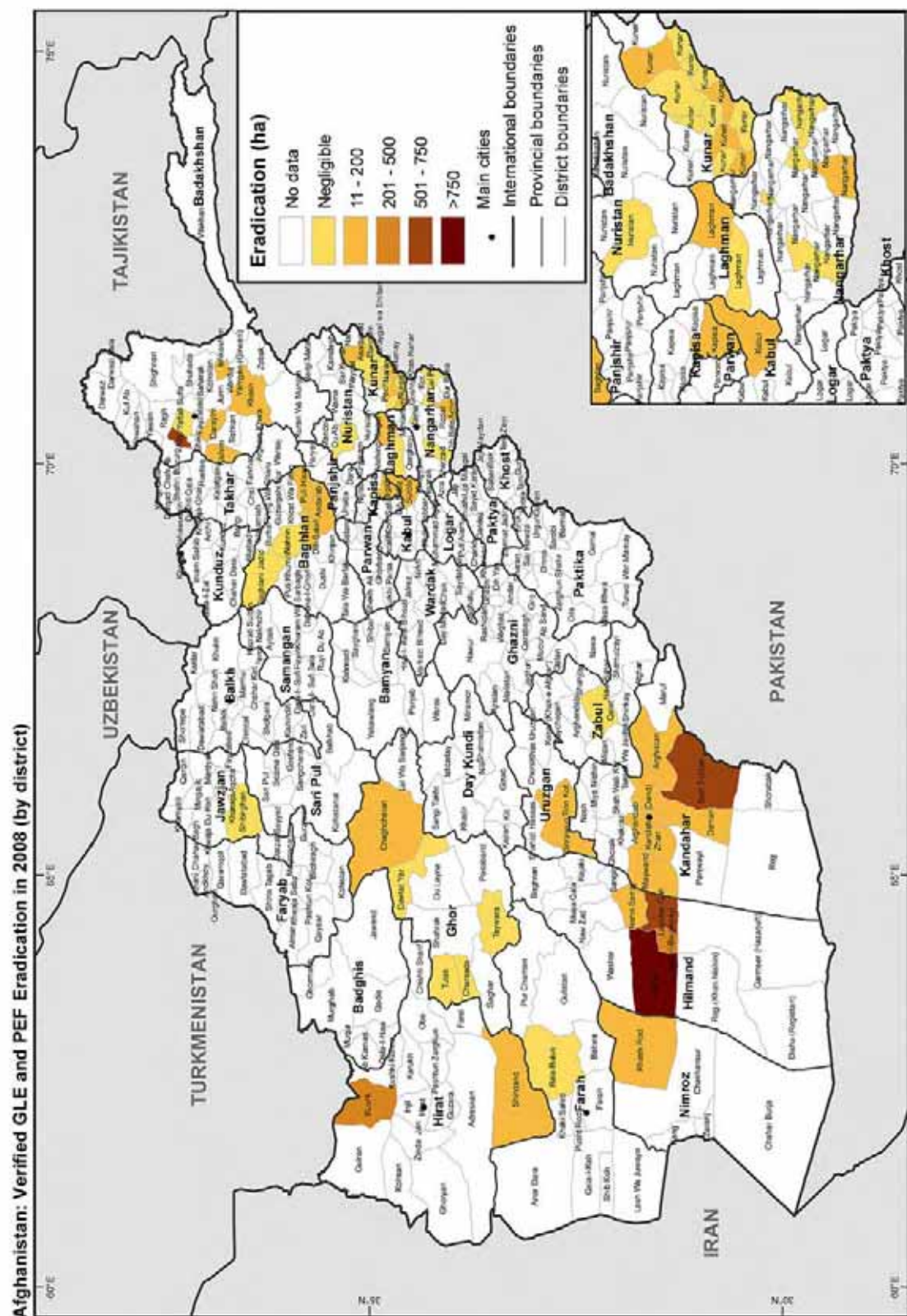
Total eradication in 2008 was 5,480 ha in 17 provinces compared to 19,047 ha in 26 provinces in 2007. Below are major observations on the 2007 and 2008 eradication campaign.

- The eradication campaign had already started in nine provinces by the end of January 2007. In 2008, eradication was reported only in Hilmand province by the end of January.
- Eradication progressed at a much slower pace in 2008 compared to 2007 throughout the country.
- Since opium cultivation levels were insignificant in northern and eastern Afghanistan in 2008, eradication campaigns were active mostly in the south and south-west. Eradication activities were reported from 17 provinces compared to 26 provinces in 2007.
- The number of security incidents and fatalities were very high in 2008 compared to 2007. At least 78 eradication campaign-related fatalities were recorded in 2008 compared to 19 deaths in 2007.

Table 34: Governor-led eradication 2005-2008

Year	Eradication (ha)	No. of provinces	Cultivation (ha)
2005	4,007	11	104,000
2006	13,378	19	165,000
2007	15,898	26	193,000
2008	4,306	17	157,000





Source: Government of Afghanistan - National monitoring system implemented by UNODC

Eradication: Regional findings

Eastern region

(Kunar, Laghman, Nangarhar, Nuristan, Kapisa)

- Kunar: Total of 103 ha of opium eradication was verified in 54 villages.
- Nuristan: Total of 3 ha of opium eradication was verified in one village.
- Nangarhar: Total of 26 ha of opium eradication was verified in 18 villages. Moreover, a total of 944 ha (4,723 jerib) of eradication was claimed by Nangarhar provincial authority as self-eradication by farmers. Government authorities arrested a number of poppy farmers as part of an anti-cultivation campaign.
- Laghman: Total of 26 ha of opium eradication was verified in seven villages.
- Kapisa:
 - GLE: Total of 6 ha of opium eradication was verified in three villages. Because of the strong resistance of the elders, the opium eradication campaign was stopped.
 - PEF: PEF eradicated 54 ha of opium in Tagab district of Kapisa province from 2007 to 9 May 2008.



Governor-led opium eradication in Kunar province



Onion growth stage in Shigal district of Kunar province



Poppy at lancing stage in Achin district of Nangarhar province



Poppy and onion cultivation in the same field in Tagab district of Kapisa province

Southern region

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

Governor-led eradication verification

- **Hilmand:** Total of 1,416 ha of opium eradication was verified in 140 villages based on satellite data analysis and field reports. It is evident that local authorities linked to eradication interfered in the verification process. MCN/UNODC verifiers were not able to perform properly under given circumstances. Re-visiting eradicated fields for re-verification was not possible since provincial authorities failed to provide security. Out of the 1,416 ha eradicated, 780 ha (55%) were within and 636 ha (45%) were outside of the target zone
- **Kandahar:** A total of 1,222 ha of eradicated opium poppy fields were verified by MCN/UNODC in 228 villages based on satellite data and field reports. Out of the 1,222 ha eradicated, 97 ha (8%) fell within and 1,125 ha (92%) were outside of the target zone.



Poppy lancing tools



Poppy at senescence (dying) stage in Arghandab district of Kandahar province



Dry capsules being collected for the purpose of seed



Cannabis growth stage in Kandahar province

- **Uruzgan:** A total of 113 ha of opium eradication were verified by MCN/UNODC in 21 villages. Out of the 113 ha eradicated, 54 ha (47%) fell within the target zone.
- **Zabul:** A total of 0.14 ha of opium eradication were verified by MCN/UNODC in one village.
- **Day Kundi:** No eradication campaign was carried out in Day Kundi province.



**Poppy in lancing stage in
Uruzgan province**



**Governor-led opium eradication
in Uruzgan province**

Self-eradication activities

- Provincial authorities claimed that farmers eradicated a total of 1,890 ha of opium in about 55 villages in eight districts: Arghandab, Dand, Daman, Zhari, Spin Boldak, Arghistan, Panjwayi and Takhta Pul in Kandahar province. These claims were not verified by MCN/UNODC.
- UNODC/MCN verifiers visited some of these villages and reported that provincial authorities distributed wheat seeds to farmers.

Eradication activities led by the Poppy Eradication Force (PEF)

- PEF-led eradication started in Hilmand (Nad Ali district) on 17 February 2008 and concluded on 8 April 2008. A total of 1,121 ha of PEF eradication was verified by MCN/UNODC. The PEF-led eradication mission was hampered due to multiple attacks by anti-government elements in Hilmand province.
- Cross-checking using satellite data confirms that eradication was delivered with the best possible quality, and eradicated fields were accurately measured. A snapshot of satellite data validating PEF eradication is provided below.



The figure shows satellite data of part of Nad-Ali district. The area measured based on satellite data and the area reported from the field show perfect agreement.

Western region

(Farah, Ghor, Hirat, Badghis Nimroz)

- Farah: GLE was carried out in Pusht Rod district of Farah province on 27 January 2008. A total of 9 ha of eradication were verified by MCN/UNODC in nine villages. Out of the 9 ha eradicated, 5 ha (56%) fell within and 4 ha (44%) fell outside the target zone.
- Hirat: A total of 349 ha of eradicated opium poppy fields were verified by MCN/UNODC in 52 villages.
- Nimroz: GLE was carried out in Khash Rod district of Nimroz province. A total of 113 ha of eradicated opium poppy fields were verified by MCN/UNODC. Out of the 113 ha eradicated, 106 ha (94%) fell within and 7 ha (6%) fell outside the target zone.



**Governor-led poppy eradication
in Ghor province**



**Alfalfa growth stage in Shindand district
of Hirat province**

Northern region

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

- **Faryab:** In Qaisar district of Faryab province, self-imposed eradication was reported from 1 March 2008 to 13 March 2008. Provincial authorities claimed a total of 40 ha of opium eradication by farmers, but this claim was not verified by MCN/UNODC.
- **Baghlan:** A total of 85 ha of eradicated opium poppy fields were verified by UNODC/MCN in 13 villages. In addition, 2 ha of self-eradication were also reported, but this claim was not verified by MCN/UNODC.
- **Jawzjan:** A total of 0.05 ha of opium eradication were verified by MCN/UNODC in one village.
- **Sari Pul:** A self-imposed eradication operation took place from 16 April 2008 to 19 April 2008. Provincial authorities claimed a total of 364 ha of opium eradication in about 11 villages by farmers from Sayad district, but these claims were not verified by MCN/UNODC.



**Growth stage of cumin in Chimtal district
of Balkh province**



**Growth stage of wheat in Sholgara district
of Balkh province**

North-eastern region

(Badakhshan, Takhar)

- **Badakhshan:** A total of 774 ha of eradicated opium poppy fields were verified by UNODC/MCN in 71 villages.



Governor-led opium eradication in Argo district of Badakhshan province



Poppy growth stage in Argo district of Badakhshan province



Wheat growth stage in Argo district of Badakhshan province



Flax growth stage in Argo district of Badakhshan province

- **Takhar:** There was no reported governor-led eradication in Takhar province due to a negligible amount of opium cultivation.

Central region

(Kabul, Khost)

- **Kabul:** A total of 20 ha of opium eradication were verified by MCN/UNODC in six villages. There was resistance to opium eradication; one police officer was killed and one was injured.
- **Khost:** There was no reported governor-led eradication in Khost province due to a negligible amount of opium cultivation.



Governor-led poppy eradication in Surobi district of Kabul province



Poppy in capsule stage in Surobi district of Kabul province

2.5 Potential opium production

As a result of 157,000 ha of cultivation and a high yield (48.8 kg/ha is the national average), potential opium production in Afghanistan for 2008 was 7,700 metric tons (mt), representing a decrease of around 6% compared to 2007.

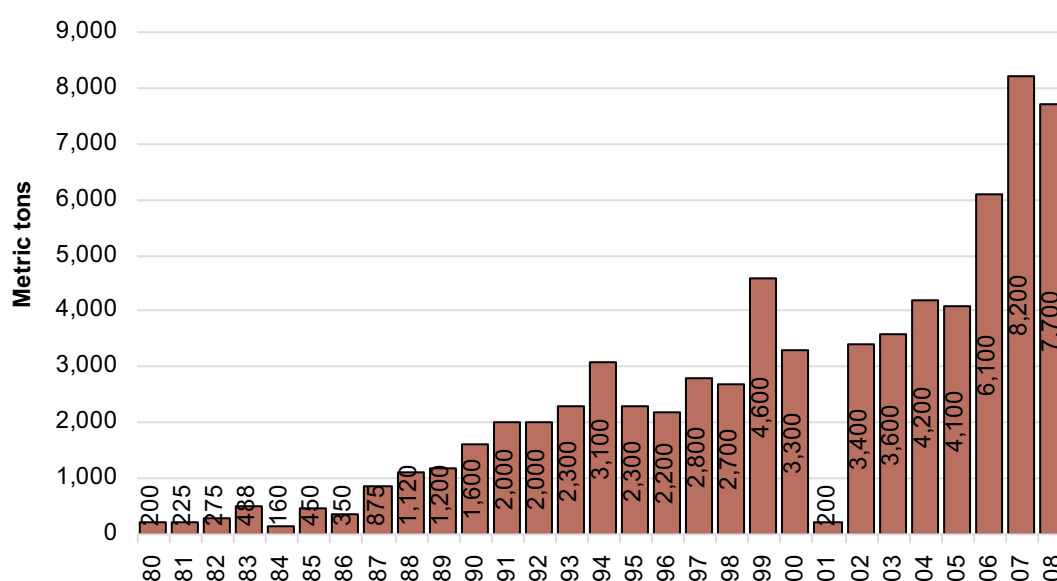
Opium production in Afghanistan in 2008 was 16% higher than global opium production in 2006 (6,610 mt). As a result of the decline in opium production in Afghanistan, global opium production in 2008 decreased by 6% to 8,298 mt²³. The 2008 proportion of global opium production accounted for by Afghanistan remained 93%, the same as in 2007.

The contribution of Afghanistan to global opium production has been increasing since 2002. Almost 98% of total opium production was concentrated in the south and south-west of Afghanistan in 2008. In 2007, this zone contributed to 88% of the total opium production.

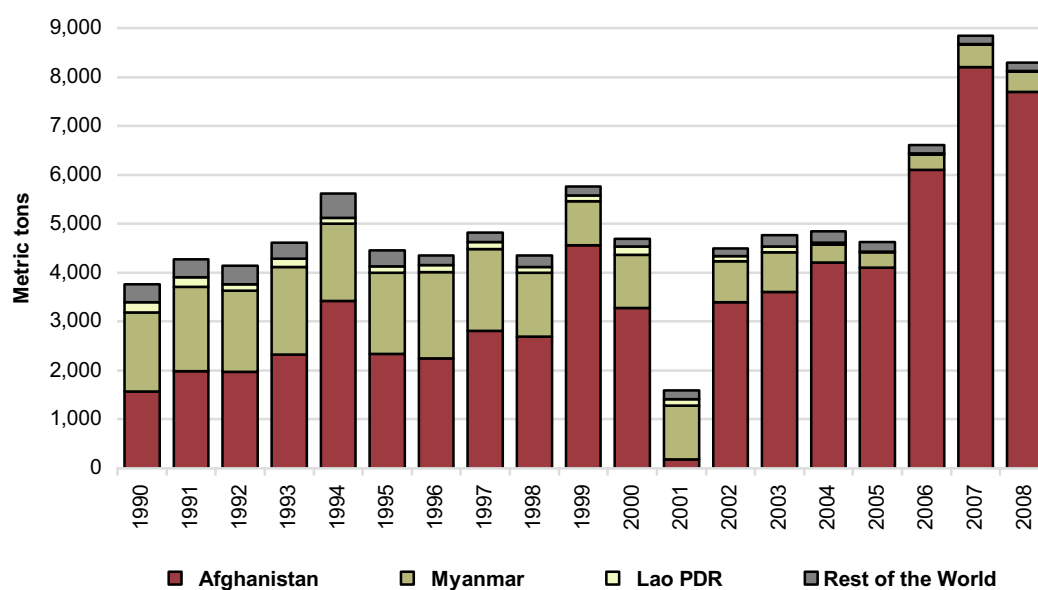
²³ Based on preliminary opium production estimates for some countries and regions.

Table 35: Afghanistan's contribution to global opium production since 2002

Year	Afghanistan opium production (metric tons)	Global opium production (metric tons)	Percentage of global production accounted for by Afghanistan (per cent)
1998	2693	4346	62%
1999	4565	5764	79%
2000	3276	4691	70%
2001	185	1596	12%
2002	3400	4491	76%
2003	3600	4765	76%
2004	4200	4850	87%
2005	4100	4620	89%
2006	6100	6610	92%
2007	8200	8847	93%
2008	7700	8298	93%

Figure 35: Potential opium production in Afghanistan (mt), 1980-2008

Sources: UNODC opium surveys, 1994-2008

Figure 36: Global potential opium production (mt), 1990-2008**Table 36: Main opium-producing provinces (% of total production), 2006-2008**

Province	2007	2008
Hilmand	53%	70%
Kandahar	9%	10%
Uruzgan	5%	7%
Farah	5%	6%
Nimroz	5%	2%
Nangarhar	12%	Poppy-free

Table 37: Potential opium production by region, 2007-2008

Province	Production 2007 (mt)	Production 2008 (mt)	Change 2007-2008 (mt)	Change 2007-2008 (%)	Region
Kabul	26	11	-15	-57%	Central
Khost	0	0	0	0%	Central
Logar	0	0	0	0%	Central
Paktya	0	0	0	0%	Central
Panjshir	0	0	0	0%	Central
Parwan	0	0	0	0%	Central
Wardak	0	0	0	0%	Central
Ghazni	0	0	0	0%	Central
Paktika	0	0	0	0%	Central
Central region	26	11	-15	-57%	
Kapisa	40	17	-23	-58%	East
Kunar	18	11	-7	-38%	East
Laghman	20	17	-3	-15%	East
Nangarhar	1,006	0	-1006	-100%	East
Nuristan	0	0	0	0%	East
Eastern region	1,084	45	-1039	-96%	
Badakhshan	152	6	-146	-96%	North-east
Takhar	43	0	-43	-100%	North-east
Kunduz	0	0	0	0%	North-east
North-eastern region	195	6	-189	-97%	
Baghlan	36	26	-10	-28%	North
Balkh	0	0	0	0%	North
Bamyan	0	0	0	0%	North
Faryab	135	16	-119	-88%	North
Jawzjan	54	0	-54	-100%	North
Samangan	0	0	0	0%	North
Sari Pul	9	0	-9	-100%	North
Northern region	233	42	-192	-82%	
Hilmand	4,399	5,397	998	23%	South
Kandahar	739	762	22	3%	South
Uruzgan	411	518	107	26%	South
Zabul	61	122	60	98%	South
Day Kundi	135	118	-17	-12%	South
Southern region	5,745	6,917	1172	20%	
Badghis	100	17	-83	-83%	West
Farah	409	446	37	9%	West
Ghor	44	0	-44	-100%	West
Hirat	33	8	-25	-76%	West
Nimroz	372	184	-188	-51%	West
Western region	959	655	-303	-32%	
Total (rounded)	8,200	7,700	-500	-6%	

2.6 Security

In 2008, 98% of the opium cultivation was concentrated in Hilmand, Kandahar, Uruzgan, Day Kundi, Zabul, Farah and Nimroz, where security conditions are classified as high or extremely risky by the United Nations Department of Safety and Security (UNDSS).

Anti-government elements (AGEs) as well as drug traders are very active in this region, and most of the districts are inaccessible to the UN and NGOs. Provinces in the south are the stronghold of anti-government elements, while those in the west (Farah and Nimroz) are known to have organized criminal networks. The security map (source: UNDSS) shows the difference between the southern and northern provinces in terms of security.

Security incidents in Afghanistan have been on the rise every year since 2003, especially in the south and south-western provinces. The number of security incidents increased sharply in 2006, in parallel with the increase in opium cultivation, and 2008 shows a further sharp increase.

During the survey period, the security situation was fragile in most of the southern and western (Nimroz and Farah) provinces. In the south, military operations were ongoing and AGEs were active. Unstable security conditions in the region reportedly played a major role in decisions by households to cultivate opium poppy since the AGEs were able to encourage and even threaten farmers to cultivate opium. The main increase in cultivation took place in the southern provinces, where most of the high- and extreme-risk areas are located. The security situation was relatively good in the northern and north-eastern provinces, where opium cultivation was almost negligible in 2008. Cultivation also decreased in the eastern region and Nangarhar has become poppy-free. This was achieved with the strong presence of legitimate governance and the cooperation of local shura leaders, although security remains poor in this region.

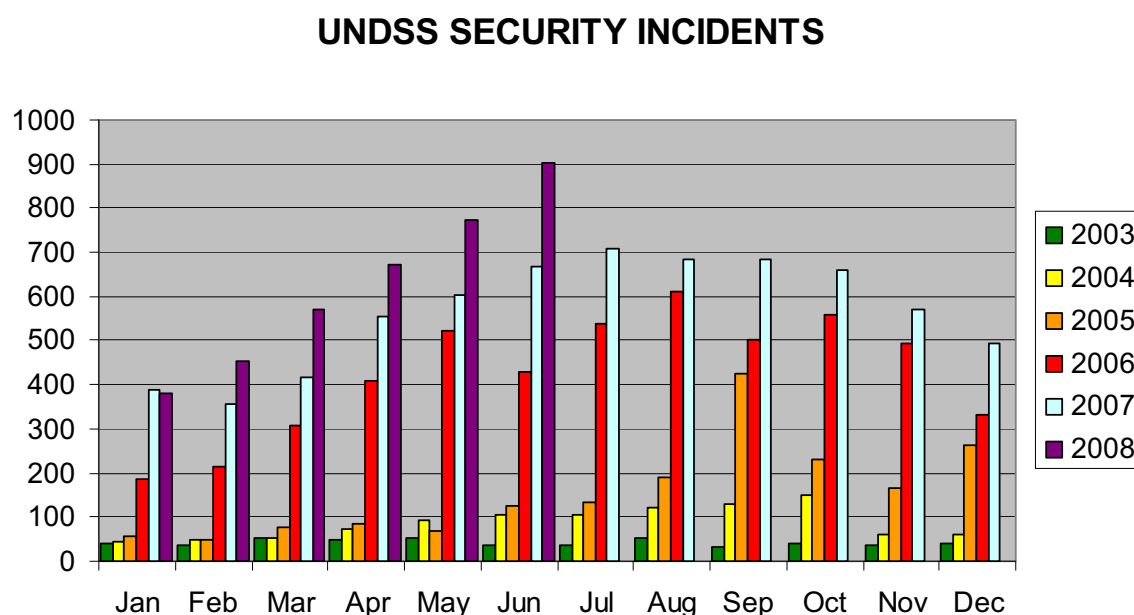
The following examples show the relationship between a lack of security and opium cultivation:

- Surobhi district in Kabul province controlled by AGEs (opium cultivation: 310 ha)
- Andarab district of Baghlan province controlled by a local commander (opium cultivation: 475 ha)
- Ghormach, Murghab and Qadis districts of Badghis province dominated by insurgency (opium cultivation: 556 ha)

Most of the security incidents that arose during the eradication verification survey in 2008 were due to insurgency. In 2007, resistance by farmers to eradication forces resulted in more fatalities, with at least 78 people dying as a result of security incidents related to eradication.

The chart below shows security incidents from January 2003 to June 2008, as recorded by the UNDSS. Security incidents increased sharply after 2005, particularly in the south and south-western provinces, and additional dramatic increases were recorded in 2008. The levels of opium cultivation were the highest (over 80%) since 2007 in Hilmand, Kandahar, Uruzgan, Day Kundi, Farah and Nimroz provinces, where security is very poor. Most of the districts in this region cannot be reached by UN agencies or NGOs because anti-government elements and drug traders are very active. The security map (page 37) shows the clear difference between the northern and southern provinces in terms of security.

Figure 37: Number of security incidents between January 2003 and June 2008



Source: UNDSS, Afghanistan

2.7 Drug trafficking

As in previous years, UNODC/MCN collected information in 2008 through key informants on opiate trafficking routes, processing laboratories and markets. What follows is the description of reported flows within and outside the country and the concentration of laboratories and markets by region.

Opium markets, laboratories and drug business

Overall, the geographic distribution of Afghan opiate laboratories remained stable over the last few years with the processing of morphine and heroin dispersed across the whole country. Some changes have been observed: laboratories are less concentrated in the northern provinces, while they are more concentrated in the south where widespread opium cultivation and low or no government control are attractive to both processors and traffickers. An example of this is the relocation of a dozen laboratories from Badakhshan to Hilmand, where the highest concentrations of laboratories are now observed. The total number of laboratories in the west is also high. The southern region has both heroin and morphine laboratories, while the western region hosts more morphine laboratories.

By examining the distribution of opium markets in the country, it can be noted that western provinces are playing a more dominant role in the opium trade. Both the southern and eastern regions have only half as many markets compared to the west, while few markets operate in the northern and central regions (see the heroin and opium trafficking map).

The eastern region has recently focused almost exclusively on heroin production. Processing morphine for heroin production is more common, than processing opium, as there are fewer opium processing labs in use than in previous years. The laboratories import most of their morphine from the north-east (Badakhshan) and, to a lesser extent, from the central region.

The northern region has almost no opium processing laboratories and opium markets are not very active.

Over 20 heroin/morphine laboratories may be active in Badakhshan. Laboratories are generally very mobile, moving from place to place based on information about raids planned by law enforcement agencies. It seems that laboratories can access the needed precursors, although the

trafficking of precursors has become more difficult. Given the lower opium cultivation in 2008, opium stocks from previous years are also used for processing morphine/heroin.

There are at least 35 opium processing laboratories in the southern region, but these are not sufficient to process the large production of opium (6,917 mt) in the region. Most of the processing centres in the southern region are concentrated in Hilmand, but much of the opium produced in the south is also processed in the western region. AGEs provide logistics for the processing in both regions. Laboratories are mostly mobile, too, staying no more than a month at any given place. The mobile laboratories also may cross the Pakistan border if law enforcement activities impair their functioning.

The drug trade in the provinces in the western region is controlled by organized criminal networks. There are numerous illegal border crossings from the western region into Iran. A large number of laboratories (over 30, at least) are located in this region and most of them are in Nimroz, Farah and Hirat provinces. AGEs offer protection to those dealers. The current drought situation also has played a role in attracting individuals to the drug business, and a number of disarmed commanders have increasingly become involved in narcotics.

Trafficking flows

Eastern region

(Nangarhar, Kunar, Laghman, Kapisa, Nuristan)

The eastern border with Pakistan is mountainous, rugged and remote; smugglers can travel virtually unfettered into and out of the country. Although Nangarhar was poppy-free in 2008, it remains a province where a large amount of opium, heroin and morphine are trafficked.

Much of the trafficked heroin is controlled by tribes on either side of the Afghan-Pakistan border who move it into Pakistan. Pakistan receives over one third of the heroin trafficked through Nangarhar. Traffickers from the eastern region of Afghanistan export heroin mostly to Pakistan, but a sizeable share also is sent to the northern region and to the north-east, to a lesser extent, where it is shipped on to Tajikistan. Negligible amounts are routed to the western region, Iran, China and India²⁴.

Opium produced and trafficked through the east takes two routes, one to the north-eastern region (about 30%) and one to the southern region. In general, opiates travel through the ring road that connects all the regions of the country, therefore, the central region, even though it has little cultivation, also plays a major role in trafficking.

The eastern region is an established route for precursor chemical smuggling as well. This is proven by the significant number of seizures that occurred in the last two years in Nangarhar province. Those precursors that are not used for processing in Nangarhar either move north towards Badakhshan's laboratories or to the south and south-west regions.

North-east region

(Kunduz, Takhar and Badakhshan)

Most of the opiates are trafficked through the north-east region into Central Asia due to proximity and to strong cross-border ethnic links. Small quantities are also trafficked to other regions and all neighbouring countries. Badakhshan, the largest of the three north-eastern provinces, sends one third of its heroin to Tajikistan. Badakhshan borders Tajikistan's Gorno-Badakhshan Autonomous Region to the north, China (from the Wakan corridor) in the east and Pakistan (Northern Areas of Chitral and Gilgit) in the north-east.

Lesser amounts of heroin processed in the north-east go to Iran, while heroin trafficked to Turkmenistan originates from Kunduz and Badakhshan. Because of its shared border, Badakhshan

²⁴ The only province that reported a direct route to India was Nangahar.

sends small quantities of heroin into Pakistan's Northern Areas of Chitral and Gilgit. A small portion of the north-east region's heroin also is routed to the adjacent northern region.

The heroin found in the north-east is produced in that region or comes from the east. The heroin coming from the east is most likely routed into Tajikistan, while the small portion of heroin produced in the north-east takes the reverse course and is trafficked to the east and central regions.

Incoming opium generally follows the same route as heroin. There is relatively little opium stocking in the north, and production in 2008 was very low (6 mt), which explains the trafficking of opium from the east to the north-east.

A small amount of Badakhshan's heroin also is reportedly trafficked to the Chinese market. Whether this is done using the 76 km border (Wakan corridor) or through Central Asia into Xinjiang is unclear. With a few exceptions, north-eastern opium flows generally mirror heroin flows.

Northern region

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

The northern region has very small amounts of opium cultivation and no laboratories were identified. Nevertheless, this region serves as a transit point for flows from the west and south towards the north as well as from east to north.

Heroin trafficked through the north comes from the adjacent north-eastern provinces, with the exception of Balkh, which receives a third of its heroin from southern sources.

Opium stocks from previous years are exported to Ghor and then to the south-west through the Lav-lash valley in Faryab province. Traffickers generally export opiates over the closest border, however, over three quarters of the heroin from Balkh province, which borders Uzbekistan, is routed through the eastern region. There were no reports of heroin or opium being routed directly from the northern provinces across the short border with Uzbekistan (137 km). It is likely that the majority of opiates found in Uzbekistan come indirectly from Afghanistan through Tajikistan. Whether this is due to more effective control at the Uzbek border or data limitations is unclear.

Southern region

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

Almost three quarters of the southern region's heroin is exported to the western provinces. From there, most of it goes to Iran where there is a significant domestic drug market and where some Afghan opiates are consumed. A substantial portion travels through Turkey to Europe, with lesser amounts shipped to the Caucasus and Iraq. Despite the fact that four of the southern provinces share a common border with Pakistan, much less of the southern region's heroin seems routed there. However, there is evidence that some southern opiates travel into Iran through Pakistan's Baluchistan areas. For example, the Speen Boldak crossing in Kandahar province is a well-known exit point for opiates, however, only about 5% of Kandahar's heroin is exported to Pakistan. Around 10% of southern heroin is reportedly routed directly to Iran, but the proportion that goes to Iran through Pakistan is unclear.

Although the south mainly services the western region and Iran, it also sends a small percentage of its heroin into Turkmenistan using the northern route, thereby feeding the route that crosses the Caspian region toward the Caucasus. The great majority of heroin found in the south comes from the processing laboratories within the region. However, two provinces, Uruzgan and Kandahar, import heroin exclusively from the eastern region.

In addition to its own produced opium, Uruzgan province also receives almost half of its incoming opium from the north as well as some from the central and eastern regions. Opium is imported to Hilmand province equally from the east, north and north-east and, to a lesser extent, from the central region.

Opium exports from the south closely resemble heroin movements. Around one third of opium exports are destined for Iran, nearly half head westward and a small amount travel to

Turkmenistan. Given its unprocessed form, opium quantities trafficked are larger than heroin quantities.

Western region

(Farah, Nimroz, Hirat and Badghdis)

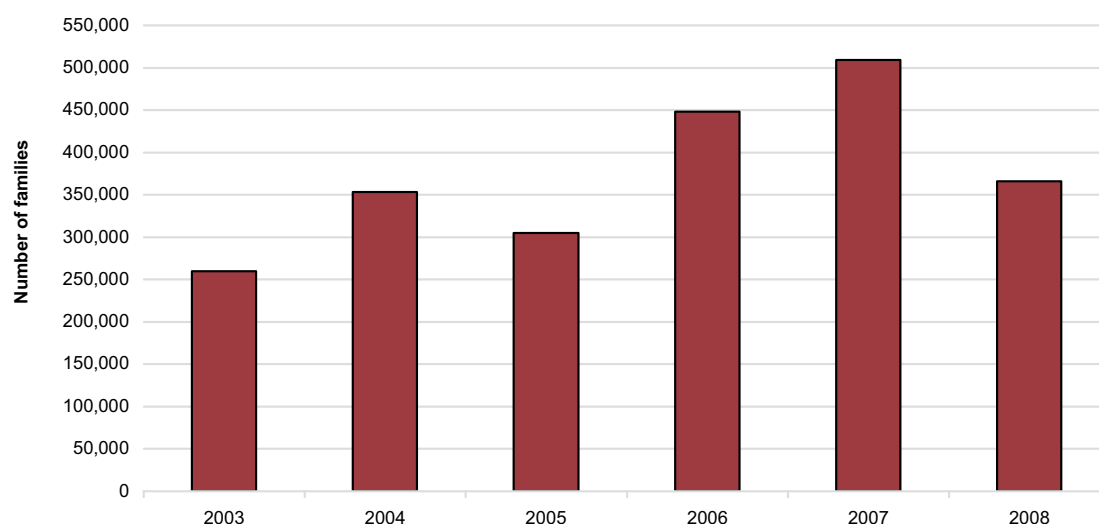
Opiates in the western region include those produced within the region and, to larger extent, those coming from the south. The main destination of these opiates is Iran, the most prominent trafficking route through Nimroz province. Trafficking to Iran also takes place through a large number of legal and illegal cross-border points in Farah and Hirat provinces.

Badghis province sends a sizeable portion of its heroin across the border to Turkmenistan, and some also goes to Iran and Tajikistan. The majority of Badghis's opium is sent to Iran and Turkmenistan. Over three quarters of the heroin in Badghis comes from the south.

2.8 Opium farmers

In 2008, the annual village survey collected data on the number of families cultivating opium poppy in Afghanistan. At the national level, it was estimated that 366,500 families were involved in opium cultivation, compared to 509,000 households in 2007 – a decrease of 28%. Based on an average of 6.5 members per household²⁵, 366,500 households represented an estimated total of 2.4 million persons or 9.8% of Afghanistan's total population of 24.5 million²⁶. This means that 13% of the rural population was involved in opium cultivation, a decrease from 18% in 2007. The rural population is estimated at 18 million.

Figure 38: Number of households involved in opium cultivation in Afghanistan, 2003-2008



²⁵ Food and Agriculture Organization (FAO) activities update in Afghanistan, N° 2, p. 2, January 2003.

²⁶ Source: Afghanistan Central Statistical Office.

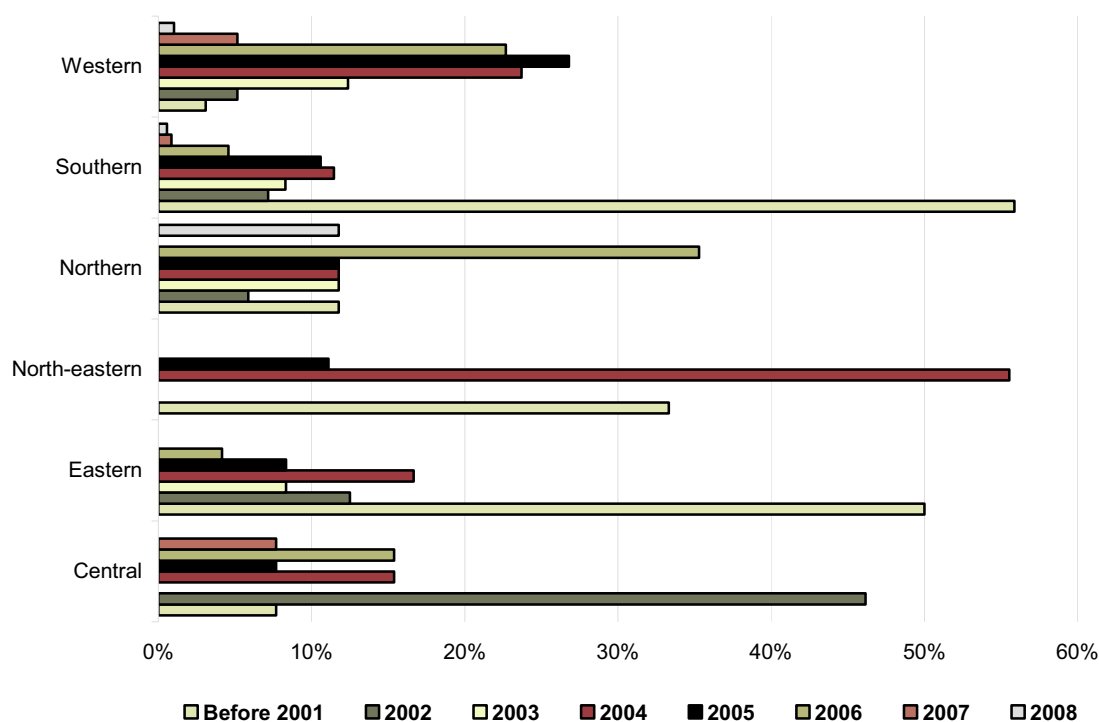
Table 38: Number of households involved in opium cultivation, 2008

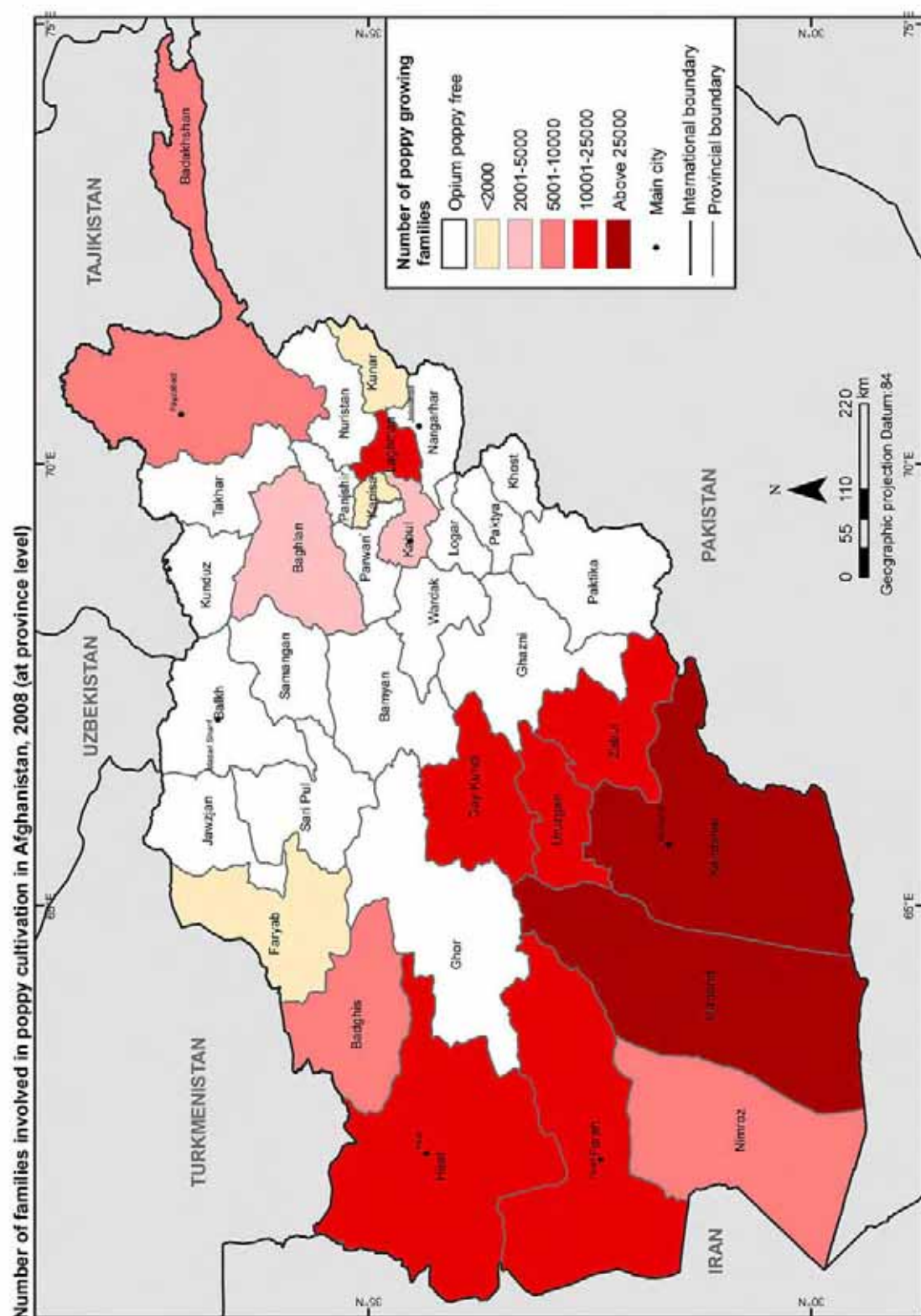
Region	Opium cultivation in 2008 (ha)	Total no. of opium poppy-growing households	Percentage of total opium poppy-growing households	Average size of opium poppy field per opium poppy-growing household (ha)
Central	310	3,747	1%	0.08
Eastern	1,151	19,743	5%	0.06
North-eastern	200	6,218	2%	0.03
Northern	766	5,240	1%	0.15
Southern	132,760	266,862	73%	0.50
Western	22,066	64,674	18%	0.34
Total (rounded)	157,000	366,500	100%	0.43

The average area of land dedicated to opium cultivation per household in 2008 was 0.43 ha in comparison to 0.37 ha in 2006 and 2007. In the main opium-producing provinces, the average area under opium cultivation was 0.5 ha per household, while in the other provinces it was much lower (0.15-0.08 ha per household) except in the west (0.34 ha per household).

The 28% decrease in the number of opium-cultivating households in 2008 means that less households are cultivating more poppy.

Some 42% of opium poppy-growing farmers in Afghanistan began to cultivate opium before 2001, while 58% began after 2001. Only a small proportion of farmers began to cultivate opium for the first time in 2007 (2%) and 2008 (1%). In the southern and western regions, where 98% of the opium cultivation took place in 2008, only 1% of farmers were cultivating opium for the first time. In the north-eastern and eastern regions, there were no farmers who grew opium poppy for the first time.

Figure 39: First year of opium cultivation, by region (n=724)



Under normal conditions, three persons can harvest one jerib (0.19536 ha) of opium poppy in 21 days. Thus, a total of two million persons would be needed to gather the entire opium poppy harvest in Afghanistan in 2008 if all of the harvesting took place at the same time. Hilmand province alone required 1.2 million persons for harvest. The number of skilled persons available in opium poppy-cultivating households (366,500) was not sufficient to harvest the 157,000 ha of crops cultivated. Extra labour was therefore needed for harvesting, especially in southern Afghanistan. Labourers, attracted by the wages, travelled from all over Afghanistan to the southern region for employment in lancing jobs. As a result of the increased demand for labourers for opium poppy-harvesting, average daily wage rates for lancing were US\$ 9.50 per day, much higher than for any other regular jobs in the country. The daily wage rate for lancing in 2008 was almost the same as in 2007 (US\$ 9.30 per day) and higher than the US\$ 7.70 in 2006. In Hilmand, wages were the highest at US\$ 15 per day.

Table 39: Daily wage rates for different activities in Afghanistan, 2007

Activity	Daily wage rate (US\$)
Labour (roads, construction, etc.)	3.6
Lancing /gum collection	9.5
Poppy weeding	4.4
Wheat harvesting	4.4

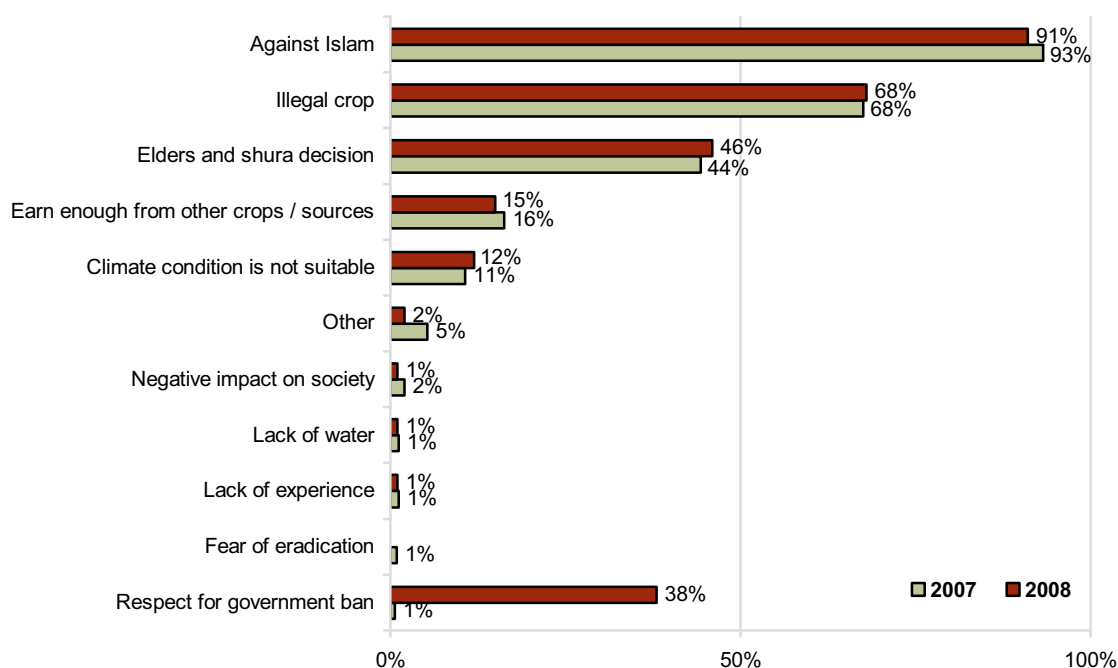
2.9 Reasons for cultivation, non-cultivation and stopping cultivation of opium

As part of the annual village survey, 3,050 farmers in 1,529 villages across Afghanistan were asked why they cultivated opium or, if applicable, why they had stopped cultivating it or had never grown opium poppy. For the purpose of analysis, the farmers were grouped into four categories: active growers (engaged in opium cultivation in 2008); farmers who had grown opium poppy in previous years but not in 2008 (stopped cultivating in 2008); farmers who had stopped cultivating opium poppy before 2008; and farmers who had never cultivated opium poppy.

Reasons for never cultivating opium

Almost all farmers who never cultivated opium reported 'religion' as one of the reasons (91% of farmers in 2008 and 93% in 2007). A consistent number of farmers also reported 'illegality of the crop' (68% of farmers) and 'respect for a shura/elders decision' (46% of farmers). Based on these results, it could be argued that the majority of farmers who never cultivated opium appear to be sensitive to the rule of law. In fact, few farmers cited reasons related to income or climate for not growing poppy. This also shows that the cultural/religious pressure for not cultivating opium can be very strong.

Figure 40: Reasons for never having cultivated opium (n=1488 farmers in 2007; n=1804 in 2008)²⁷



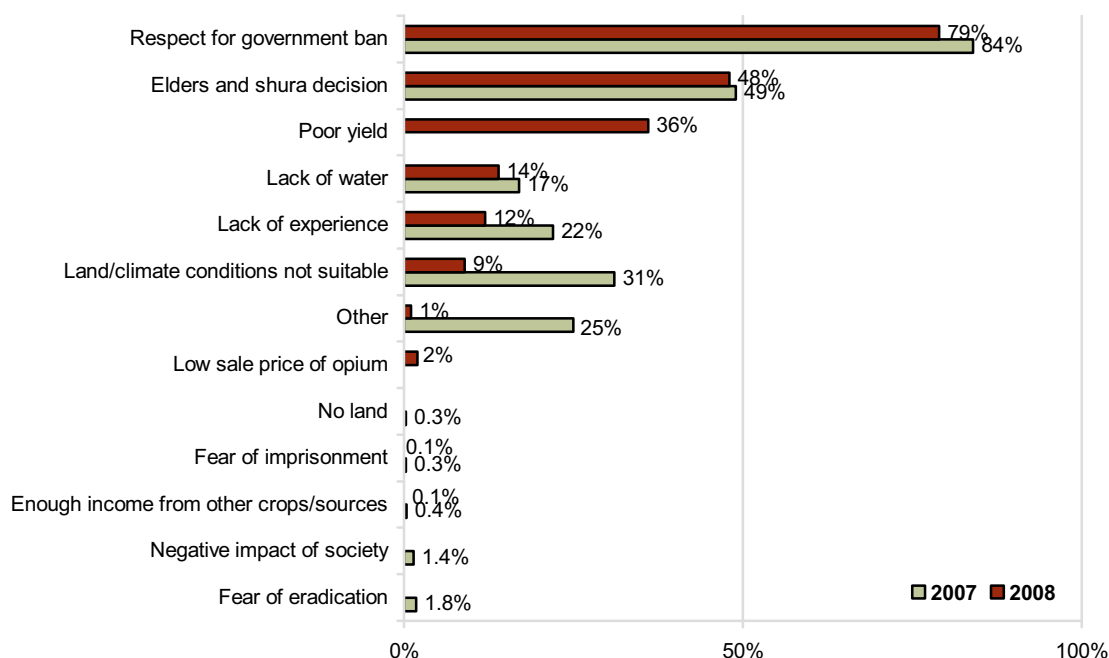
Reasons for stopping opium cultivation

Seventy-nine per cent of farmers who had stopped opium cultivation before 2008 cited the government ban as their reason for doing so. Decisions of the elders and the shura were regarded as important by 48% of farmers, and poor yield also caused farmers to stop opium cultivation (36%). Other important reasons are a lack of water (14%) and lack of experience (12%). Some farmers had attempted to cultivate opium but stopped because the land or climate conditions were unsuitable (9%).

Respect for the government ban was the reason most cited by farmers in all regions except the south and west. Farmers in the south and west also attached less importance to the decisions of the shura and religion than did farmers in other regions.

²⁷ See footnote 16

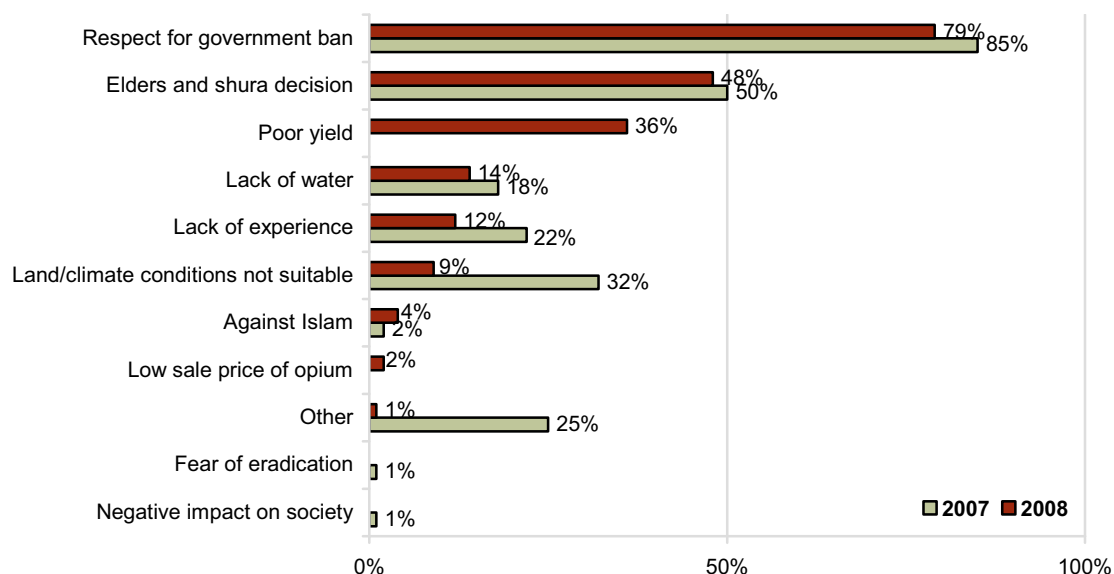
Figure 41: Reasons for stopping opium cultivation (n=731 farmers from 1,529 villages)²⁸



Reasons for not cultivating opium in 2007 and 2008

Among the farmers that grew opium poppy in the past but stopped 'respect for the government ban' was one of the most commonly reported reasons (79% of farmers), followed by 'decisions of the elders and the shura' (48%) and poor yield (36%). To a lesser extent, farmers reported reasons related to weather or agricultural conditions.

Figure 42: Reasons for not cultivating opium in 2007 and 2008 (n=2,261 farmers in 2007 and n = 2521 in 2008)²⁹



²⁸ See footnote 16

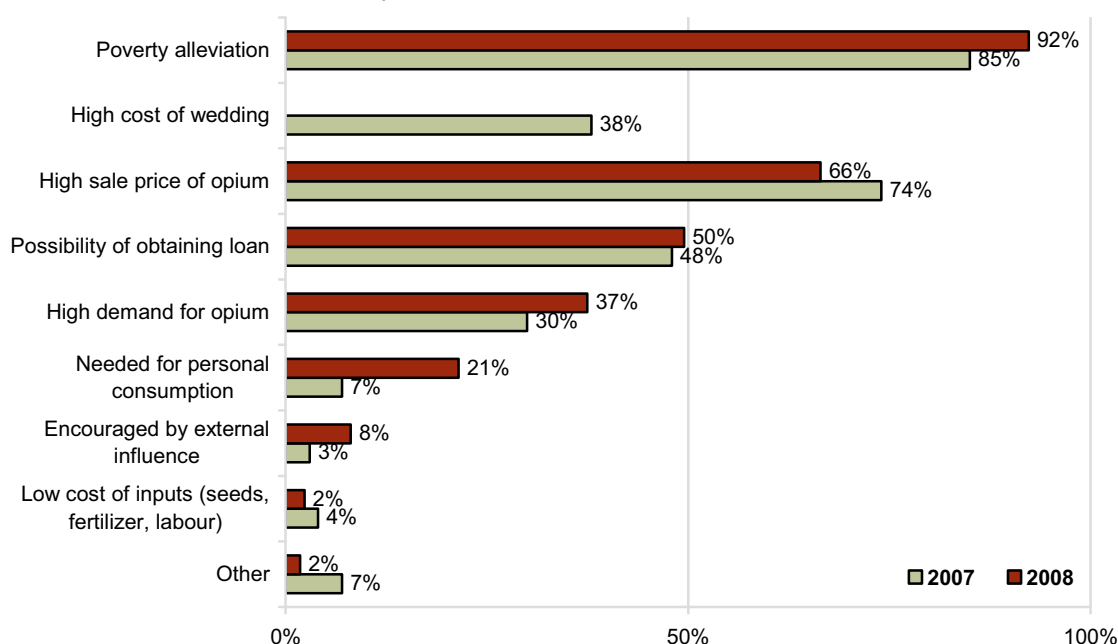
²⁹ See footnote 16

Shura decisions, respect for the government ban and religion are less important in the south of Afghanistan compared to other regions. In the east, farmers appear to be more concerned about respecting the government ban than in other regions.

Reasons for opium cultivation in 2008

One of the reasons reported by the majority of farmers for cultivating opium across the regions was 'poverty alleviation' (92% of farmers). Among the most common additional reasons provided were 'high sale price of opium' (66% of farmers) and 'possibility of obtaining loans' (50% of farmers). In southern and western provinces, high sale price and poverty alleviation were the dominant reasons for opium cultivation, while in the east it was poverty alleviation.

Figure 43: Reasons for opium cultivation in 2007 and 2008 (n=718 farmers in 2007 and n = 508 in 2008)³⁰



2.10 Loans

Outstanding loans

It is important to understand the financial status of farmers in order to understand the reasons for opium cultivation and the opium dynamics in the country. To that end, as part of the annual village survey, farmers were asked whether they had any outstanding loans and whether they had taken out a new loan in 2008.

Of the 3,050 farmers who provided information, 38% reported having one or several outstanding loans (compared to 42% in 2007). The average amount of outstanding loans per farmer was US\$ 713 in 2008, which is lower than the US\$ 753 in 2007. The average amount of outstanding loans was equivalent to approximately 1.7 times the per capita GDP in Afghanistan (US\$ 415) as of August 2008.

On average, non-opium poppy growing farmers who stopped opium cultivation before 2008 were in debt with higher outstanding loans (US\$ 780) than opium poppy farmers, which is a 7% increase compared to 2007 (US\$ 729). Of those farmers who have never cultivated opium, 40%

³⁰ See footnote 15

had outstanding loans, the average value of which was US\$ 691. Farmers who did not cultivate opium in 2008 had an average US\$ 716 in outstanding loans.

Table 40: Average outstanding loans held by farmers

	Opium growing farmers	Non- opium poppy growing farmers		
		Did not cultivate opium in 2008	Stopped opium cultivation before 2008	Never cultivated opium
Average loan (US\$)	693	716	780	691
Percentage of farmers with loan	27%	40%	40%	40%

In 2008, 27% of opium poppy-growing farmers had debts, compared to 39% in 2007. There are pronounced regional differences in the average loan amounts and the proportion of farmers obtaining loans. In central Afghanistan, 37% of farmers had outstanding loans in 2008. Farmers in the west had the lowest average amount in outstanding loans (US\$ 394), whereas farmers in the central region had the highest debts (US\$ 977). The number of farmers having loans is lowest in the south, indicating a lesser need for them in the south compared to other regions.

Table 41: Average outstanding loans held by farmers, by region

Region	Average loan (US\$)	Percentage of farmers with outstanding loans
Central	977	37%
Eastern	888	39%
North-eastern	408	46%
Northern	906	51%
Southern	660	22%
Western	394	42%

New loans

The average amount of new loans taken out in the 2007-2008 cropping season was US\$ 536 per farmer (both opium poppy-growing and non-opium poppy-growing farmers), 2% less than in 2006-2007 (US\$ 547). The average amounts for 2008 and 2007 are well below the 2003 level (US\$ 699). It should be noted that the survey was conducted for the first cropping season of the year; therefore the value of the loans mentioned indicates the amount of the loans taken by farmers up to mid-year.

The average value of new loans taken out by opium poppy-growing farmers in 2007-2008 was US\$ 450, which is lower than the US\$ 681 taken out by opium poppy-growing farmers in 2007 and less than the amount loaned to non-opium poppy growing farmers in 2007-2008.

Table 42: Average value of new loans taken out by farmers

	Opium poppy-growing farmers	Non-opium poppy growing farmers		
		Did not cultivate opium in 2008	Stopped opium cultivation before 2008	Never cultivated opium
Average loan (US\$)	450	552	605	646
Percentage of farmers that took out a new loan in 2008	34%	36%	38%	36%

Fifty-six per cent of farmers in the northern region took out new loans in 2008, with an average value of US\$ 723. This was the highest percentage of all the regions. The vast majority of farmers in the north did not cultivate opium poppy in 2008, and most of the provinces in the region were poppy-free in 2008. However, the high number of borrowers, together with the high average amount of loans, could encourage farmers in the northern region to cultivate opium in the coming seasons in order to repay those loans. The average amount of new loans taken out by farmers in the north-eastern region was the lowest (US\$ 333).

Table 43: Average value of new loans taken out by farmers, by region

Region	Average loan (US\$)	Percentage of farmers with new loans
Central	612	32%
Eastern	593	27%
North-eastern	333	48%
Northern	723	56%
Southern	486	25%
Western	367	35%

Sources of new loans

Shopkeepers and traders are the main source of new loans for farmers. Seventy-two per cent of opium poppy-growing farmers reported to have obtained their loans from these sources. It is important to note that shopkeepers and traders are often involved in the opium business. The second most frequent source of loans cited by respondents was fellow villagers, such as neighbours, headmen and shura chiefs (17%). Other sources included relatives and friends (10%).

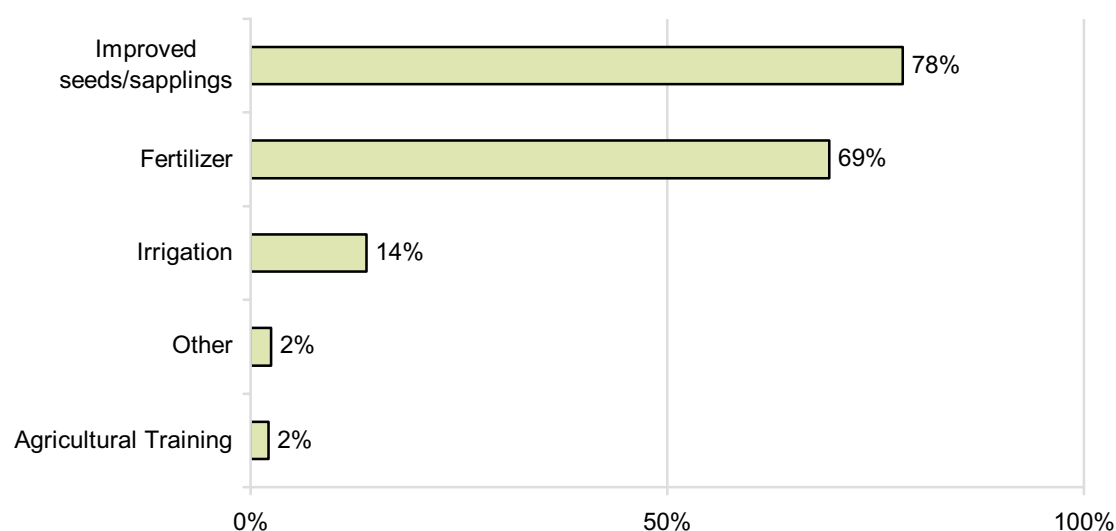
Table 44: Sources of new loans taken out by farmers

Loan source	Opium poppy-growing farmers	Non-opium poppy growing farmers		
		Did not cultivate opium in 2008	Stopped opium cultivation before 2008	Never cultivated opium
Shopkeeper/trader	72%	57%	61%	55%
Fellow villager	17%	15%	12%	17%
Relative/friend	10%	22%	19%	23%
Government credit	0%	2%	1%	3%
NGO	0%	2%	4%	1%
Other	0%	2%	4%	2%
Total	100%	100%	100%	100%

2.10 Agricultural assistance

In addition to farmers, headmen were interviewed in each of the 1,529 villages included in the annual village survey. According to the information that they provided, 281 out of the 1,529 surveyed villages (18%) received agricultural assistance. The type of assistance varied and included improved seeds/saplings (78% of villages), fertilizers (69% of villages) and irrigation facilities (14% of villages). Only 2% received agricultural training.

The majority (72%) of the villages that received agricultural assistance did not opt for opium cultivation in 2008. However, the remaining 28% still cultivated opium despite receiving agricultural assistance.

Figure 44: Type of agricultural assistance delivered to villages as reported by headmen (n = 281)

Of the 281 villages that received agricultural assistance in 2007, 203 (72%) did not cultivate opium in 2008.

Table 45: Agricultural assistance and opium poppy status of villages as reported by headmen (n = 281 villages)

Agricultural assistance received in 2007	Opium cultivation in 2008		
		No	Yes
	No	69%	31%
	Yes	72%	28%

More of the villages surveyed in the southern and western regions received agricultural assistance than did those surveyed in other regions.

Table 46: Per cent of surveyed villages receiving agricultural assistance, by region

Region	No. of villages receiving agricultural assistance	Total no. of villages surveyed	% of villages receiving agricultural assistance
Central	37	279	13%
Eastern	44	183	24%
North-eastern	36	158	23%
Northern	25	258	10%
Southern	83	357	23%
Western	56	294	19%
Total	281	1529	18%

2.11 Income generation for farmers

Data from the annual village survey on household income earned in 2007 shows that the average annual cash income of opium poppy-growing households in 2007 was 53% higher than that of non-opium poppy-growing households.

Opium poppy-growing households in southern Afghanistan earned a much higher annual cash income than did those in other regions. Non-opium poppy-growing households in southern Afghanistan also reported higher incomes than those in other regions. The annual income of both opium poppy-growing and non-opium poppy-growing households was the lowest in the east. The low income in the eastern region is mainly due to marginal land ownership (less than a jerib, i.e. one fifth of a ha) per household.

Of the five main opium poppy-growing provinces in 2007 (Hilmand, Kandahar, Uruzgan, Nimroz and Farah), farmers in Hilmand reported the highest cash income. However, cash income per farmer in Hilmand was lower in 2007 compared to 2006. The average annual household income in Kandahar is at least double that in Farah and Nimroz provinces, while it is three times higher in Hilmand and Uruzgan than in Farah and Nimroz provinces. In the poorest provinces of central and northern Afghanistan, the level of opium cultivation in 2008 was negligible. This implies that poverty is not a driving factor for opium cultivation.

Table 47: 2007 annual household cash income by region and households of opium growing and non growing farmers³¹

Region	Average annual household income of poppy famers in 2007 (US\$) 1	Average annual household income of non-poppy famers in 2007 (US\$) 2	% household income difference between non-poppy farmers and poppy farmers as % of poppy farmers income (2-1)/1
Central	2357	2674	+13%
Eastern	1817	1753	-4%
North-eastern	1970	2290	+16%
Northern	2270	1862	-18%
Southern	6194	3382	-45%
Western	2895	2273	-21%
Over all	5055	2370	-53%

Table 48: Confidence intervals of average household cash income of opium poppy-growing farmers in 2007 (US\$)

Region	US\$	Lower boundary 95%	Upper boundary 95%
Central	2357	1780	2934
Eastern	1817	1405	2229
North-eastern	1970	1419	2521
Northern	2270	1808	2732
Southern	6194	5601	6787
Western	2895	2570	3220
Overall	5055	4636	5475

Table 49: Confidence intervals of average annual household cash income of non-opium growing farmers in 2007 (US\$)

Region	US\$	Lower boundary 95%	Upper boundary 95%
Central	2674	2518	2829
Eastern	1753	1630	1876
North-eastern	2290	2161	2419
Northern	1862	1698	2026
Southern	3382	3155	3609
Western	2273	1920	2626
Overall	2370	2286	2454

³¹ Caution should be used in comparing household income of growing and non growing households and across regions given the different size and distribution of farmers in the samples.

Figure 45: Contributions to cash income in poppy-growing households by source, 2008

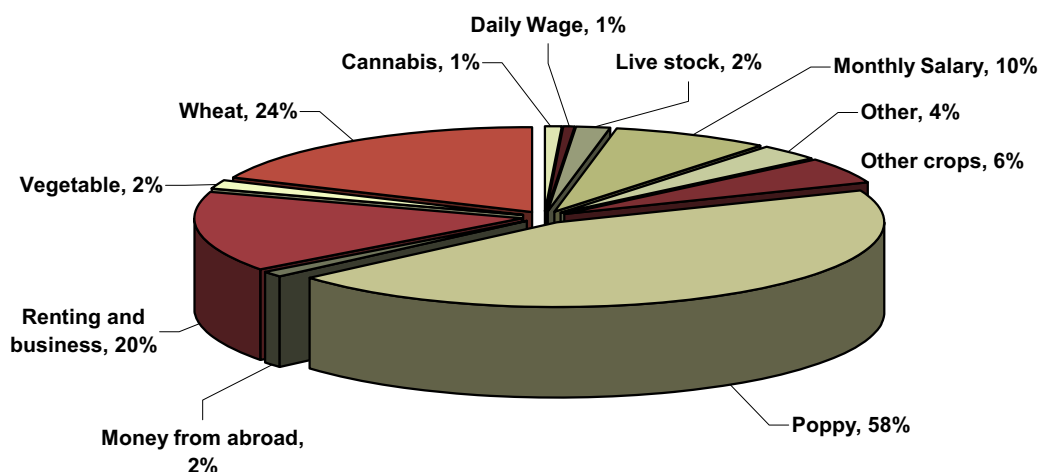
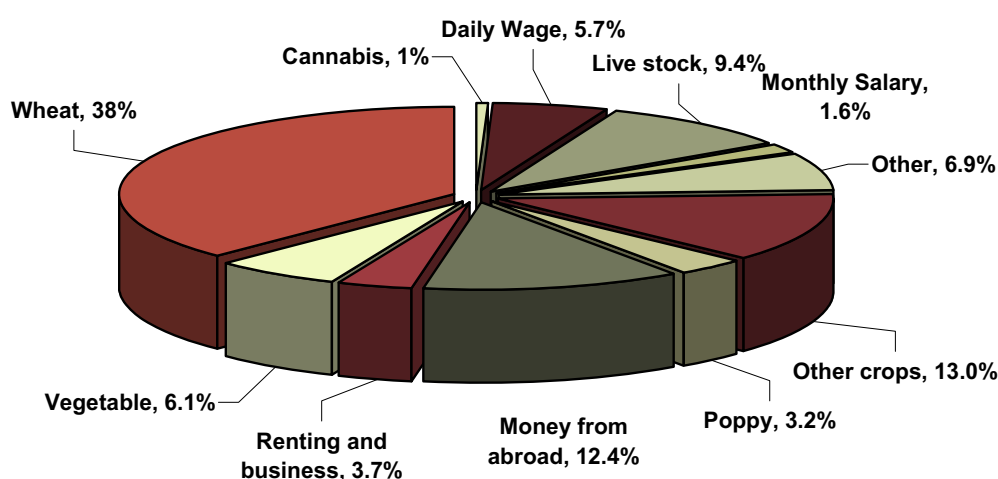


Figure 46: Contributions to cash income in non poppy-growing households by source, 2008



The income reported by farmers in 2008 is the cash income that they derived from different sources in 2007. The majority of farmers had more than one source of income. In non-opium poppy growing households, the main source of income was cash income derived from wheat sales (38%); followed by other crop sales (13%) and remittances from abroad (12%); as some of the non-poppy growing households of 2008 had still grown opium poppy in 2007, opium poppy to a small extent (3%) – also contributed to their total income in 2007. In opium poppy-growing households the main source of income was poppy sales (58%), followed by wheat (24%) and other crop sales (6%).

Table 50: Sources of cash income for *all farmers*, by region³²

Region	Livestock	Other	Other crops	Poppy	Vegetable	Wheat
Central	12%	52%	6%	1%	9%	20%
Eastern	12%	22%	18%	21%	5%	22%
North-eastern	9%	24%	21%	3%	3%	41%
Northern	12%	21%	15%	1%	6%	45%
Southern	3%	15%	10%	40%	3%	29%
Western	8%	18%	8%	10%	5%	51%

For opium poppy-growing farmers, a breakdown by region shows a different picture. In all regions, approximately half or more than half of the total income of these farmers stems from opium and wheat.

Table 51: Sources of cash income for *opium poppy farmers*, by region

Region	Livestock	Other	Other crops	Poppy	Vegetable	Wheat
Central	7%	28%	1%	43%	5%	15%
Eastern	14%	19%	7%	50%	1%	9%
North-eastern	6%	6%	7%	36%	3%	43%
Northern	11%	16%	9%	30%	5%	29%
Southern	2%	7%	7%	61%	2%	22%
Western	4%	5%	5%	42%	3%	41%

2.12 Ethnic distribution

As part of the annual village survey, data was collected from village headmen in 1,529 villages on the ethnic and linguistic make-up of the surveyed population.

Data on ethnicity and language linked with opium cultivation in 2008 show that 93% of the country's opium is cultivated by Pashtun farmers. Tajik/Dari-speaking farmers account for 4%, Hazara farmers for 1% and Uzbek farmers for 0.1%.

A comparison with data collected in 1994 showed an increase in opium production among Tajiks, Uzbeks, Hazara and other ethnic groups until 2006. In 2007, the ethnic distribution of opium cultivation reverted to the distribution found in 1994, when Pashtun farmers accounted for more than 80% of opium production. The situation in 2008 compared with 2007 shows a further decrease in opium production among Tajik, Hazara and Uzbek farmers, and a 9% increase in production among Pashtun farmers.

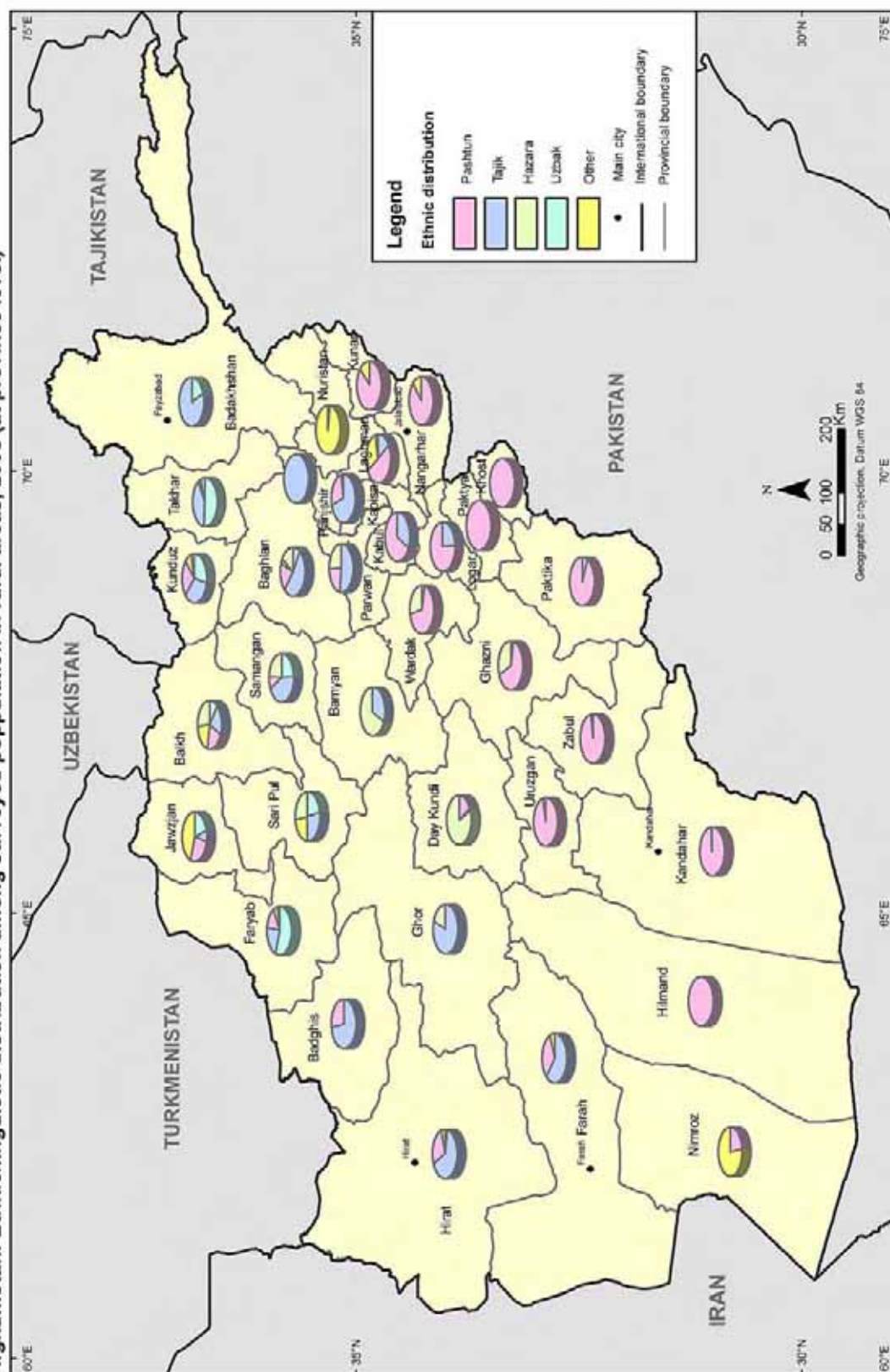
These results were estimated distributing the opium production of each province according to its ethnic composition as reported in opium-producing villages. However, this is based on the assumption that the distribution of opium poppy farmers in villages of mixed ethnic composition is homogeneous, which is not necessarily the case. The percentages shown below as representing the ethnic distribution of opium poppy farmers must therefore be treated with caution.

³² Caution should be used in comparing sources of cash income across regions given the different size and distribution of farmers in the samples.

Figure 47: Ethnic distribution of population in opium producing villages in 1994, 2005-2008



Afghanistan: Ethnic/linguistic distribution among surveyed population in rural areas, 2008 (at province level)



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

2.13 Opium prices

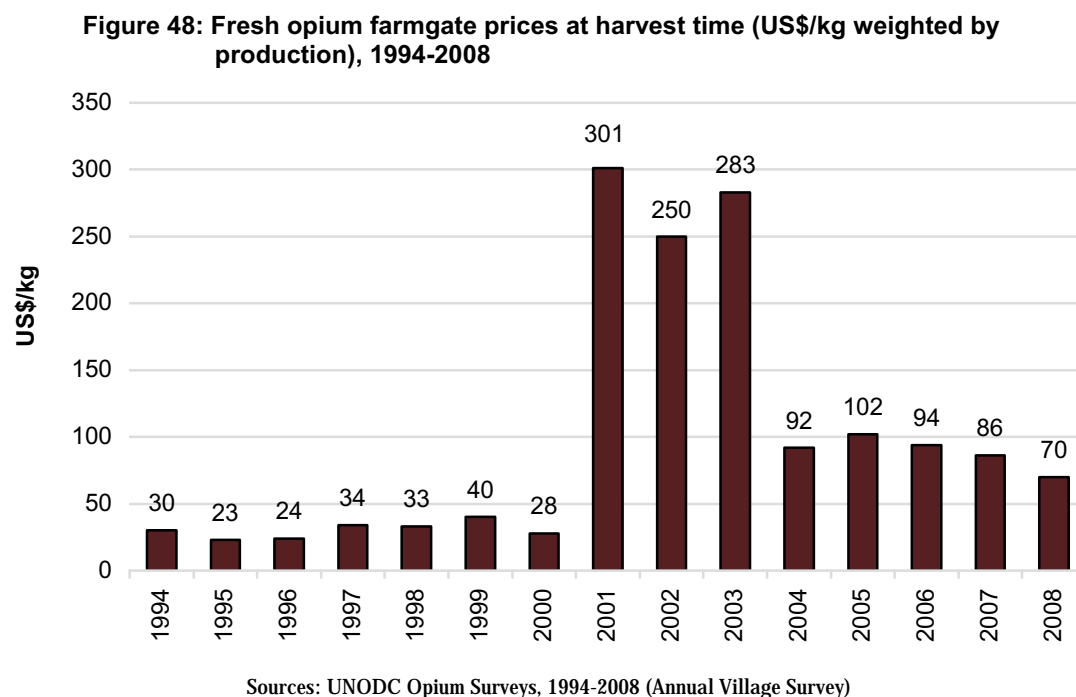
Based on interviews conducted in 1,529 villages, the average weighted fresh opium price in 2008 was calculated at US\$ 70/kg compared to US\$ 86/kg in 2007. Fresh opium price at harvest time was 19% lower than in 2007, 26% lower than in 2006 and just one fifth of the price in 2001.

The dry opium price at harvest time decreased by 22% to US\$ 95/kg (price weighted by production) in 2008, compared to US\$ 122/kg in 2007. The total farmgate income from opium in Afghanistan is calculated based upon dry opium price at harvest time.

The decline in opium prices is even more significant once Afghanistan's rising inflation rate is taken into account (2006: 3.5%; 2007: 16.5%; first two quarters of 2008: 27.1%).³³

Dry opium prices decreased in all regions except the central region. This decrease is due to the substantially high opium production that has taken place since 2007. Prices fell by 30% in the eastern region, 20% in the north and 17% in the west. Dry opium prices fell by only 18% in the south, despite record production levels for two consecutive years. The highest dry opium prices were reported in the central and eastern regions (US\$ 171/kg and US\$ 117/kg, respectively). Prices were decreasing consistently and were considerably lower in 2008 than they were in 2005 when prices increased in the east as the result of a dramatic fall in opium production. In 2007, substantial opium production in Nangarhar province resulted in much lower opium prices than in 2006.

In general, prices in the northern and north-eastern regions are lower than in other regions. Low prices can be attributed to less demand for opium due to strict law enforcement actions prohibiting the processing of opium and the high cost of transporting opium from northern to southern Afghanistan for heroin production and onward trafficking to other countries.



The Afghan Government (Ministry of Counter-Narcotics) and UNODC (MCN/UNODC) have monitored opium prices on a monthly basis in various provinces of Afghanistan since 1994. These monthly prices indicate a decreasing trend for farmgate dry opium prices since 2004. Monthly opium prices have been collected regularly by UNODC since 1997 in selected parts of Nangarhar

³³ Over the same period, the average exchange rate of the Afghani per US\$ remained practically unchanged (2006: 49.93 Afghanis; 2007: 49.96 Afghanis; first two quarters of 2008: 49.65 Afghanis for 1 US\$). Source: IMF International Financial Statistics, October 2008.

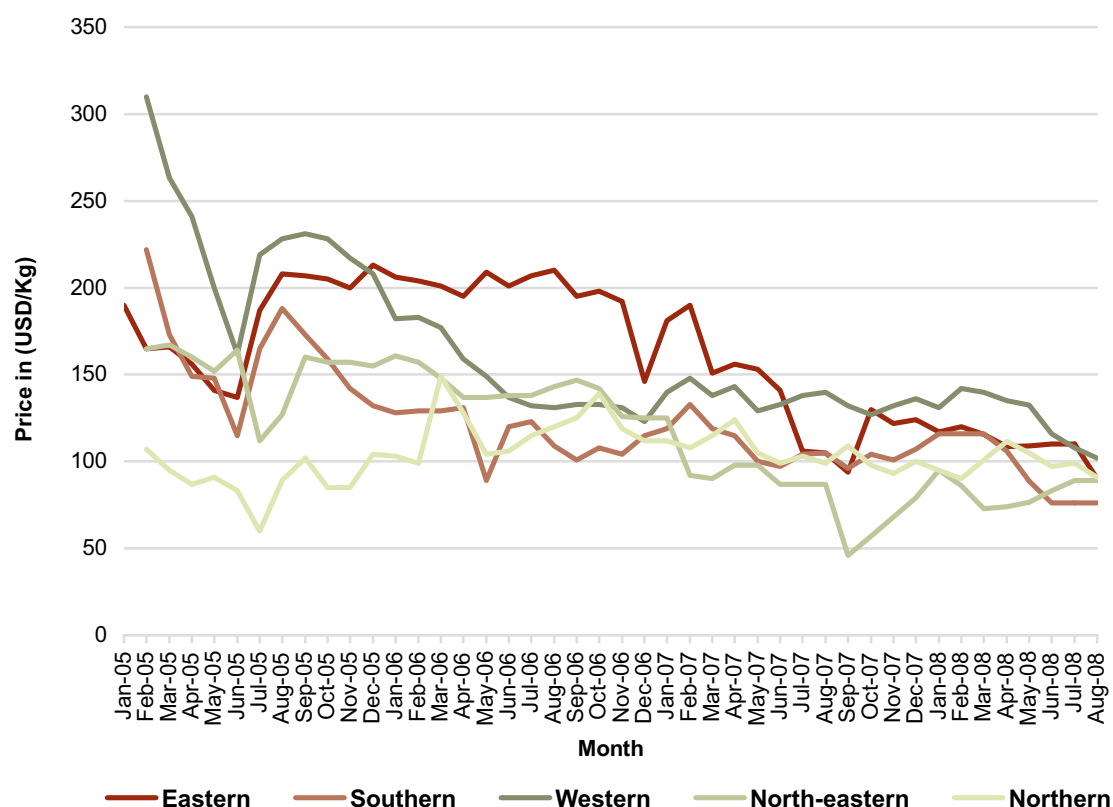
(eastern region) and Kandahar (southern region) as part of the opium poppy survey in Afghanistan. In recent years, prices also have been collected monthly in Badakhshan, Balkh, Hilmand and Hirat, both from opium poppy farmers and from local opium traders. The provinces of Badghis, Faryab, Takhar, Kunduz, Ghor, Farah, Laghman, Kunar and Nimroz were recently included in this price monitoring system. Opium prices are currently collected in 15 provinces.

Table 52: Regional average price of dry opium in August 2008 collected from traders (US\$/kg)

Region	Price of dry opium (US\$/kg)		
	Jul-08	Aug-08	Change
Eastern region (Kunar, Laghman, Nangarhar)	100	90	-10%
Southern region (Hilmand, Kandahar)	76	82	8%
Western region (Badghis, Farah, Ghor, Hirat, Nimroz)	102	106	4%
North-eastern region (Badakhshan, Takhar)	89	96	8%
Northern region (Balkh, Faryab, Kunduz)	91	82	-10%
Average	92	91	-1%

Source: MCN/UNODC Monthly Price Monitoring System

Figure 49: Regional average price of dry opium collected from traders, January 2005-August 2008



Source: MCN/UNODC Monthly Price Monitoring System

Dry opium prices collected from traders show a decreasing trend since 2005. Dry opium prices in the western region have been higher than in other regions since July 2007. The price graph also reveals that prices in all regions are converging, which may be an indication of a centralized control mechanism for opium prices in Afghanistan.

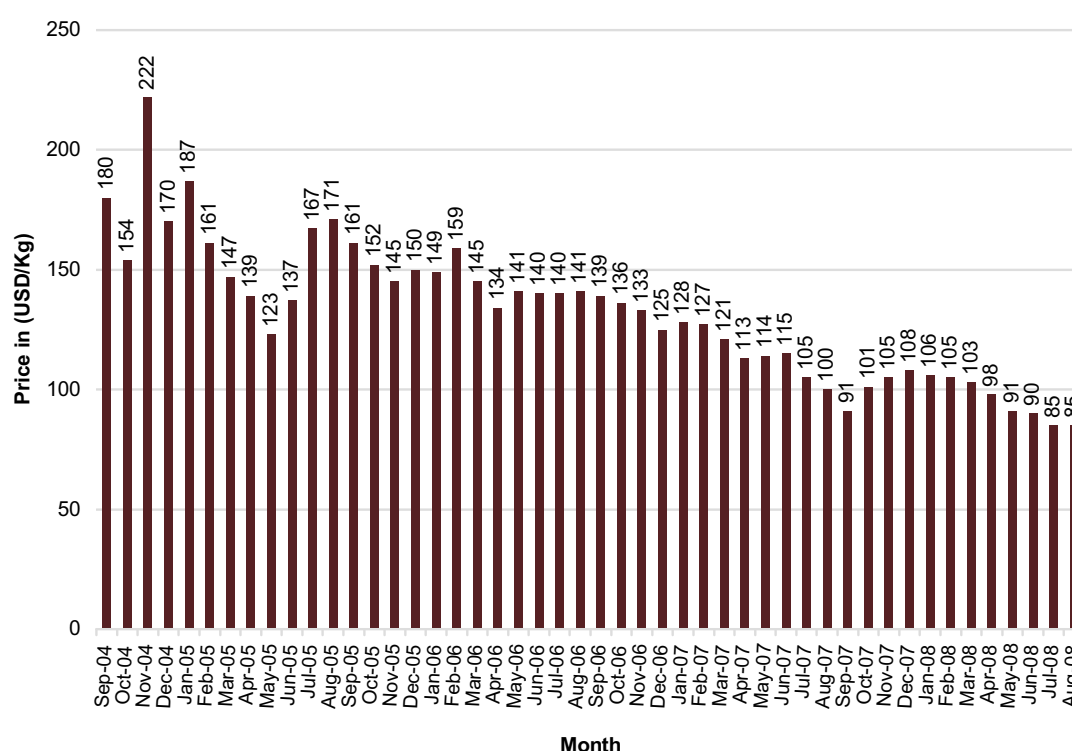
Trends in average dry farmgate prices vary according to region. Prices decreased by 30% in the east, while in other regions (except the central region), the decrease in dry farmgate prices is

between 16-20%. Opium prices increased by only 2% in the central region, and the highest dry opium prices were reported in the central (US\$ 171/kg) and eastern regions (US\$ 117/kg).

One possible explanation for the general decreasing trend is that there is a surplus of opium due to the record production of 8,200 mt in 2007 and another significant production level of 7,700 mt in 2008. These production levels are above the estimated global demand for illicit opium³⁴, suggesting that the surplus production has been accumulated as stocks.

It could be argued that, given the production increases in 2006 and 2007 and the still high production in 2008, prices have not fallen as much as expected. A possible explanation could be that after the sharp decrease in opium cultivation in Myanmar and Laos in recent years, opium from Afghanistan appears to be increasingly trafficked to China, India and South-East Asia, which were traditionally supplied by opium from the Golden Triangle.

Figure 50: Average farmgate prices for dry opium (US\$/kg) collected from farmers, September 2004 and July 2008



Source: MCN/UNODC Monthly Price Monitoring System

At the end of July 2008, the average price for one kilogram of dry opium in Afghanistan at farmgate was US\$ 92. Overall, dry opium prices decreased by 17% between July 2007 and July 2008 at the trader level. A breakdown by region shows a general decreasing trend in opium prices compared to July 2007; prices fell sharply in the south (28%) and west (27%) but only slightly decreased in the east (6%) and north (8%).

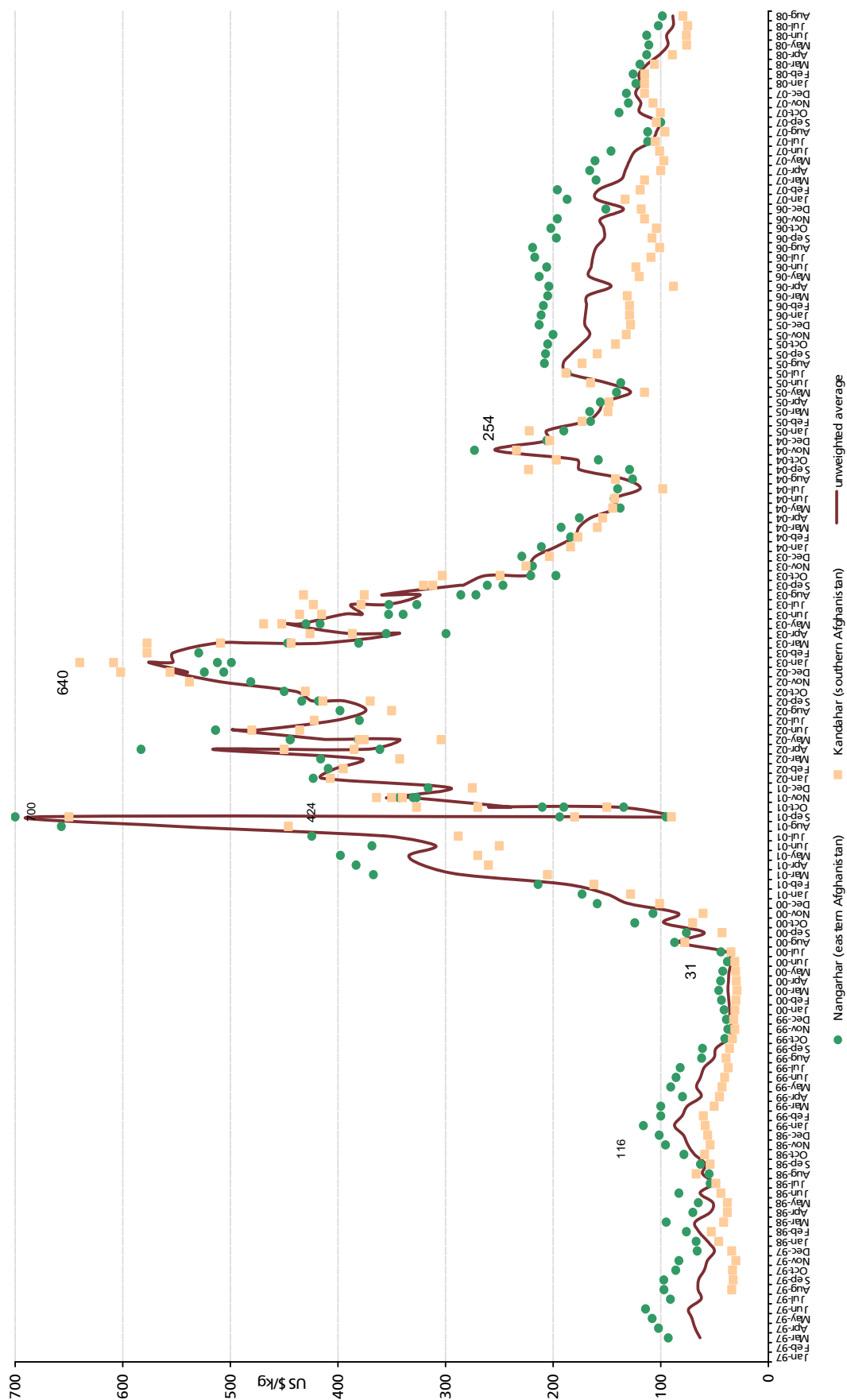
³⁴ World Drug Report 2008, UNODC

Table 53: Farmgate and trader prices for dry opium (US\$/kg), July 2007- July 2008

Region	Regional average price (US\$/kg) / July 2007		Regional average price (US\$/kg) / July 2008		Trader change
	Farmgate	Trader	Farmgate	Trader	
Eastern region (Kunar, Laghman, Nangarhar)	101	106	94	100	-6%
Southern region (Hilmand, Kandahar)	98	105	67	76	-28%
Western region (Badghis, Farah, Ghor, Hirat, Nimroz)	126	140	90	102	-27%
North-eastern region (Badakhshan, Takhar)	80	87	85	89	2%
Northern region (Balkh, Faryab, Kunduz)	94	99	91	91	-8%
Average	105	111	85	92	-17%

Source: MCN/UNODC Monthly Price Monitoring System

Prices of dry opium in Nangarhar and Kandahar provinces collected from traders (USD/kg), March 1997 - August 2008



2.14 Migration

Immigration to surveyed villages

During the annual village survey, headmen were asked about the extent of and reasons for migration to their respective villages. According to the data collected from the headmen, a total of 2,540 households moved into the 1,529 surveyed villages, which corresponds to 11 persons per village. More than half of the immigrants (71%) moved to non-opium poppy-growing villages and the remaining (29%) moved into opium poppy-growing villages.

Eight hundred thirty-two households moved to villages in the northern region, with only 5% of these households moving to opium poppy growing villages. Of the 446 households who moved to the southern region, 88% chose opium poppy-growing villages, and some 52% of the households that moved to the eastern region selected opium poppy-growing villages.

Figure 51: Distribution of household immigration in the 1,529 villages interviewed, by region of immigration

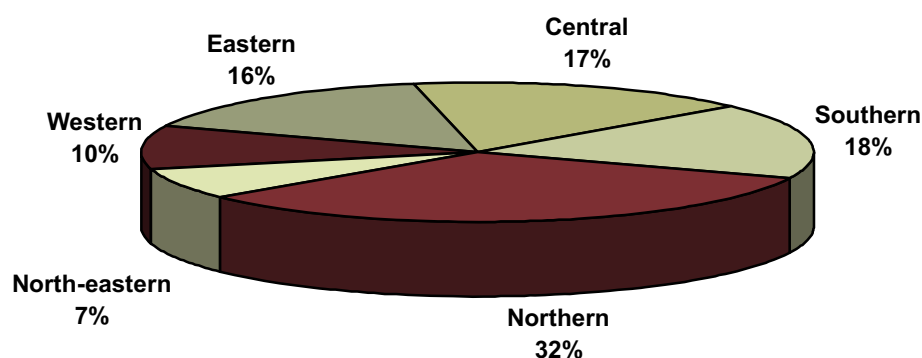
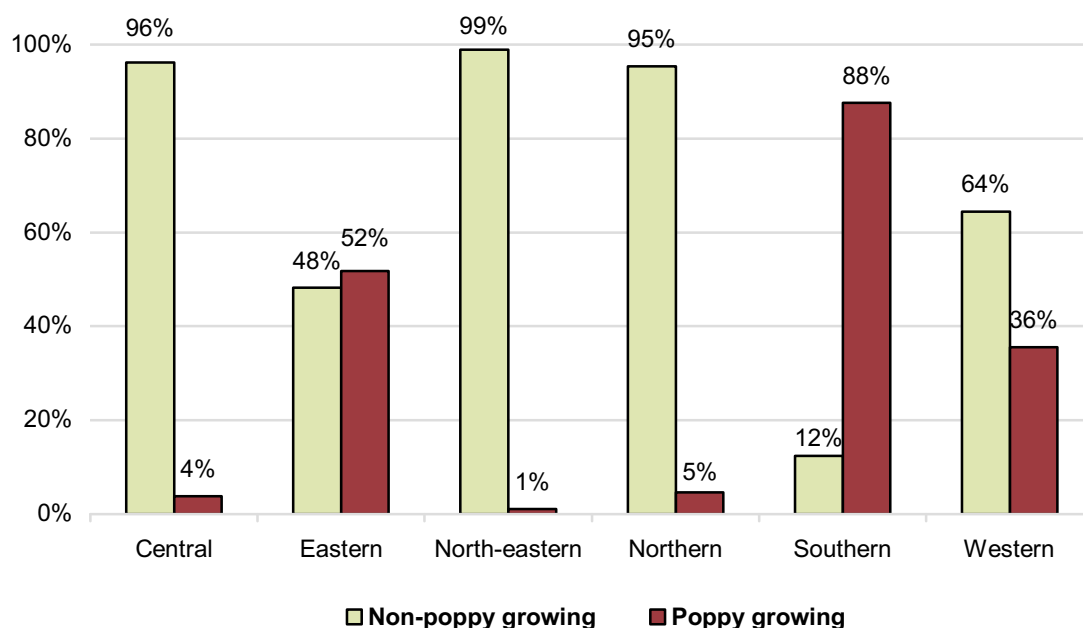
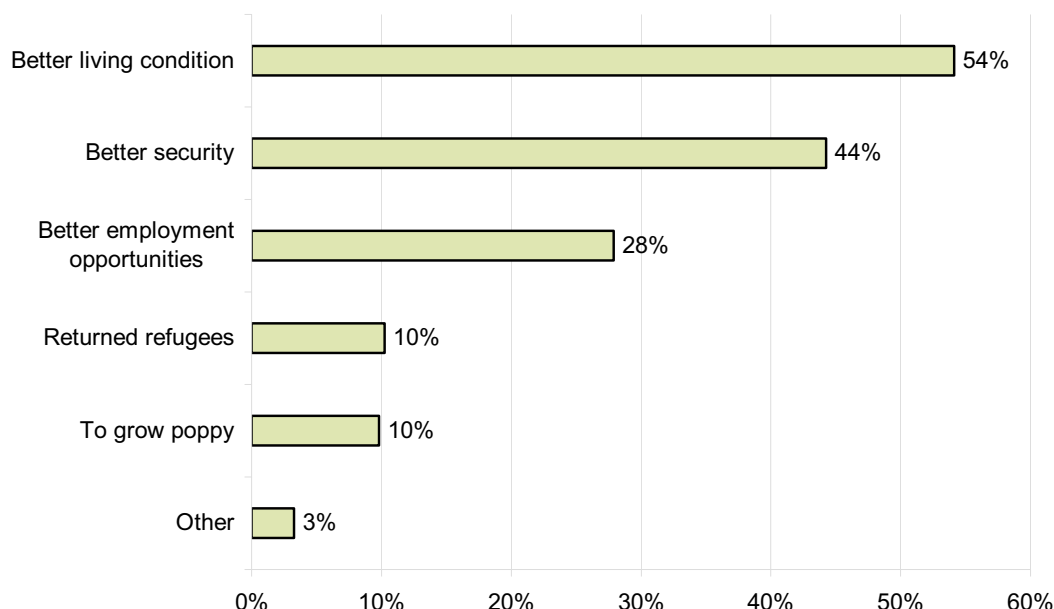


Figure 52: Number of households immigrating to opium poppy-growing and non-opium poppy-growing villages, by destination region



According to the headmen, the majority of immigration in 2008 took place because households were looking for better living conditions and security.

Figure 53: Reasons for emigration from surveyed villages (n=615 villages)

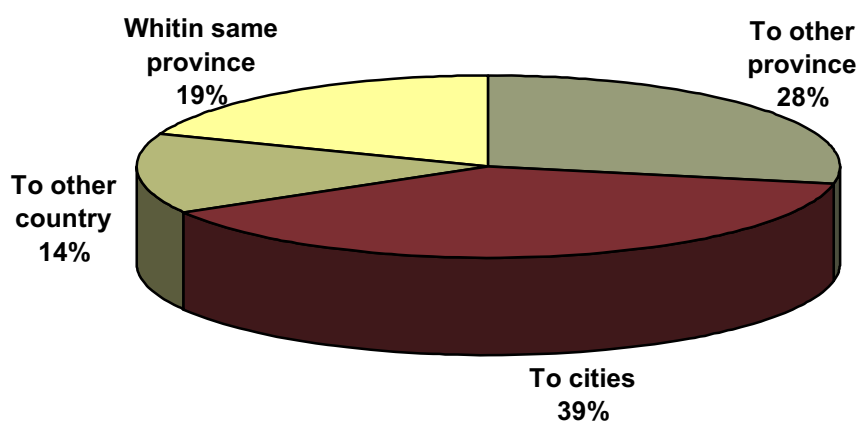


Emigration out of the surveyed villages

In 2008, a total of 8,283 households moved out of the 1,529 surveyed villages. The households went to other districts in the same province, other provinces, other regions, other cities or other countries. This corresponds to an average of five households, or approximately 35 persons, per village. A total of 1,820 households (22%) migrated from opium poppy-growing villages and the remainder from non-opium poppy-growing villages.

The majority of these migrants moved to cities (39%); 28% moved to other provinces, 19% to another location in the same province and 14% to another country³⁵.

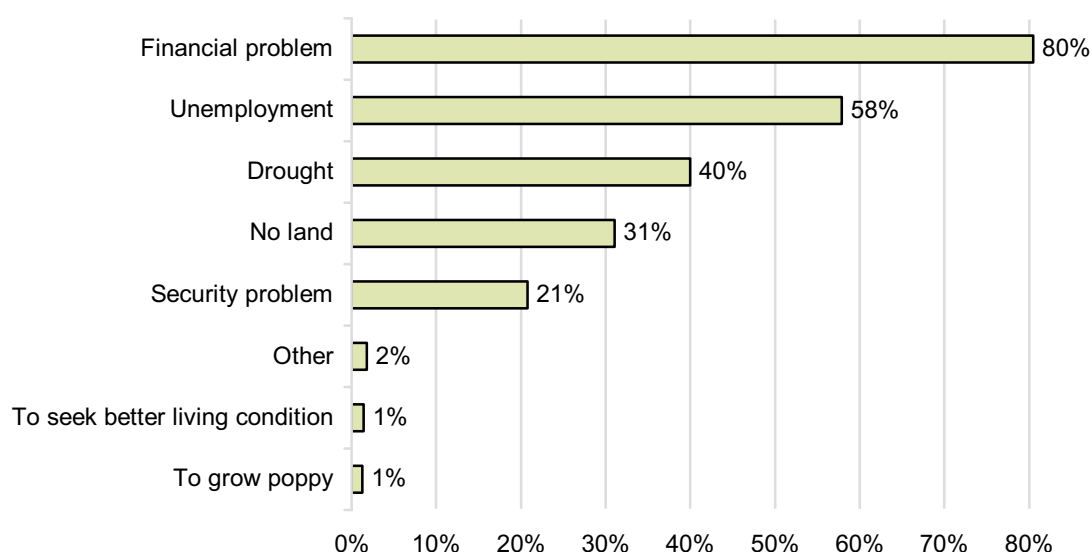
Figure 54: Regional destinations of households emigrating from villages (n=1,529)



³⁵ Taking into consideration the number of households that emigrated and immigrated, there is no consistency in the number of households that should have moved within the country. This is because the data reported relate only to the interviewed villages and are presented as unweighted, and are not intended to provide information on the percentage of internal migration at the national level. However, these findings can provide useful insights on the dynamic of migration patterns within the country.

Financial problems and unemployment were the reasons most cited for moving out of villages.

Figure 55: Reasons for migration from surveyed villages (n=615 villages)



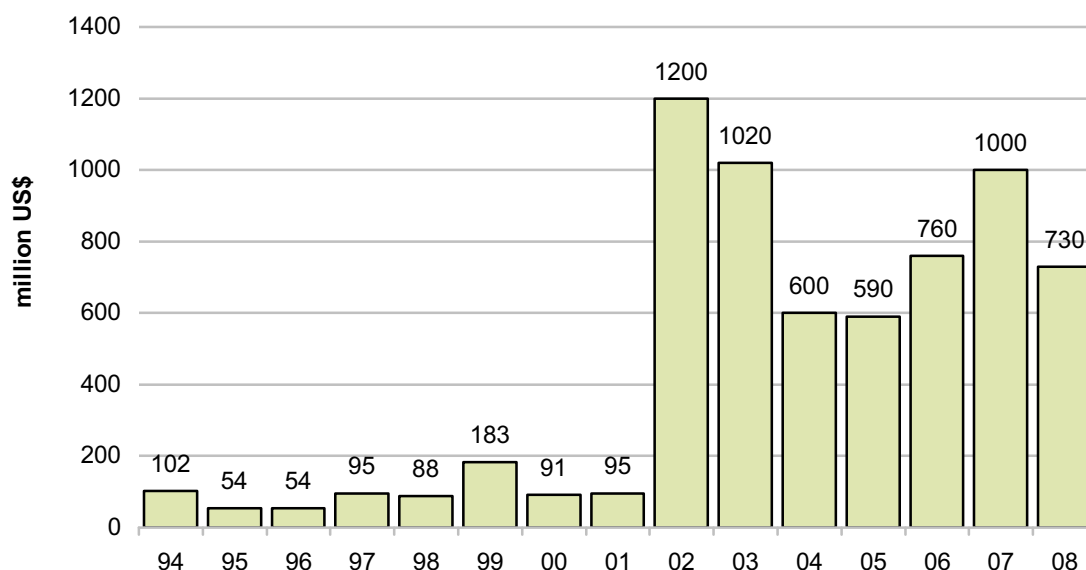
2.16 Estimated value of opium production and income of opium poppy-growing farmers

Based on opium production estimates and reported opium prices, the farmgate value of the harvest can be estimated at around US\$ 730 million. Farmers in the southern region accounted for close to 90% of the total income from opium production – the highest such concentration ever encountered in Afghanistan. Farmers in Hilmand, the largest opium producing province, earned around US\$ 507 million, equivalent to 70% of the total income for farmers in Afghanistan in 2008.

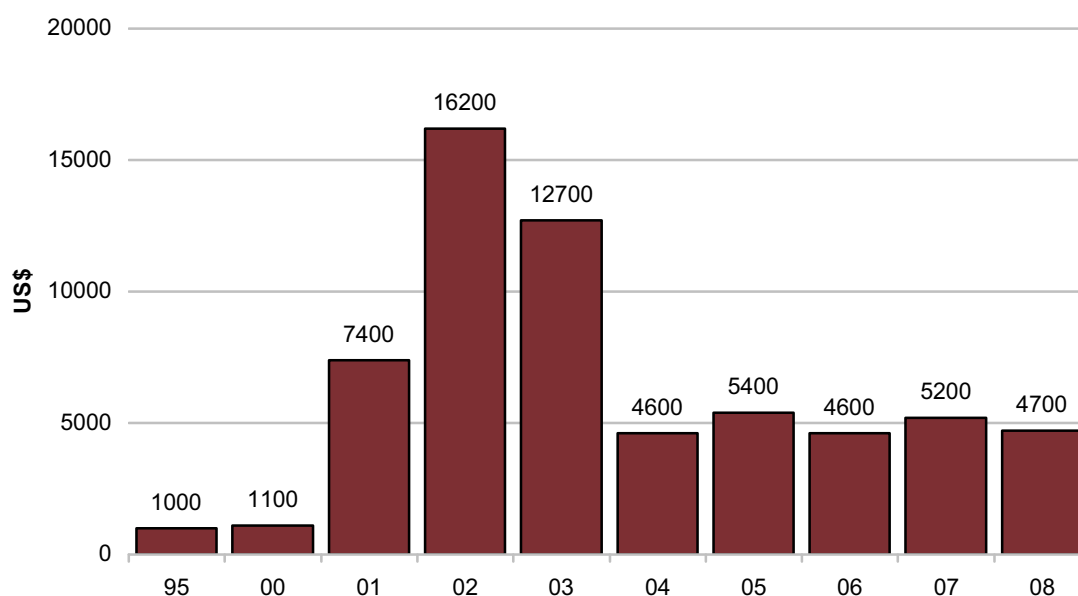
Table 54: Farmgate value of opium production in 2008

Region	Production of dry opium in metric tons	Price of dry opium per kg (\$)	Farmgate value (\$ millions)
Southern	6,917	94	650
Western	655	104	68
Eastern	45	117	5
Northern	42	72	3
Central	11	171	2
North-eastern	6	72	0.4
Total	7,676	95	729
Rounded total	7,700		730

Given the decline in opium production in combination with falling prices – a consequence of surplus production – the overall farmgate value of opium in 2008 was some 27% less than in 2007 (back to 2006 levels) though still higher than the income in 2004 or 2005. The total farmgate value of Afghanistan's opium production in 2008 was equivalent to 7% of Afghanistan's licit GDP.

Figure 56: Estimated value of opium production at farmgate level in Afghanistan, 1994-2008

Gross income from opium cultivation per hectare was around US\$ 4,700 (based on a yield of 48.8 kg of dry opium per ha and a price of around US\$ 95/kg of dry opium). The income from one hectare under opium cultivation was thus slightly less than in 2007 (US\$ 5,200), reflecting falling opium prices, and income was substantially less than in 2002 (US\$ 16,200) or 2003 (US\$ 12,700) when prices were much higher. On average, a family growing opium poppy cultivated 0.43 ha in 2008, which was more than a year earlier (0.38 ha), reflecting the fact that many small opium producers in eastern Afghanistan stopped producing opium in 2008.

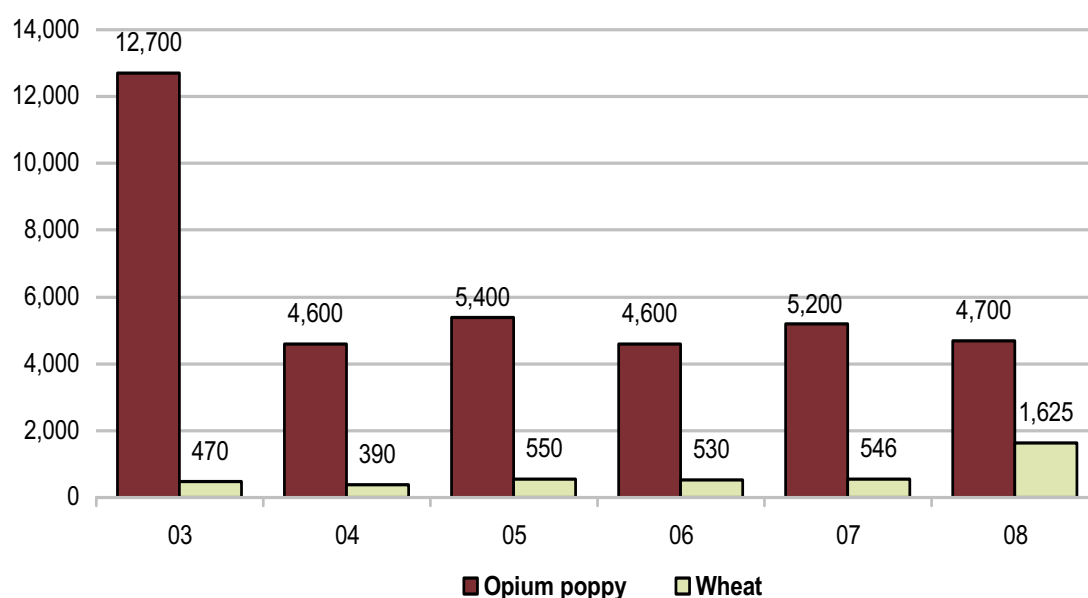
Figure 57: Gross income from opium cultivation per hectare, in US\$

The difference between the gross income per hectare of wheat as compared to that of opium per hectare declined substantially from a ratio of 9.5:1 in 2007 to a ratio of 3:1 in 2008, mainly due to rapidly rising wheat prices which tripled in 2008 as compared to a year earlier. This comparison is based on the gross income per hectare of poppy, which is today mainly grown on irrigated land, and the gross income per hectare of wheat cultivated on irrigated land. The change in the relative profitability of opium production becomes even more pronounced if the comparison is made with the situation a few years earlier. In 2003, farmers earned 27 times more in gross income per hectare of opium than per hectare of wheat.

In principle, such high wheat prices should help the authorities in convincing farmers to switch their cultivation from an illegal to a legal crop. In fact, the difference is far less when net income is considered. When asked as to the amount of funds that farmers have to spend on opium production, Afghan farmers (based on replies of some 500 farmers) reported that they spend, on average, some 39% of the retail value. The amounts were even higher according to information collected by UNODC's survey coordinators. They reported that opium farmers spend, on average, about 45% of the sales price on various opium production costs (seeds, ploughing, weeding, fertilizers, lancing & opium collection). Thus, out of an average gross income of \$4,700 per hectare they will actually only collect \$2,585 in net income. For comparison, wheat farmers have to reckon with production costs of around 20% of their sales value. Their average net income would be thus around \$1,300 per hectare. In other words, while the ratio of gross income per hectare for opium to wheat is 3 : 1 in favour of opium, this ratio declines for the net income to just 2 : 1. In addition, farmers have to pay in several provinces (notably in the South and South-West of the country) a tax of about 10% ('ushr') on the sale value of the opium. Their actual net income will be thus only US\$ 2,115 per hectare. Moreover, there have been also reports that some farmers bribed eradication teams, which would further reduce the ratio of opium versus wheat income.

However, the high wheat prices may also endanger the survival of farmers who do not have sufficient land and are thus forced to buy wheat from the market. Such farmers, notably if indebted, may be tempted to return to opium production in order to make ends meet.

Figure 58: Gross income per hectare of opium poppy/wheat, 2003-2008



Sources: UNODC/Food and Agriculture Organization (FAO)/World Food Programme (WFP).

The average gross income of opium poppy-growing households was US\$ 1,997 in 2008, about the same as a year earlier (US\$ 1,965). However, this number is only half as high as in 2003 (US\$ 3,864) when opium prices were substantially higher. Similarly, the average gross per capita income of members of opium poppy-growing families was US\$ 307, similar to the income of a year earlier but significantly lower than the average income level found in 2003 (US\$ 594). Taking opium production cost of around 45% into account, the net income of a poppy-growing farmer would have amounted to some \$1,100; taking the 10% ushr into consideration, the average net income would fall further to around \$900 per farmer. The average net per capita income of members of poppy growing farmers would thus amount to some \$170. Taking the 'ushr' into account, it would decline to some \$140.

One caveat is, however, needed. The average production cost for opium of around 45% of opium farmgate prices do not generally apply to small-scale farmers who typically cultivate 1 jerib (= 0.2 ha) or less in Afghanistan. They can make use of – de-facto – 'free labor' of their family members for ploughing and weeding the fields and for lancing and collecting the opium. The remaining

production cost for them (mainly seeds and fertilizers) have been close to 7% of the 2008 opium farm-gate price.

Gross opium-related income per opium poppy-growing farmer remained largely unchanged in 2008 despite falling opium prices. This is linked to the on average larger area under opium cultivation per farmer resulting from the cessation of production in many parts of eastern Afghanistan where landholdings are small, and the increasing concentration of opium production in southern Afghanistan where landholdings tend to be larger.

Table 55: Average family and per capita income of opium poppy-growing families from opium production, 2003-2008

	2003	2004	2005	2006	2007	2008
Gross income in US\$ millions	1,020	600	560	760	1,000	730
Estimated number of opium poppy farmers	264,000	356,000	309,000	448,000	509,000	366,500
Average income per opium poppy farmer	\$3,864	\$1,685	\$1,813	\$1,696	\$1,965	\$1,997
Rounded	\$3,900	\$1,700	\$1,800	\$1,700	\$2,000	\$2,000
Number of farmers and members of their families	1,716,000	2,314,000	2,008,500	2,912,000	3,308,500	2,380,000
Per capita income of opium poppy-growing families	\$594	\$259	\$279	\$261	\$302	\$307
Rounded	\$600	\$260	\$280	\$260	\$300	\$310

2.17 Potential value and income of the opiate sector to the Afghan economy

The calculation of the potential income from opium production for the Afghan economy is based on the value of opiate exports in the border areas of neighbouring countries. This approach is based on the observation that Afghan traffickers (far more than nationals of other countries) are heavily involved in shipping opiates across the borders to neighbouring countries, notably Iran and Pakistan, and to a lesser extent, countries in Central Asia. From there onwards, traffickers from neighbouring countries usually take over the drug shipments. Thus, the far larger funds generated in subsequent trafficking activities to Europe and various other overseas locations are not accrued by Afghanis or the Afghan economy. The financial gains made by criminal groups in Afghanistan only constitute a small proportion of the overall trafficking profits arising from Afghan opiates. The amounts are, however, still important if compared to the size of the Afghan economy.

The basic methodology for calculating the overall gross income from opium production for the Afghan economy was developed for the first time in UNODC's report *The Opium Economy in Afghanistan – An International Problem* (New York 2003) and was, with some amendments/improvements, repeated in subsequent years in the annual opium survey report. A number of variables have been taken into account to arrive at the estimates: production; extent and degree of involvement of Afghan traffickers in trafficking opiates abroad; proportion of the transformation of opium into heroin and morphine in Afghanistan; conversion rate of opium into heroin; number of identified laboratories in Afghanistan; information on drug trafficking flows within Afghanistan; and prices in the main export markets, among other things.

Despite ongoing attempts to improve the estimates by means of additional information-gathering activities, it should be stressed that the calculations of the money made from the Afghan opium economy remain far less robust than the estimates of the area under cultivation, yield, opium production or the income made by Afghan opium farmers. These estimates are intended to provide reasonable orders of magnitude of the likely amounts of money made from this illegal trade to neighbouring countries and to provide rough trends and patterns.

The calculation of the value of the Afghan opium economy is based on the size of opium production in Afghanistan, less domestic consumption and domestic seizures (expressed in opium equivalents), which gives the amount available for export. This amount is then distributed for opium, heroin and morphine exports based on information from key informants within Afghanistan and information obtained via the analysis of the opiate seizures made in countries neighbouring Afghanistan. A transformation ratio of opium to morphine and heroin provides an estimate for the export of morphine and heroin.

Table 56: Estimated opium and heroin and morphine exports in 2008

	Opium production (metric tons)	Opium exports (metric tons)	Heroin and morphine exports (metric tons)
Opium production in 2008 (not rounded)	7,676		
Less local consumption of opiates in opium equivalents	-156		
Less seizures (in opium equivalents)	-123		
Opiates available for export*	7,397		
Distribution		40%	60%
Opium required*		2,959	4,438
Conversion rate (opium to morphine/heroin)			7 : 1
End product exports* (rounded)		2,960	630

* Estimates do not take changes of stocks into account.

The next step is to establish the average export price for opium and morphine and heroin, calculated by weighting the different prices found in neighbouring countries using the distribution of export to the same countries. The opium exports are then multiplied with the average opium export price to arrive at an estimate for the value of opium exports (US\$ 1.4 billion in 2008). Similarly, heroin and morphine exports are multiplied by the average heroin and morphine export price to arrive at an estimate for the value of the total heroin and morphine exports (US\$ 1.6 billion in 2008). Detailed explanations of the calculations made are found in the methodology section of this report.

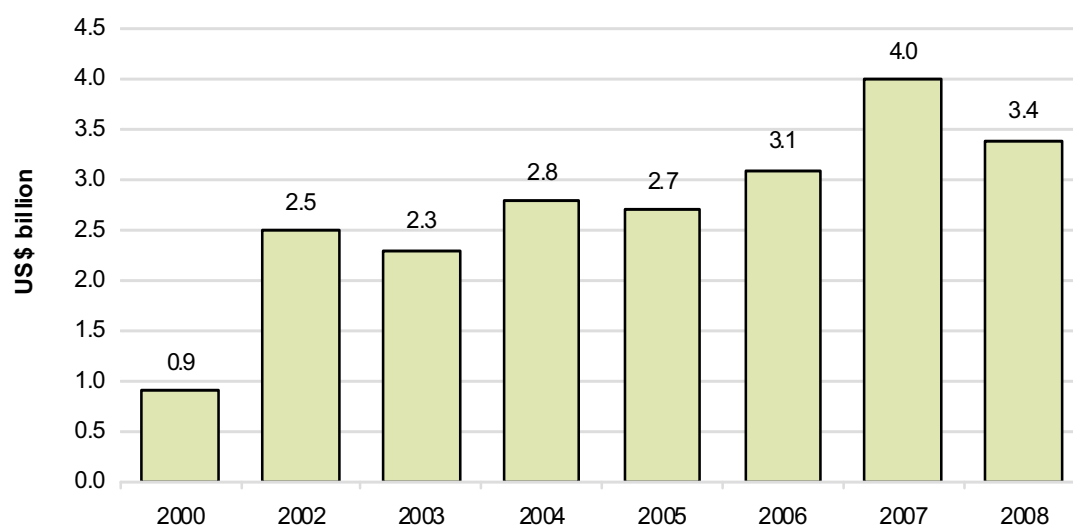
Table 57: Estimate of Afghan gross income from the opium sector in 2008

	Opium exports	Opium prices (wholesale per kg) in US\$	Opium export distribution		Heroin and morphine exports	Heroin prices (wholesale per kg) in US\$	Heroin and morphine export distribution		Total (billion US\$)
			Best estimate	Range			Best estimate	Range	
Total exports in tons*	2,960				630				
Iran		500.0	83.3%	71%-96%		3,271	39.0%	32%-44%	
Pakistan		210.0	6.8%	3%-11%		3,256	40.9%	28%-51%	
Central Asia		337.5	9.9%	1%-18%		3,150	19.2%	8%-25%	
China		870.0	0.01%	0%- 0.015%		10,000	0.7%	0%-2%	
India		670.0	0.004%	0%- 0.009%		6,100	0.2%	0%-0.6%	
Average export price		464.1				3,284			
Value* in billions US\$	1.37				2.07				3.44

* Estimates do not take changes of stocks into account.

Based on these calculations, the potential value of 2008's opium harvest for the Afghan economy (accruing to farmers, laboratory owners and Afghan traffickers) is estimated to amount to around US\$ 3.4 billion, down from US\$ 4 billion calculated for 2007. As compared to 2000 (US \$0.9 billion) – the year before the opium ban of 2001 – the overall opium-related income for the Afghan economy rose almost fourfold, reflecting higher export volumes as well as higher prices.

Figure 59: Potential income from opium production, 2000-2008 (gross income for farmers and Afghan traffickers)



Sources: The Opium Economy in Afghanistan, UNODC, Afghanistan opium surveys 2003, 2004, 2005, 2006, 2007 and 2008.

The decline in the potential value of the Afghan opium economy by some 15% in 2008 from a year earlier was stronger than the decline in opium production in 2008 (-6%). This reflects falling opium prices, likely due to the rise in Afghan opium production and exports in recent years.

UNODC calculations, based on information from key informants and from seizures in neighbouring countries over 2003-2007, suggest that about 60% of the opium is transformed into heroin and morphine in Afghanistan. The heroin and morphine are then mostly trafficked via Pakistan and Iran and, to a lesser extent, Central Asia (mainly Tajikistan and Turkmenistan) to markets in Europe, the Middle East, Africa, southern and south-eastern Asia and, in lesser amounts, to North America and the Oceania region. The rest (some 40%) is exported in the form of opium, which goes mainly to Iran (mostly for domestic production) and, to a lesser extent, other neighbouring countries (Central Asia and Pakistan). Direct exports of opiates to China (by land and air) and India (by air) have also been reported but do not play a significant role.

Afghan traffickers earned in gross terms some US\$ 1.4 billion from opium exports in 2008, down from US\$ 1.7 billion in 2007, though slightly up from US\$ 1.2 billion in 2006. In addition, they earned in gross terms some US\$ 2.1 billion from heroin and morphine exports, down from US\$ 2.3 billion in 2007. The total gross income from exporting opiates to neighbouring countries was estimated at US\$ 3.44 billion in 2008. Deducting the cost of the opium purchased from farmers (US\$ 0.73 billion) shows gross profits for Afghan traffickers of US\$ 2.7 billion in 2008, down 10% from US\$ 3 billion in 2007.

Nonetheless, drug traffickers remained the main beneficiaries of opium production in Afghanistan. About US\$ 2.7 billion or 79% of the total profit was reaped by traffickers (including laboratory owners), while Afghan farmers earned US\$ 0.73 billion or 21% of the total. Though overall income declined, the proportions remained roughly unchanged as compared to previous years.

In order to arrive at net profits, additional cost factors would have to be considered, including the cost of bribes; taxes to warlords and insurgency groups; labour costs to convert opium into morphine and heroin, for smuggling the opiates across the border, etc.; transport costs, including the cost of protecting shipments; and the cost of laboratory equipment and precursor chemicals,

which reportedly increased substantially in 2008. This would suggest that, *ceteris paribus*, the net profits of Afghan traffickers may have declined by slightly more than 10% in 2008.

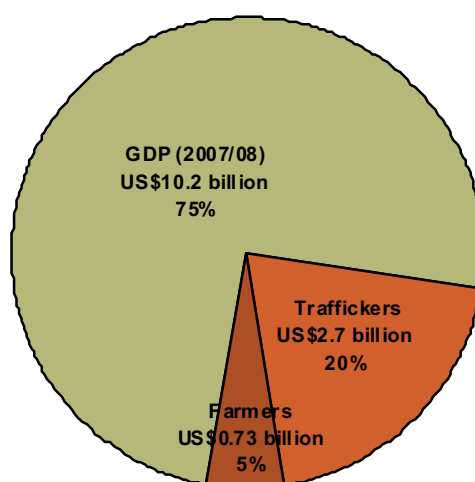
The average export price of opium obtained by Afghan traffickers in the border regions with neighbouring countries was calculated at around US\$ 464/kg in 2008, down from US\$ 525/kg in 2007, US\$ 633/kg in 2006 and US\$ 890/kg in 2005. This decline seems to reflect the strong rise of opium exports in recent years, which increasingly exceed demand. Potential Afghan opium exports rose from 1,170 tons in 2005 to 2,960 tons in 2008, an increase of 153%.

The decline in opium prices (-12% as compared to 2007 and -48% as compared to 2005) was more pronounced than the decline in heroin prices (-3% as compared to 2007 and -15% as compared to 2005). The average export price of heroin in the border regions of neighbouring countries fell from US\$ 3,860 per kg in 2005 to US\$ 3,394 in 2007 and US\$ 3,284 in 2008. A possible explanation for the stronger decline in opium prices might be the strong efforts made to dismantle heroin laboratories and to improve international precursor control. These efforts led to the first signs of shortages in precursor availability, reflected in strong price increases for these substances. In other words, the higher cost of precursor chemicals and the larger risk premium for heroin production in Afghanistan may have been responsible for the greater decline in the price of opium than in heroin in recent years.

At the same time, UNODC estimates suggest that the heroin production and export problem has not been solved. Afghan heroin and morphine exports are estimated to have risen from 420 tons in 2005 to 666 tons in 2007 before declining slightly to 630 tons in 2008. This pattern was similar to estimates of opium exports, which rose from 1,170 tons in 2005 to 3,320 tons in 2007 before declining to 2,960 tons in 2008.

Despite falling export prices, the total value-added to Afghanistan's opium sector is estimated to have risen from US\$ 2.7 billion in 2005 to US\$ 4 billion in 2007 before falling to US\$ 3.4 billion in 2008. A significant proportion of the gross income of the Afghan opiate industry – notably of traffickers' gross income (US\$2.7 billion in 2008) – is thought to land in the hands of warlords, organized criminal groups and, to some extent, the insurgency. All of these groups have the potential to corrupt and destabilize the country. With their coffers filled with narco-money and income from previous years, they have already proven successful, as reflected in high levels of corruption and falling levels of security in the main opium, morphine and heroin producing parts of the country. The total estimated amount of traffickers' gross income (US\$ 2.7 billion) was equivalent to 26% of Afghanistan's licit economy (US\$ 10.2 billion) or around 20% of the total Afghan economy including the illicit sector. The income of traffickers and farmers from the opium sector, taken together, is equivalent to around 25% of Afghanistan's total GDP (including the opium sector).

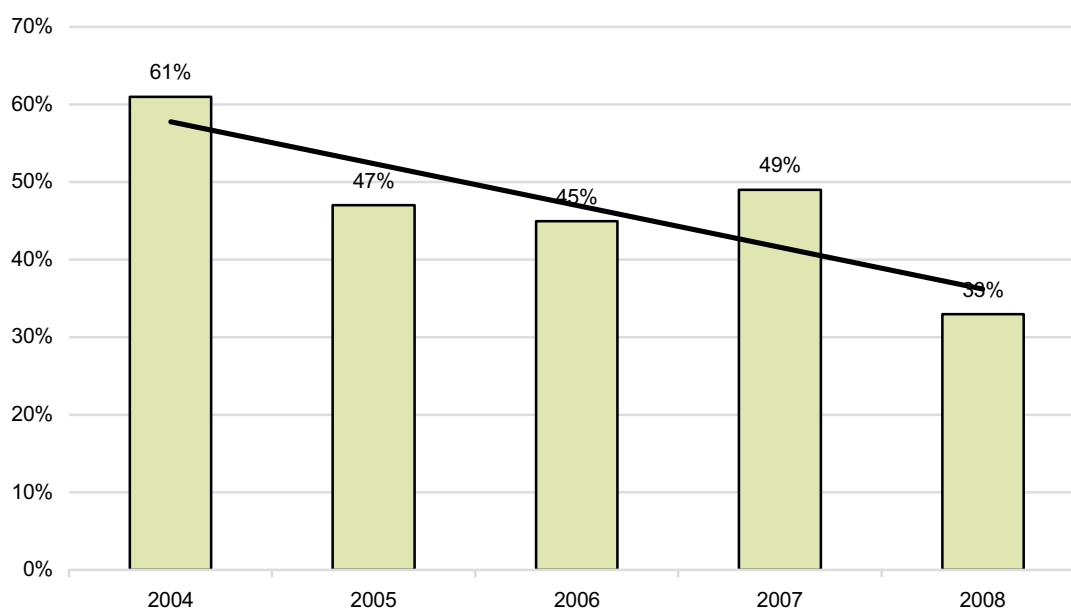
Figure 60: Licit economy and opiate industry in Afghanistan in 2008



Sources: Afghanistan Central Statistical Office (CSO) and UNODC, Afghanistan Opium Survey 2008.

The value-added of the opium sector for Afghanistan in 2008 (US\$ 3.4 billion) was equivalent to 33% of licit GDP (US\$ 10.2 billion according to preliminary estimates by the Afghanistan Central Statistical Office for the Afghan year 1386, i.e. April 2007 to March 2008), down from 49% a year earlier (based on a revised GDP figure of US\$8.2 bn for the Afghan year 1385) and 61% of licit GDP in 2004. Thus, data indicate that the importance of the opium sector – though extremely high by international standards – is now lower than it was a few years ago. In other words, the Afghan economy, due to significant external assistance by the international community and some recovery from more than two decades of war, among other things, has been growing faster than the opium sector.

Figure 61: The Afghan opiate industry compared with official licit economy, 2004-2008 (as a percentage of licit GDP based on CSO)*



* Comparisons with official GDP data reported (e.g. for 2008: GDP over the March 2007-March 2008 period).

Sources: Afghanistan Central Statistical Office (CSO) and UNODC / Ministry of Counter Narcotics, Afghanistan Opium Surveys 2008 and previous years.

3 METHODOLOGY

This chapter covers various methodological aspects, such as estimations of the extent of opium cultivation, opium yield production, opium prices and eradication verification. It also covers socio-economic aspects, such as the number of families involved in opium cultivation, reasons for cultivation/non-cultivation of opium poppy and the income from opium earned by farmers and traffickers. The survey methodology was based on a sampling approach that combined the use of satellite imagery and extensive field visits. The methodology used in the survey on opium eradication verification is also described in this chapter.

As part of capacity-building activities within MCN in 2008, Afghan nationals (UNODC and MCN staff) were trained in the visual interpretation of satellite data, and opium poppy fields were identified by visual interpretation using IKONOS data of one meter resolution.

3.1 Opium cultivation

A remote sensing approach has been used by UNODC since 2002 to monitor the extent of opium cultivation in the main opium poppy-growing areas of Afghanistan. Satellite imagery supported by good ground reference information offers a reliable, efficient and unbiased tool for the estimation of opium cultivation and minimizes the security problems faced by surveyors in the field.

In 2008, high-resolution satellite images were acquired for 118 sample locations covering 21 provinces. All locations were covered at two different growth stages of opium poppy: at the flowering or capsule stage and after the lancing of opium poppy capsules. These images covered 7% of all agricultural land (453,000 ha) in the 21 provinces. A similar number of images were collected in 2007 for 24 provinces, covering 11% of agricultural land. In 2006, 210 images collected at 105 locations were processed to provide coverage of 19 provinces, covering 16% of agricultural land. In 2005, 190 images collected at 79 sample locations were processed to provide coverage of 15 provinces, covering 214,000 ha of agricultural land. Only 112 images were collected in 2004 at 56 sample locations to provide coverage of 10 provinces, covering 131,000 ha of agricultural land.

Satellite data was the sole data source used to estimate the area under opium poppy in 21 provinces in 2008. In the remaining 13 provinces, opium cultivation was estimated on the basis of assessments by surveyors of the extent of cultivation in sampled villages. In these 13 provinces, opium cultivation was either negligible or they were poppy-free.

Establishment of the sampling frame for satellite image selection

The sampling frame was established by extracting the area of land potentially available for opium cultivation in 21 provinces. Arable land was delineated from Landsat-7 images taken in 2002 and 2003 and was subsequently updated in 2006 and 2007 using Landsat-7 ETM images. In 2006 and 2007, an agricultural map of Afghanistan was prepared using visual interpretation of Landsat-7 ETM data. This provided recent statistics of land under cultivation. The arable land in the sampling frame covers irrigated and rainfed areas. The total area of arable land in the 21 provinces was 62,218 km², which is equivalent to 81% of all potential agricultural land in Afghanistan. The potential land is referred to as the land that is available for cultivation and includes land that is currently fallow.

Opium fields were identified by interpreting high-resolution (10x10 km) IKONOS images. Locations for these images were randomly selected from a 10x10 km grid that was overlaid on the map of arable land. Cells containing less than 1% of arable land were removed in order to cover the maximum area of arable land with a minimum number of cells. The final sampling frame consisted of 1,894 cells in 21 provinces. Optimization of the sampling frame reduces the probability of selecting a cell containing marginal areas of arable land, which ensures optimal use of the high-resolution satellite images.

Sample selection

For each selected cell, IKONOS images were acquired for the pre-harvest and the post-harvest periods, which facilitated discrimination of opium poppy from other crops. Given the available

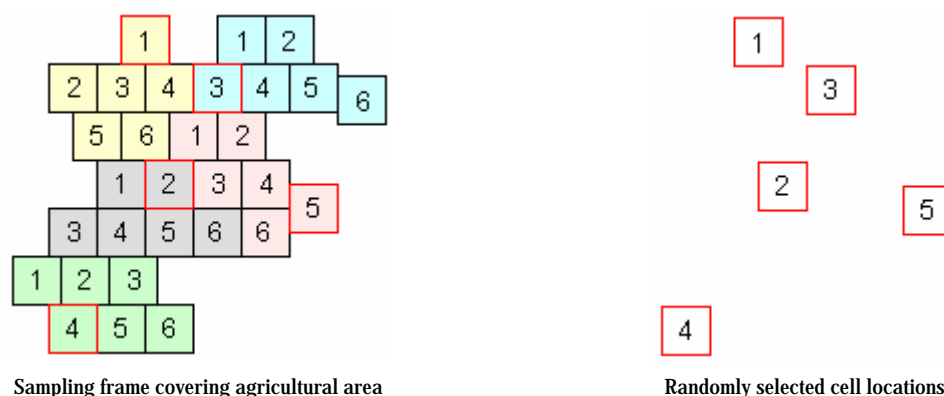
budget, the total number of IKONOS images was limited to cover 118 locations (228 multi-spectral images) distributed over 21 provinces.

Table 58: Agricultural land sampled, by province

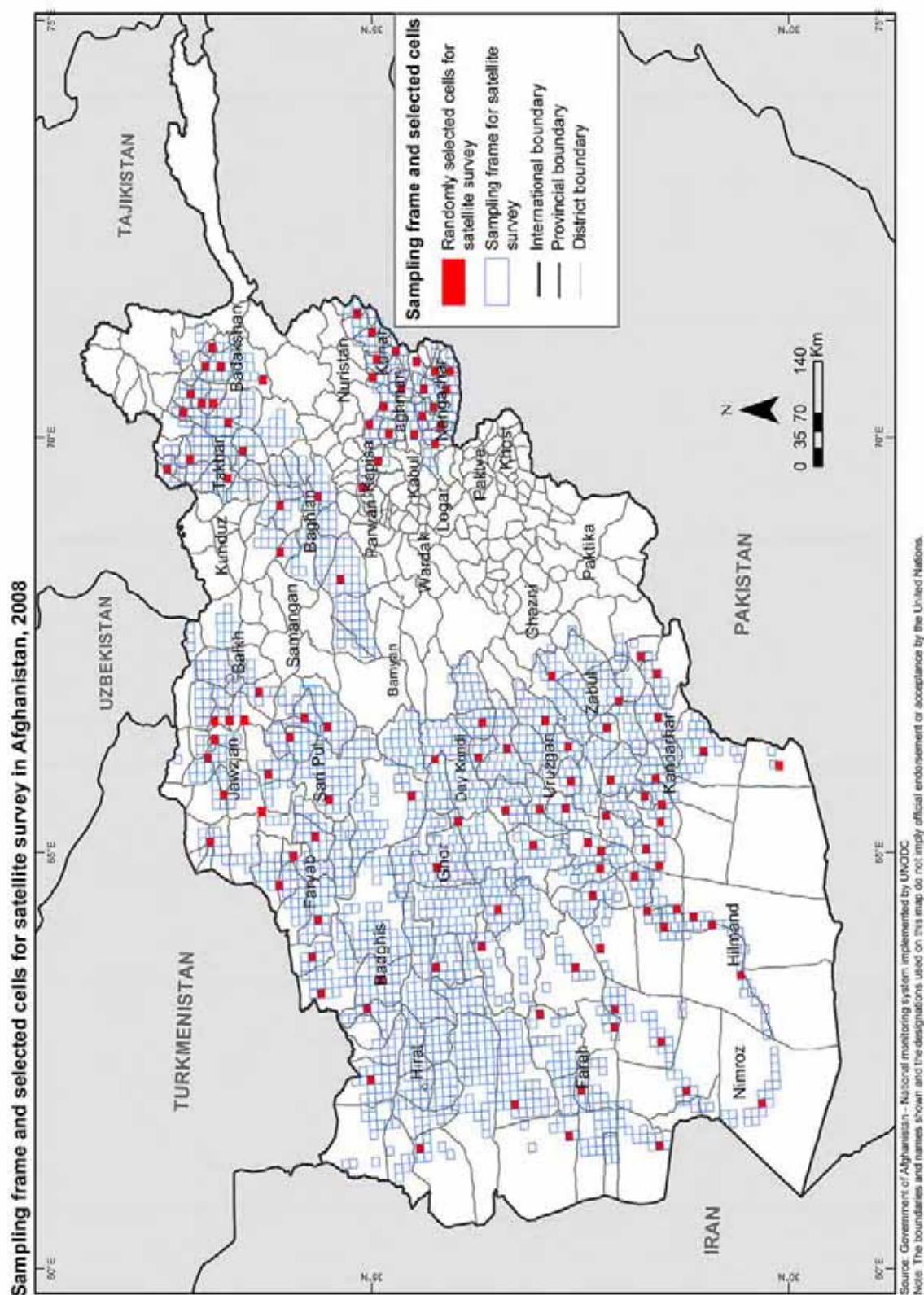
Province	Total arable land (km ²)	Total	Selected	% of selected cells over total cells	Arable land in selected cells	Sample size (% of arable land in selected cells)
		# cells	# cells		(km ²)	
Badakhshan	4341	52	9	17%	504	12%
Badghis	5643	106	4	4%	281	5%
Baghlan	2801	110	4	4%	115	4%
Balkh	6357	70	5	7%	309	5%
Day Kundi	871	56	5	9%	57	7%
Farah	1362	132	6	5%	121	9%
Faryab	8069	108	5	5%	441	5%
Ghor	1199	184	6	3%	45	4%
Hilmand	3164	115	13	11%	517	16%
Hirat	6409	223	3	1%	171	3%
Jawzjan	2951	43	4	9%	199	7%
Kandahar	2989	121	12	10%	400	13%
Kapisa	304	8	2	25%	60	20%
Kunar	304	28	5	18%	57	19%
Laghman	230	23	4	17%	25	11%
Nangarhar	1236	53	10	19%	312	25%
Nimroz	660	55	4	7%	121	18%
Saripul	5337	70	4	6%	296	6%
Takhar	5979	74	4	5%	287	5%
Uruzgan	634	181	5	3%	83	13%
Zabul	1377	82	4	5%	128	9%
Total	62,217	1,894	118	6%	4,530	7%

To ensure adequate geographical distribution of the sample throughout the provinces, the cells were grouped in clusters. The number of clusters was equivalent to the number of images to be selected for the sample in each province. Consequently, one cell was randomly selected from each cluster. For example, to select five cells, 30 cells from a province were grouped in five clusters, each containing six cells (Figure 62 left). From each cluster, one cell was randomly selected (Figure 62 right).

Figure 62: Cell selection



Finally, 118 cells were selected for the sample, representing a sampling ratio of 7% of the total area of arable land in the 21 provinces.



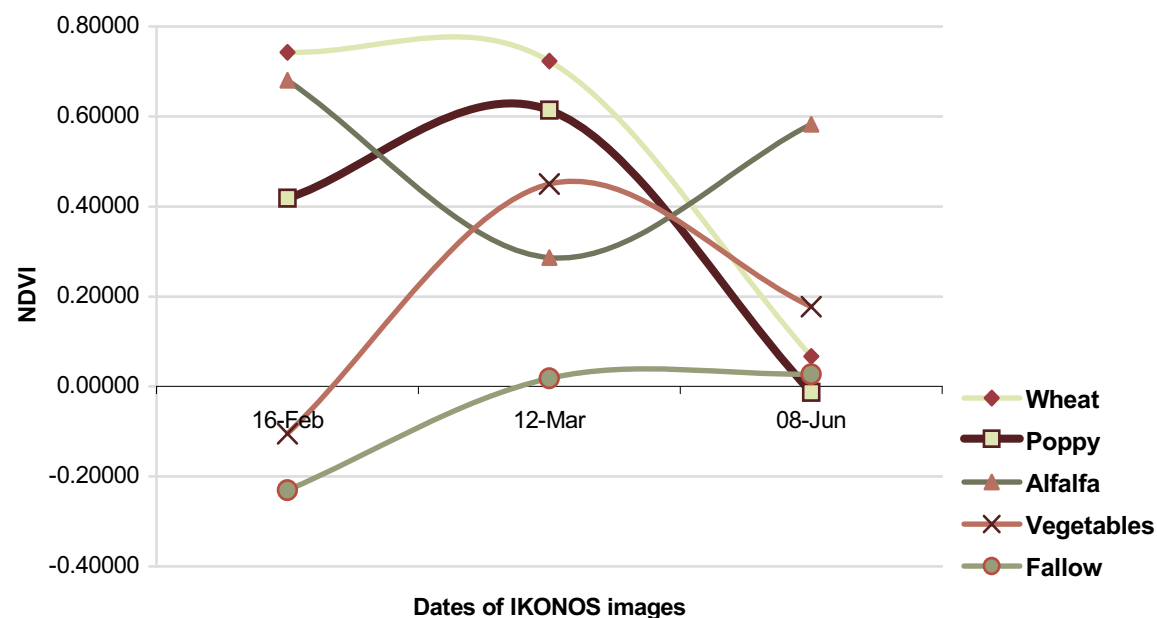
Satellite image acquisition

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, namely the pre-harvest (capsule) 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. This is useful in 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 the 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 these 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. This is why two-dated images – pre-harvest and post-harvest – are collected for the same location.

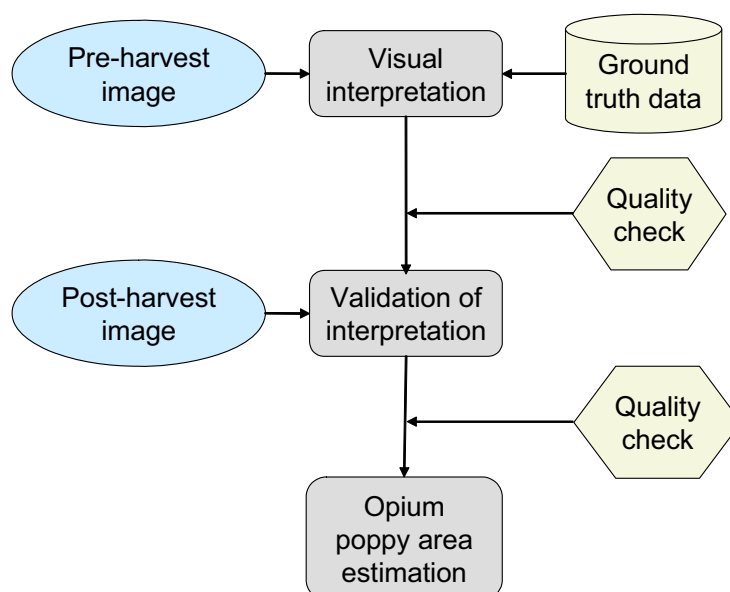
Figure 63: Spectral reflectance of opium poppy and other crops



The figure above illustrates the growth cycles of opium poppy, wheat and clover from February to June, with the help of ground photographs. It can be seen 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 below (field photographs of opium poppy, wheat and clover on different dates).

Figure 64: Illustrations of opium poppy, wheat and clover growth cycles

		
February 21, Poppy, Emergent Stage	February 21, Wheat, Emergent Stage	February 21, Clover, Emergent Stage
		
March 13, Poppy, Cabbage Stage	March 13, Wheat, Cabbage Stage	March 13, Clover, Cabbage Stage
		
April 7, Poppy, Steam Elongation	April 7, Wheat, Steam Elongation	April 7, Clover, Steam Elongation
		
April 19, Poppy, Flowering Stage	April 19, Wheat, Flowering Stage	April 19, Clover, Flowering Stage
		
May 5, Poppy, Lancing Stage	May 5, Wheat, Maturity Stage	May 5, Clover, Maturity Stage
		
May 21, Poppy, Lancing completed	May 21, Wheat, Senescing	May 21, Clover, Senescing
		
June 06, Poppy Field ploughed	June 06, Wheat Harvest Completed	June 06, Clover, Harvested

Figure 65: Image classification methodology for estimating opium cultivation area

Interpretation of opium cultivation from satellite images

First-dated images were acquired during the flowering or capsule stage and second-dated images after the opium poppy harvest. For example, wheat appears mostly in bright red on the first image (full coverage with vegetation appears in red; bare soil in grey/green), while opium poppy fields show pale red. While 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.

In previous years (2002 to 2005), digital classification was used to identify opium poppy using 4 m multispectral IKONOS data. The first- and second-dated images were classified separately using a maximum likelihood algorithm. Opium poppy fields were interpreted using a logical classification technique based on the classified first-dated and second-dated images.

Digital classification of images requires the skills of an analyst with comprehensive expertise in digital satellite image processing. In order to build the remote sensing analysis capacity of the Ministry of Counter-Narcotics, it was decided to opt for the visual interpretation method. The visual interpretation method is easier to learn than image classification as it requires less technical skills and experience. On the other hand, visual interpretation requires more time and more manpower.

Since 2007, the visual interpretation technique has been used to delineate opium poppy fields by interpreting IKONOS images covering a 10x10 km area. Ortho-rectified IKONOS images of 1 m resolution (PAN-sharpened) were used for this purpose. Opium poppy was initially identified using first-dated IKONOS 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. Poppy field boundaries were delineated by an on-screen digitization method.

The technical details of visual interpretation are provided below.

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 (e.g. Hilmand and Kandahar) and in cases where images were obtained during the flowering and lancing stages of opium poppy.

False-colour combination (infrared, 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.

Ground reference information

Ground reference data were collected from selected locations covering an area of 250x250 m within the extent of 118 satellite images. These locations are referred to as 'segments'. In areas where segment maps were unavailable, ground reference data was collected in locations marked by GPS (point data).

Three to four segments were randomly selected in the agricultural area in each of the 118 image locations. The surveyors visited these segments to collect detailed information for each agricultural field. This work was carried out by eight teams comprised of 56 surveyors trained by UNODC. Most of the surveyors trained and assigned to the segment survey already had the relevant experience from surveys conducted in previous years. Information collected during the segment survey included crop type, plant height, GPS coordinates and photographs.

Due to security constraints, only 286 of the planned 302 segments could be surveyed. Segment survey could not be carried out in parts of the southern and south-western regions. Each survey team was equipped with an orientation map to help locate segments within each satellite image, a detailed segment map showing individual land parcels and a manual containing instructions for ground data collection.

Table 59: Total number of segments surveyed

Province	Number of segments	
	Selected	Surveyed
Badakhshan	25	25
Badghis	8	8
Baghlan	16	16
Balkh	12	12
Day Kundi	8	8
Farah	12	12
Faryab	20	20
Ghor	24	22
Hilmand	12	10
Hirat	12	12
Jawzjan	12	12
Kandahar	16	15
Kapisa	4	0
Kunar	16	16
Laghman	12	12
Nangarhar	37	37
Nimroz	12	8
Sari Pul	12	11
Uruzgan	12	12
Takhar	16	16
Zabul	4	2
Total	302	286

Segment maps and GPS point data were superimposed over the satellite images to facilitate visual interpretation.

Ground data is not always sufficient to identify the signature of opium poppy since segments may not necessarily contain opium poppy fields. In such cases, opium poppy was identified on the basis of the analysts' experience and subsequently confirmed using the second-dated satellite images.

The superimposition of GPS point data also posed difficulties, because the images of mountainous terrain were not perfectly ortho-rectified. This limits the use of GPS data as ground reference information, particularly in mountainous areas.

Quality control

A strict quality control mechanism was adopted. The interpretation carried out by each analyst was checked by two other experts. Both first-dated and second-dated images were cross-checked.

All fields determined as likely to be under opium cultivation (potential opium poppy fields) were delineated on the basis of interpretation of first-dated satellite imagery. These polygons were overlaid on the second-dated images for the purpose of confirmation. Each of the potential opium poppy fields identified using first-dated satellite data was validated with the help of second-dated satellite data. The corrections involved a few commissions and omissions.

Area estimation based on satellite imagery

Ratio estimation formulae were used to estimate the extent of opium cultivation at the provincial level using Equations 1 and 2.

Equation 1: Estimation of opium cultivation within each cell

$$\bar{p} = \sum x / X$$

where

\bar{p} = Average proportion of opium cultivation in province

x = Total opium poppy area in each cell

X = Total agricultural area in cell

In order to estimate the total area under opium cultivation in the province, Equation 2 was used.

Equation 2: Estimation of total opium cultivation

$$\hat{X} = \bar{p}N_A$$

where

\hat{X} = Total opium poppy area in province

N_A = Total agricultural area (sampling frame) in province

The results for provinces with more than five selected cells were refined using the bootstrap method with 10,000 iterations. The main reason for using this method was to calculate the standard error of the estimator. Since the sample items are of varying size (the total area of agricultural land varying from cell to cell), it is not appropriate to calculate standard error using simple random formulae. The bootstrap technique does not have a significant effect on the estimation of the mean. In provinces with fewer than five cells, the smaller sample size ruled out the possibility of using the bootstrapping method. For these provinces, the simple random sampling formulae were applied.

Bootstrapping with 10,000 iterations found a 90% probability that the area under opium cultivation (estimated from satellite imagery) was between 130,000 ha and 190,000 ha, with a mean estimate of 157,000 ha. It should be noted that the upper and lower estimates do not lie symmetrically around the mean estimate obtained for these 24 provinces because of the use of the

bootstrap method. The mean estimate for the 24 provinces where a satellite survey was conducted represented 100% of the total area under opium cultivation in 2007.

Accuracy assessment

Ground reference information (segment maps and GPS data) was used to assess the accuracy of visual interpretation of high-resolution satellite data to delineate opium poppy fields. The producer's accuracy indicates that 89% of the fields identified as opium poppy by the analysts were actually found to be opium poppy on the ground, whereas user's accuracy indicates 95% of the areas identified as opium poppy on the ground were correctly classified as opium poppy using satellite images. The overall accuracy of interpretation of satellite data was 99%.

Table 60: Accuracy of analysis of satellite data interpretation (no. of fields)

		Image interpretation		Total	Producer's accuracy
		Poppy	Other crops		
Ground Reference	Poppy	251	31	282	89%
	Other crops	12	3,266	3,278	100%
	Total	263	3,297	3,560	
	User's accuracy	95%	99%		
Overall accuracy					99%

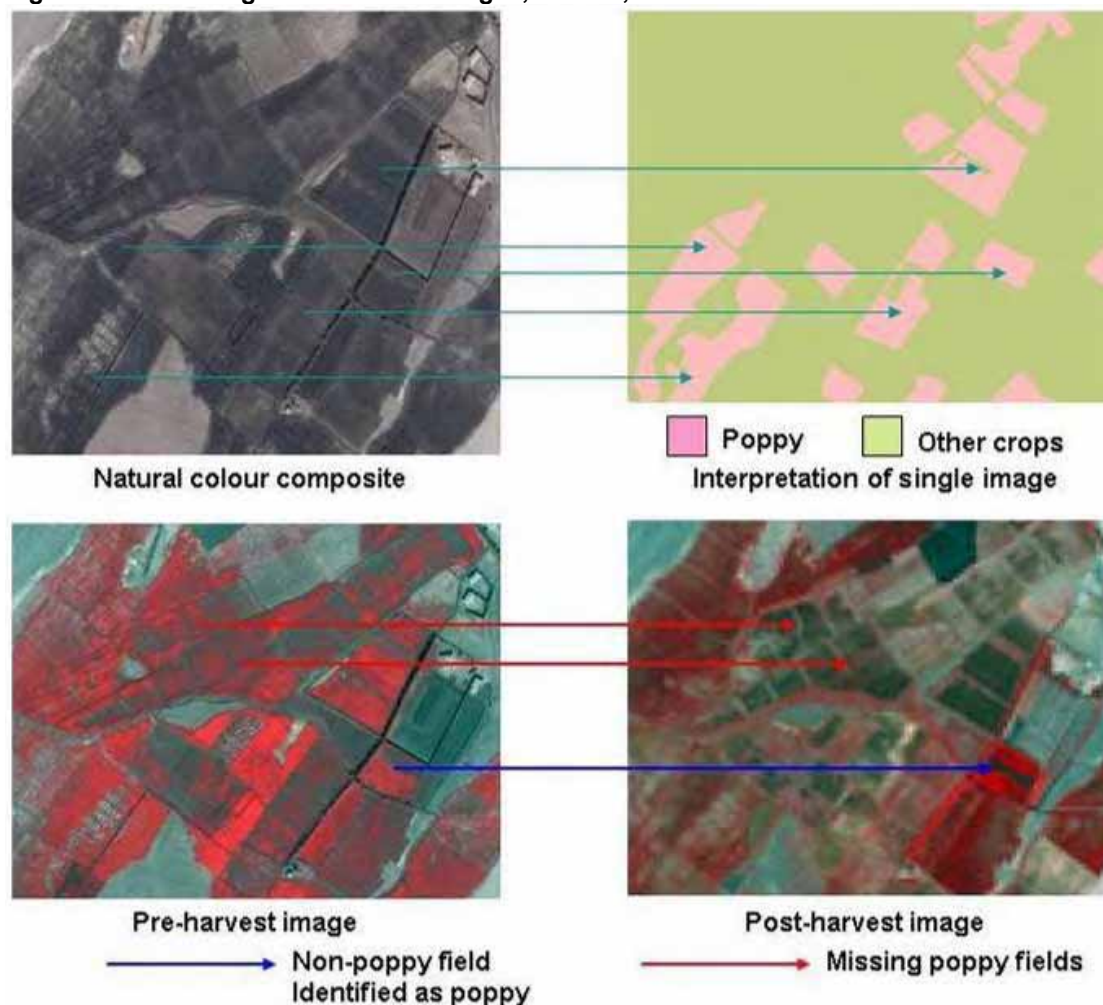
Segment data collection, Kandahar



Advantage of two-dated images

Visual interpretation of single-dated very high resolution images was an easy task in Hilmand, Kandahar and Nangarhar provinces. This was attributed to larger field sizes and timely acquisition of the images. Interpretation of images in Farah, Nimroz and Badghis was more difficult, since the spectral signatures of opium poppy were not as clear as in Hilmand, Kandahar and Nangarhar. 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.

Figure 66: Advantage of two-dated images, Nimroz, 2008



3.2 Village survey methodology

Village survey activities (such as training, deployment and data collection) were carried out from March to June 2008 by 134 local field surveyors across all provinces. These activities were supervised jointly by MCN and UNODC. The surveyors were selected on the basis of their experience in opium poppy surveys, knowledge of local customs and their acceptance by local communities. Security was generally problematic for the surveyors, but selection of the surveyors from their respective regions helped to reduce security risks.

Sampling framework

The surveyors conducted structured interviews with the headmen of selected villages in each district. A total of 1,529 villages in 357 districts were surveyed across all provinces.

Opium cultivation is most successful at altitudes below 1,500 m, where it is significantly more widespread than in areas of higher elevation; opium cultivation above 2,500 m is comparatively rare. In view of the uneven distribution of opium cultivation at different elevations, a stratified sampling method was used to select the sample villages. The villages in the sampling frame were divided into three groups (strata) according to their elevation:

Group 1: Villages located at an elevation of less than 1,500 m.

Group 2: Villages located at elevations between 1,500 m and 2,500 m.

Group 3: Villages located at an elevation of more than 2,500 m.

Villages were selected from each group using a systematic random selection technique. In 2008, the sampling frame for the village survey data was comprised of a complete list of all villages in Afghanistan. The village database used to establish the sampling frame was obtained from the Afghanistan Information Management System (AIMS) and consisted of 31,230 villages. The total sampling ratio was 4.9%. The design and size of the sample facilitate the establishment of cultivation trends; the sample is not designed for calculating quantitative areas or production estimates. In addition to the sample villages, the surveyors, using their knowledge of the local situation, visited other areas in the province to complement their assessment of opium cultivation trends and the security situation throughout the province.

Table 61: Village survey strata

Strata	Elevation (meter)	Total no. of villages	No. of villages selected	% villages selected	No. of villages surveyed	% villages surveyed
Group 1	<=1,500	10,559	667	6.32%	655	6.20%
Group 2	1,500-2,500	11,812	606	5.13%	593	5.02%
Group 3	>=2,500	8,859	264	2.98%	281	3.17%
		31,230	1537	4.92%	1,529	4.90%

Most of those provinces in which opium cultivation was estimated on the basis of the sample village survey were found to be poppy-free (either no cultivation or cultivation below 100 ha) in 2008. Village survey data was useful primarily in understanding the socio-economic aspects of opium cultivation.

The following data were collected for all villages surveyed:

- Extent of opium poppy and wheat cultivation
- Total number of families/inhabitants living in the village
- Total number of families growing opium poppy
- Farmer estimates of wheat and opium yield
- Wheat and opium prices
- Financial status of farmers
- Reasons for cultivation/non-cultivation of opium poppy

The surveyors conducted structured interviews with 3,050 farmers and 1,529 headmen (two farmers – one opium poppy-growing and one non-opium poppy-growing – and the headman of each selected village in each district). For the 13 provinces not covered by satellite imagery, opium cultivation estimates were calculated on the basis of ground survey findings.

Surveyor training

Until 2007, all surveyors were provided with village survey training in Kabul. In order to prepare for the 2008 village survey and as part of a capacity-building exercise for national staff, regional survey coordinators and their assistants were trained in Kabul over a four-day period. They, in turn, trained surveyors in their respective regions. The extension of survey training sessions to the regional level is one of the milestones reached in building national capacity to conduct opium poppy surveys.

During the training period, a total of 134 surveyors and nine survey coordinators were trained in the use of the survey form and techniques by local UNODC staff in all regions.

Surveyor training began in March 2008 and was conducted by the national staff of UNODC. MCN also participated in all training sessions. The training included practical (use of GPS, area calculation, etc.) and theoretical aspects (interviewing and dialogue with village headmen and farmers).

Data collection

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

Surveyors were trained in techniques for approaching local community members and conducting interviews. Following intensive theoretical and practical training, they were deployed to the field, where they interviewed headmen of villages and conducted other survey-related activities. UNODC and MCN coordinators closely monitored data quality and the progress of the survey. Fortunately, the surveyors did not encounter any security problems.

Debriefing

At the end, surveyors were debriefed by survey coordinators, reporting on their findings in the areas they had visited and providing an assessment, inter alia, of various factors thought to influence opium cultivation, including the security situation; pressure from the government concerning survey reports; difficulties encountered in conducting the survey; the level of control exercised by governors over their respective provinces; the presence of anti-government elements; corruption; and the levels of cannabis cultivation. Debriefing facilitates a greater understanding of opium cultivation, the socio-political and other factors that determine cultivation trends and provides useful guidance in analysing survey data.

Area estimation formulae for village surveys

Stratified random sampling formulae were used to calculate opium cultivation based on the village surveys in the 10 provinces where no satellite images were acquired.

\bar{x}_s = Provincial average of the surveyors' estimations of opium cultivation per village in strata 's'

N_s = Total number of villages per strata ('s') in each province

$X = \sum_s N_s * \bar{x}_s$ = Total area of opium cultivation

As the area of agricultural land varies from one village to another, these results were also refined by bootstrapping the provincial samples (with 10,000 iterations). The bootstrap method also provided for the standard error of the estimates.

Only one province out of 13 surveyed using the village survey had opium cultivation.

3.3 Opium yield and production

In the past, calculation of opium yield in Afghanistan relied on interviews with farmers usually conducted prior to the harvest. The data thus reflected primarily the farmers' 'expected' opium yield rather than the actual opium yield, which was still unknown at the time of the survey. Data were also subject to the bias of the farmers.

Since 2000, UNODC has been developing an alternative objective yield assessment approach based on the measured volume of opium capsules and cultivation density³⁶. The relationship between capsule volume per square metre and dry opium yield was originally developed from data collected in Pakistan and Thailand. It takes the form of a non-rectangular hyperbola:

Non-rectangular hyperbola formula for predicting opium yield:

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

where

Y = Dry opium gum yield (kg/ha)

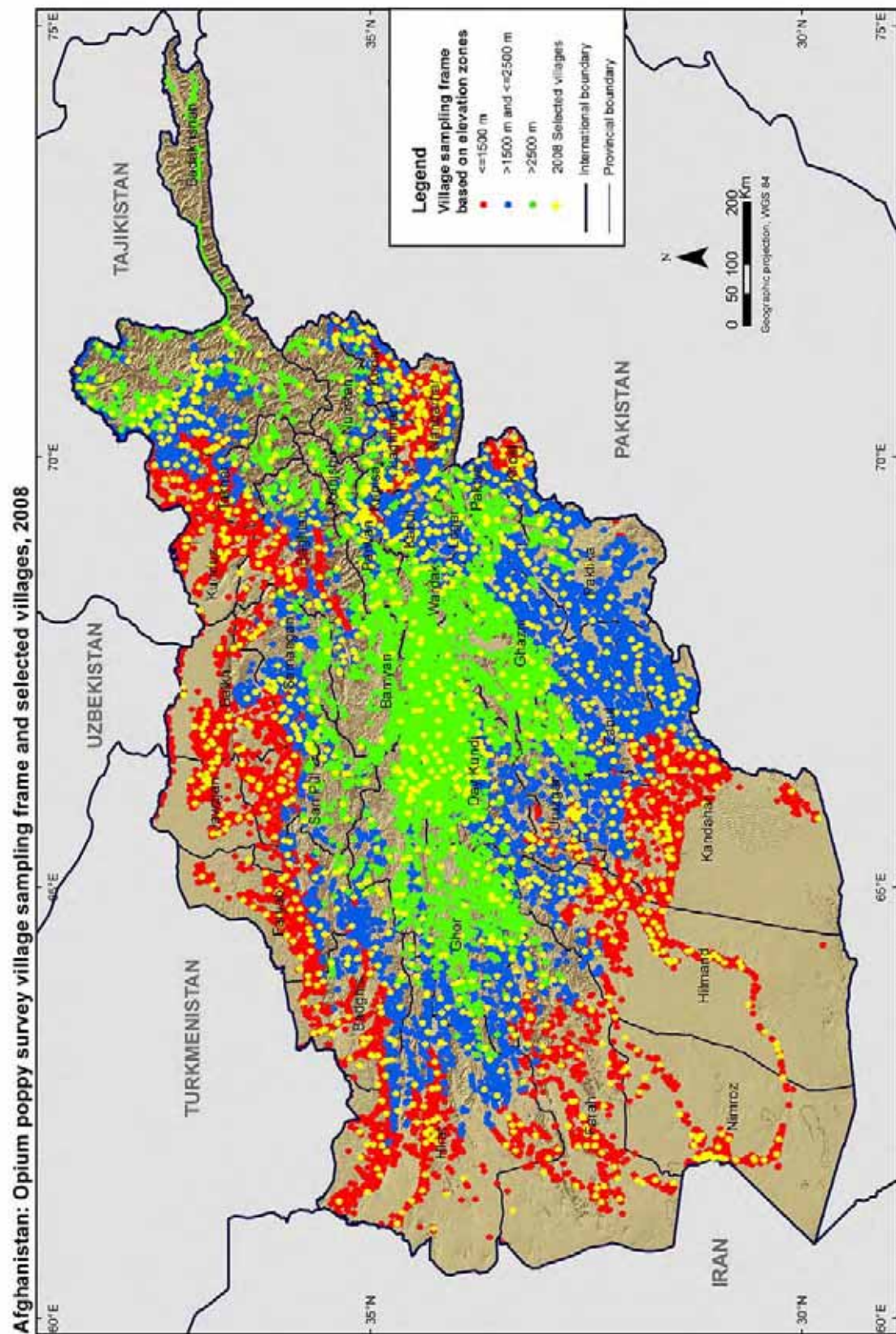
VC = Mature capsule volume (cm³/m²)

Data collection

In 2008, capsule measurements were collected from 569 fields (531 in 2007) in 198 villages (185 in 2007) randomly selected throughout the country. A total of 17,541 capsules (17,420 in 2007) from 1,707 plots were measured. The work was carried out by 45 surveyors.

For the yield survey, the procedure established in the UNODC "Guidelines for Yield Assessment" was followed. An imaginary transect was drawn, along which three one-metre square plots were selected. From 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. With these data, the capsule volume per square metre was calculated and entered into a non-rectangular formula for the yield calculation. Each plot thus provided one yield observation. The simple average of the observations gave the regional yield estimate.

³⁶ UNODC Guidelines for yield assessment of opium gum and coca leaf from brief field visits", UN New York, 2001, ST/NAR/33.



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



Yield survey training, 2008

3.4 Opium prices

In the 2008 village survey, 3,050 farmers in 1,529 villages were interviewed to provide data on prices for fresh and dry opium. The average regional prices for dry opium were used to estimate the total value of opium produced in Afghanistan in 2007.

Since November 2002, UNODC has maintained a regular opium price monitoring system whereby prices of fresh and dry opium are collected from farmers and traders on a monthly basis in Nangarhar, Hilmand and Kandahar. Price collection was extended to Hirat, Balkh and Badakhshan provinces in May 2005 and to Faryab, Kunduz, Takhar, Laghman, Kunar, Farah and Ghor in January 2006. Since June 2007, prices also have been collected in Nimroz province, bringing to 14 the total number of provinces where prices are collected. Some 180-200 farmers and 170-190 local traders are interviewed each month to provide this information.

3.5 Eradication verification methodology

Verification of eradication led by provincial governors (GLE)

Detailed methodology of governor-led eradication verification is given in Annex 1. In 2008, UNODC/MCN improved the field based verification activities by enhancing the control mechanism. The areas verified by the eradication verifiers were randomly checked by the verification inspectors for validation of the reported figures. Regional Verification Coordinators were appointed to coordinate verification activities and impose quality checks on the eradication verification activities. A total of 131 eradication verifiers, 27 verification inspectors and five verification coordinators were trained on 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. Verifiers reported to the Office of Provincial Governors beginning 1 December 2007.

Verification methodology for GLE:

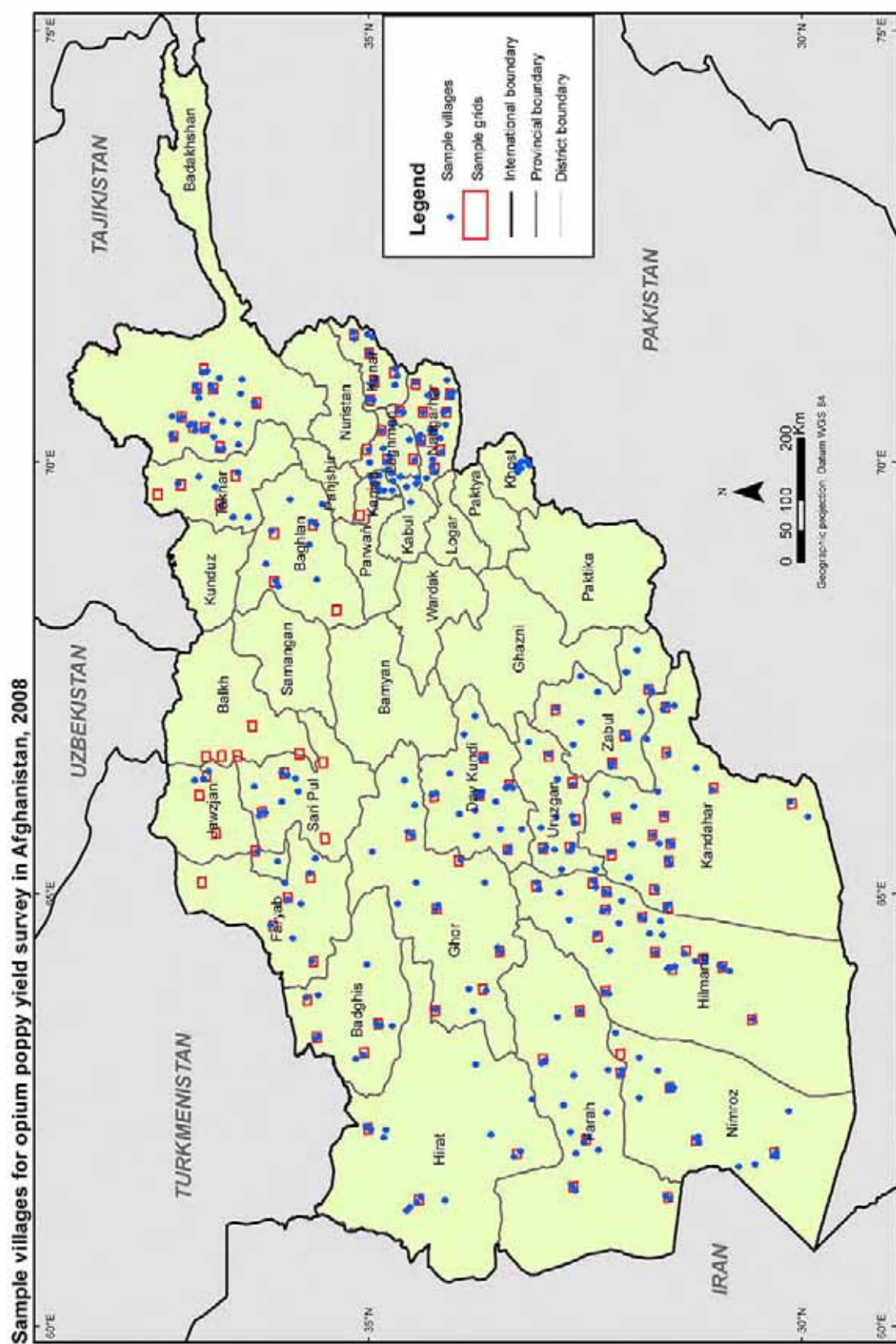
- Eradication verifiers were part of the governor-led eradication teams.
- The verifiers took measurements of each eradicated field, collected its GPS coordinates and took photographs.

- The verifiers drew sketch maps of each field as a reference for area calculations done at a later stage in the Kabul office.
- The verification reporting officers in Kabul obtained the provisional data from the verifiers through 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 and regional verification coordinators at the regional level. Eradicated fields were revisited randomly by verification inspectors 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.
- MCN/UNODC published periodical reports 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.
- The updated area figure for each province was reported in the periodical reports, often on weekly basis.

Verification of eradication led by Poppy Eradication Force (PEF)

Thirteen eradication verifiers were trained by UNODC/MCN to work with PEF international verifiers, who verified eradication using GPS data.

- PEF international verifiers used all terrain vehicles (ATVs) along eradicated field boundaries and digitized the shape of eradicated poppy field. Verifiers took photographs before and after eradication.
- UNODC/MCN verifiers accompanied PEF international verifiers to observe the eradication and verification done by PEF verifiers. They also carried out field measurements by the manual technique used in the governor-led eradication verification.
- The report prepared by the PEF international verifiers was integrated into the observations by UNODC/MCN verifiers and sent to MCN/UNODC-Kabul for further analysis.
- Further validation of the results will be done using data obtained through helicopter flights, as well as from satellite imagery, to calculate the final area of eradicated poppy fields.



3.6 Opium poppy-growing families

In order to estimate the number of families involved in opium cultivation in Afghanistan, data were collected during the village survey on the number of families growing opium poppy in the sampled villages.

The following stratified simple random sampling formulae were used to derive the number of opium poppy-growing families in Afghanistan:

\bar{x}_s = Average number of opium poppy-growing farmers per village in the sample in strata 's'

N_s = Total number of villages in the sampling frame in strata 's'

$X = \sum N_s * \bar{x}_s$ = Total number of families growing opium poppy

As the sampled villages did not have a similar population size, the results were refined with a bootstrap of 10,000 iterations, providing an estimate for the mean and for the standard error. The total number of opium poppy-growing households was estimated at 509,000 (range: 437,000-653,000).

3.7 Value of opium production at farm-gate level

Based on the area under cultivation (A) (157,000 ha), the yield (Y) (48.8 kg per ha of dry opium) and opium price (P) (US\$95, weighted by production), the farm-gate value of the opium harvest was estimated ($A \times P \times Y$) at around 730 million US dollars. This figure is equivalent to the potential gross income of farmers from opium production. It does not take into account the costs to farmers of hiring labour, using fertilizers, accepting a lower income as a result of selling the harvest in advance (salaam arrangements), paying taxes to local commanders or bribing officials not to eradicate the opium poppy harvest. The 90% confidence interval of the estimate is from US\$600 to US\$890 million.

Table 62: Farm-gate value of opium production in 2008

Region	Production of dry opium, in metric tons	Price of dry opium per kg (\$)	Farm-gate value (\$ millions)
Southern	6,917	94	650
Western	655	104	68
Eastern	45	117	5
Northern	42	72	3
Central	11	171	2
North-eastern	6	72	0.4
Total	7,676	95	729
Rounded total	7,700		730
90% Confidence interval	6,330-9,308	93.46 – 96.02	601 – 885
Confidence interval rounded	6,300-9,300	93 - 96	600 – 890

In order to estimate the confidence interval of the farm-gate value, the confidence intervals of all parameters (area under cultivation, yield, prices) were calculated separately.

The combination of the 'uncertainties' (u) of the different variables, was based on the following formula³⁷:

³⁷ EURACHEM/CITAC, Guide CG4, 'Quantifying Uncertainty in Analytical Measurements' 2nd Edition, 2000, UK/Switzerland; http://www.measurementuncertainty.org/mu/guide/index.html?content_frame=/mu/guide/stepcalculating.html

$$u(y(x_1, x_2, \dots)) = \sqrt{\sum_{i=1, n} c_i^2 u(x_i)^2}$$

where $y(x_1, x_2, \dots)$ is a function of several parameters x_1, x_2, \dots (here: area, yield, price), and c_i is a sensitivity coefficient evaluated as $c_i = \partial y / \partial x_i$, the partial differential of y with respect to x_i . For simple products ($y = p \times q \times r \dots$) and an independence of the variables used (i.e. the yield per ha is not a function of the area under cultivation or the price paid to farmers), the formula could be simplified as follows:

$$u_c(y) = y \cdot \sqrt{\left(\frac{u(p)}{\bar{p}}\right)^2 + \left(\frac{u(q)}{\bar{q}}\right)^2 + \dots}$$

where $(u(p) / \bar{p})$ etc. are the uncertainties in the parameters, expressed as relative standard deviations. In order to arrive at the combined confidence interval of the farm-gate value, the calculated standard deviations are then multiplied with the appropriate z-value.

Given the fact that the confidence intervals for the individual parameters have already been calculated, a further simplification is possible. Instead of using the 'standard deviation' as a percentage of the mean of the respective parameters as inputs for the calculation of the formula shown above, before multiplying the final results with the respective z-values, the 'differences between the mean value and the upper and lower limits of the confidence interval', expressed as a proportion of the mean value of the parameter, can be used as input for the calculation of the overall confidence interval.

Following these considerations, the calculation was done as follows:

- a) Calculation of individual minimum and maximum values:

The results, based on 90% confidence intervals (using the bootstrap method), showed the following results:

	Average	Minimum	Maximum
A = Area under cultivation (ha)	157,000	130,000	190,000
Y = Yield (kg/ha)	48.8	47.1	50.4
P = Dry opium farm-gate price (\$/kg)	95	93.46	96.02

- b) Calculation of the distance between the minimum (maximum) limit and the mean of the confidence interval, expressed as a proportion of the mean value of the respective parameter

	Minimum	Maximum
	$\frac{\text{Min}(X) - \text{Avg}(X)}{\text{Avg}(X)}$	$\frac{\text{Max}(X) - \text{Avg}(X)}{\text{Avg}(X)}$
A = Area under cultivation (ha)	-17.20%	+21.02%
Y = Yield (kg/ha)	-3.42%	+3.20%
P = Dry opium farm-gate price (\$/kg)	-1.62%	+1.07%

c) Calculation of the lower limit of the overall confidence interval:

$$\sqrt{\sum_{X = A, Y, P} \left(\frac{\text{Min}(X) - \text{Avg}(X)}{\text{Avg}(X)} \right)^2}$$

$$= (17.2\%^2 + 3.42\%^2 + 1.62\%^2)^{(1/2)} = -17.61\%$$

d) Calculation of the lower upper limit of the overall confidence interval:

$$\sqrt{\sum_{X = A, Y, P} \left(\frac{\text{Max}(X) - \text{Avg}(X)}{\text{Avg}(X)} \right)^2}$$

$$= (21.02\%^2 + 3.20\%^2 + 1.07\%^2)^{(1/2)} = +21.29\%$$

The 90% confidence interval for the farm-gate value of the 2007 harvest in Afghanistan is thus:

$$\begin{aligned} & \$730 \text{ mio} \times (1-17.61\%) \text{ to } \$730 \times (1+21.29\%) = \\ & = \$601 \text{ million to } \$885 \text{ million} \end{aligned}$$

or rounded: **\$600 million to \$890 million**

3.8 Value of Afghan Opiates in Neighbouring Countries

Opiates are usually trafficked by Afghan traders to neighbouring countries. In general, Afghan traffickers are involved in shipping the opiates across the borders. From there onwards, traffickers from neighbouring countries take over the consignments. The value of the opium production (partly transformed into morphine/heroin) in the border areas of the neighbouring countries with Afghanistan is thus considered to be a good proxy for the overall gross income made by Afghan citizens from the opium sector.³⁸ Apart from some refinements, the overall approach taken to calculate such an income has remained largely unchanged as compared to previous years in order to guarantee direct comparability of the results.

The calculation has followed the following steps:

- establishment of an appropriate conversion ratio of opium into heroin;
- establishment of a distribution pattern of opium production between (i) opium destined for exports and (ii) opium destined for transformation into heroin & morphine;
- establishment of a distribution pattern of (i) opium exports and of (ii) heroin & morphine exports;
- analysis of opium prices as well as of heroin & morphine prices in neighbouring countries in border regions with Afghanistan;
- calculation of a weighted export opium price and a weighted morphine/heroin price of the border regions in neighbouring countries with Afghanistan based on and the distribution pattern and identified opium and morphine/heroin prices across the Afghan borders.

³⁸ There are, of course, also traders from neighbouring countries (notably from Pakistan, Iran and Tajikistan) purchasing opiates in Afghanistan and smuggling them across the border. Similarly, some Afghan traffickers are involved in shipping the opiates from Afghanistan to the main transshipment markets, located further inland in neighbouring countries. These effects are considered to offset each other.

- multiplying opium export volumes with export prices of opium to arrive at the value of opium exports and (ii) multiplying heroin & morphine export volumes with heroin and morphine export prices to arrive at the value of heroin and morphine exports.

The calculation – for the time being – has not considered the impact of building up opium stocks (or producing heroin out of previously accumulated stocks). The issue of changes in opium stock did not play a major role when the calculation model was first developed in 2003. As long as previously accumulated stocks of opium are being used to produce morphine and heroin and similar amounts of new opium stocks are subsequently being made, the net results will not be influenced in a significant way. In the meantime, however, there are indications that changes in stocks may have become important and could have a measurable impact on the final results. This seems to have been the case for the last two years. Given indications of a significant built-up of opium stocks in Afghanistan in 2007 and, to a lesser extent in 2008, the calculated gross income figures for these two years could be potentially inflated – more so the gross income figures for 2007 (estimated at US\$4 bn), less so the figures for 2008 (US\$3.4 bn). The problem is that, so far, UNODC (or any other organisation) does not have any solid basis for estimating year on year changes in the stocks of opium and of morphine & heroin. UNODC started asking key informants on the availability of opium stocks this year. This means, if repeated next year, that first estimates on changes in opium stocks could be available as of next year.

Conversion of opium into heroin

The first question relates to the amounts of opium needed to produce 1 kg of heroin. Traditionally a 10:1 rule of thumb ratio was used (10 kg of opium for 1 kg of heroin). Previous research showed that such a transformation ratio was correct for many opium producing countries, notably for countries of South-East Asia which until the early 1990s used to dominate global heroin production. Afghanistan, however, was shown to be different.

The analysis of price data collected in Afghanistan suggested that farmers and traffickers would lose money in many parts of the country if they had to transform opium into morphine and heroin at a 10:1 ratio, thus raising doubts as to the appropriateness of this 10:1 transformation ratio for Afghanistan.³⁹

There were also indications that the morphine content of opium produced in Afghanistan was higher than in other parts of the world. Dating back to the late 1950s, the analysis of an opium sample showed already a morphine content of almost 17%. Authorities in the Kyrgyz Republic reported that the morphine content of opium trafficked through their country (in general, originating in Afghanistan) ranged from 14% to 22%, with a typical morphine content of 18% (ARQ, 2001).⁴⁰ Over the 2000-2003 period, UNODC collected opium samples across Afghanistan, dried them and analyzed the morphine content of these samples. Overall 39 opium samples from 29 test fields across Afghanistan were collected. The morphine content of dry opium in these samples ranged from 8% to 24%. The highest morphine yields over the 2000-2003 period were found in Badakshan (on average slightly more than 16%). The average morphine content of fields in Nangarhar was above 15%. The average morphine content in Hilmand was above 12%. The average morphine content from the 39 samples in Afghanistan was 15% (confidence interval: 13.7%-16.3%).⁴¹

³⁹ UNODC, *The Opium Economy in Afghanistan – An International Problem*, New York 2003.

⁴⁰ UNODC, *Limited Opium Yield Assessment Surveys*, Technical report: Observations and findings, December 2003.

⁴¹ UNODC, *Limited Opium Yield Assessment Surveys*, Technical Report: Observations and Findings, December 2003.

Table 63: Average morphine content of opium in Afghanistan (2000-2003)*

Province	Average morphine content
Badakhshan	16.2%
Nangarhar	15.3%
Hilmand	12.4%
Others (Kandahar, Balkh)	11.2%
Unweighted average	15.0%
Confidence interval ($\alpha=0.05$)	13.7%–16.3%

* Information based on the analysis of 39 opium samples from 28 fields.

Source: UNODC, Limited Opium Yield Assessment Surveys, Technical report: Observations and Findings, December 2003.

A subsequent study on the morphine content over the 2000-2005 period - with most samples taken over the 2004-2005 period (72%), basically confirmed the initial results. The morphine content of the samples ranged from 5.1% to 24.8%. The study, based on the analysis of 78 dry opium samples, also confirmed that the highest levels of morphine content were to be found in north-eastern Afghanistan (17.4%), followed by locations in eastern Afghanistan (close to 15%). Below average levels were encountered in northern and in southern Afghanistan. The lowest levels of morphine were found in the western parts of the country (marginally less than 10%). The average morphine content of dry opium, identified through the analysis of the samples taken across Afghanistan, amounted to 14.4% over the 2000-2005 period⁴². The morphine content was thus very similar to the average of 15% found in the initial study (2000-2003).⁴³

All of these results suggested that in Afghanistan, on average, only 6 to 7 kg of dry opium would be needed to produce 1 kg of heroin.⁴⁴

Such a ratio was also in line with 'recipes' for morphine/heroin manufacture, made available to UNODC which suggested that the typical inputs needed for the production of 1 kg of morphine / brown heroin were typically between 6 and 7 kg of opium, in addition to a number of chemicals.⁴⁵ The question remained, however, how representative had been such 'recipes', quoted in the literature,⁴⁶ and how reasonable were estimates on the laboratory efficiency in Afghanistan.

⁴² Barbara Remberg, Anna Freni Sterrantino, Robert Artner, Christoph Janitsch, Liselotte Krenn, "Science in Drug Control: A Study of the Alkaloid Content of Afghan Opium" (Draft), September 2007,

⁴³ UNODC, Limited Opium Yield Assessment Surveys, Technical report: Observations and Findings, December 2003.

⁴⁴ This refers to heroin at 100% purity. In practice, laboratory efficiencies of typically 60%-70% would, of course, require the input of more opium to produce pure heroin. Heroin produced in Afghanistan, however, is not 100% pure; purity levels usually range from 40%-85%, typically slightly above 60%. This results again in a 6:1 or 7:1 conversion ratio of dry opium to heroin. (UNODC, The Opium Economy in Afghanistan, An International Problem, New York 2003, p. 133).

⁴⁵ UNODC, The Opium Economy in Afghanistan – An International Problem, New York 2003, p. 135.

⁴⁶ This is a difficult question as only few such recipes are available and have been described in detail. One recipe, dating back to 2001/02, suggested that a typical ratio was 7 kg of opium for 1 kg of morphine base in Afghanistan. According to this recipe, 28 kg of opium, 6 kg of calcium carbonate and 3 kg of ammonium chloride are needed to produce 4 kg of morphine base in another conversion process, calcium oxide (lime) is used instead of calcium carbonate). In order to produce white morphine base, needed for the production of white heroin HCL, some further processing has to take place. For the production of 2.2 kg of white morphine base, 4 kg of dry (brown) morphine base were found to be required, in addition to 3 ½ litres of methanol, 5 litres of sulphuric acid, 0.5 litres of ammonium hydroxide and 3 cups of charcoal. (DEA, Heroin Laboratories in Afghanistan, April 2002, p. 40).

In a more recent attempt to establish a better understanding of the heroin manufacturing process, the German authorities, in cooperation with the Counter Narcotics Police of Afghanistan, hired two cooks to produce white heroin for the authorities in 2004. Out of 70 kg of raw opium, the two cooks produced 7.8 kg of morphine base (purity 68%) and, out of this, 3.9 kg of white heroin HCL (purity of 74%). Other substances used in the process included 8 kg of acetic anhydride, 20 kg of ammonium-chloride, 20 kg of sodium-carbonate, 1.5 l of concentrated hydrochloride acid, 1 litre of concentrated ammonia solution, 0.15 l of acetone, and 6 kg of charcoal (Bundeskriminalamt, Dokumentation einer authentischen Heroinherstellung in Afghanistan, 2004, pp. 28-30). The morphine content of the raw opium used (previously seized by the authorities, and defined by the cooks of being of 'poor quality') had a morphine content of, on average, 8.5% (range: 6.1% – 11.1%), less than the average morphine content found in UNODC opium samples across the country (average of 15%). Readjusting the production to a hypothetical sample of 15% morphine content it can be assumed that only 40 kg of opium (of 15% morphine content) would have been needed to produce the 7.8 kg of morphine base (equivalent to a 5:1 ratio) or 3.9 kg of white heroin HCL (equivalent to a 10:1 ratio). Given the dominance of 'brown heroin' instead of 'white heroin' in Afghanistan's heroin production, it can be assumed

Against this background, surveyors in the 2005 survey were explicitly asked to find out from their informants the amounts of dry opium typically needed to produce 1 kilogram of morphine / brown heroin. Given the highly sensitive nature of heroin production in Afghanistan, and the ongoing dismantling of such laboratories, no formal questionnaire was developed in order not to raise unnecessary suspicions and endanger the security of the surveyors. A majority of the surveyors were not in a position to gather such information, possibly indicating an ongoing lack of heroin production know-how in several parts of the country at the time, as well as the sensitive nature of such a question. Most of the surveyors operating in the main heroin producing areas, however, succeeded to obtain such information and typically quoted transformation ratios around 7 kg of dry opium for the manufacture of 1 kg of morphine / brown heroin in the debriefing sessions.⁴⁷ Thus previously obtained information from recipes as well as information concerning the morphine content were confirmed. This conversion rate was subsequently also adopted as UNODC's general transformation ratio for dry opium to morphine/heroin in Afghanistan for 2005 and subsequent years.

There have been also some contradicting information received in 2006⁴⁸ as well as in 2008⁴⁹. One recent UNODC (ICMP) report on opium processing in the eastern zone of Afghanistan (Oct. 2008),⁵⁰ however, sheds some light on to the reasons for conflicting reports as to the amounts of opium needed to produce heroin. The report revealed that in eastern Afghanistan – in addition to opium as such - five different types of more or less processed opiates are typically found on the market:

- (i) 'Khata heroin' (opium mud)
- (ii) 'Bist heroin'
- (iii) 'Chara heroin'
- (iv) 'Battan heroin'
- (v) 'White injection heroin'

'Khata heroin' is the cheapest, least quality product. It is used only by poor addicts of Afghanistan and Pakistan. It is a waste product obtained in the heroin production process. In fact,

that the overall transformation ratio of opium to heroin should fall within a 5:1 to 10:1 range, probably closer to the lower limit (i.e. 6:1 or 7:1).

⁴⁷ This transformation ratio refers to quantities of 'heroin product' for which the purity, however, was not determined.

⁴⁸ Reports suggest that for the production of white heroin, more opium would be needed - often cited: 15 kg – 20 kg of opium for 1 kg of white heroin; such figures were also quoted in some newspaper articles in Iran in 2006. Similarly, the German Bundeskriminalamt found that out of 70 kg of raw opium 3.9 kg of white heroin HCL were obtained (2004), equivalent to a ratio of 17.9 kg of opium for 1 kg of white heroin HCL. (U. Zerell, B. Ahrens and P. Gerz (Federal Criminal Police Office, Wiesbaden, Germany), "Documentation of a heroin manufacturing process in Afghanistan", in Bulletin on Narcotic Drugs, 2005 Volume LVII, No. 1 & 2, Vienna 2007. http://www.unodc.org/pdf/research/Bulletin07/bulletin_on_narcotics_2007_Zerell.pdf) However, the bulk of heroin produced and exported from Afghanistan is still brown heroin.

⁴⁹ A new (internal) UNODC study was conducted among 194 key informants (of which 156 key informants actually provided quantitative information) in 20 provinces across Afghanistan in 2008. This study suggested that the average amount of opium needed to produce one kilogram of morphine/heroin may have increased from, on average, 7 kilograms in 2005 (the time of the previous UNODC study among key informants was conducted) to 8.88 kilograms in 2008 (range: 7.0 – 14.5 kg). Such an increase could have had to do with (i) the spread of laboratories across Afghanistan and thus a decline in average laboratory efficiency, and/or with (ii) the concentration of dense opium poppy cultivation on irrigated land in southern Afghanistan; this had a positive impact on overall opium yields per hectare but may have impacted negatively on the average morphine content of the opium produced in Afghanistan, possibly leading to an increase in the amounts of opium needed to produce morphine/heroin. The results differed strongly across regions, from an average ratio of 7:1 reported from western Afghanistan to 8.3 : 1 in north-eastern Afghanistan, 9.6 : 1 in southern Afghanistan and 11.8 : 1 in eastern Afghanistan. The unweighted average of the replies showed a ratio of 8.88 : 1. Applying such a ratio would reduce the income of the opium industry to Afghanistan from US\$3.4 bn to US\$3.0 bn. The results, however, would not be compatible with price data reported from neighbouring countries to UNODC. At an overall ratio of 8.88 : 1 Afghan traffickers could earn more money in exporting opium rather than in transforming it into heroin and then exporting the heroin. Such a behaviour would be difficult to explain and is unlikely to reflect reality. Moreover, some internal inconsistencies in the replies of the key informants were identified, which led to questions as to the overall reliability of some of the responses obtained. Against this background, it was decided to continue – for the time being – with the current 7:1 transformation ratio, until more solid information became available that would warrant a change in the transformation ratio currently used by UNODC for Afghan opiates.

⁵⁰ UNODC (ICMP), Opium Processing and General Information about the Heroin Labs and Drug Trafficking in the Eastern Zone of Afghanistan, Jalalabad Office, 16 October 2008.

it is not even heroin, but opium mud. After the pressing of opium sacks by press machines in the processing of 'Bist heroin', some mud opium remains in the sacks and this is sold under the name of 'Khata heroin'.

The main processed opiate products on the market in eastern Afghanistan seem to be 'Bist heroin' and 'Chara heroin', followed by 'Battan heroin' and, to a much lesser extent, 'white injection heroin'. For the manufacture of 1 kilogram of 'Bist heroin', the laboratories need 7 kilograms of opium. Given the additional information provided, there are indications that 'Bist heroin' is not necessarily 'heroin' as known by scientists in the western world, but some kind of morphine, or intermediary product, that is also being used in further processing of heroin.

Another intermediary product is so-called 'Chara heroin' (possibly referring to some kind of smokeable heroin). This is obtained in the transformation from 'Bist heroin' to 'Battan heroin'.

In order to produce 1 kilogram of 'Battan heroin' about 1.33 kg of 'Bist heroin' is needed (equivalent to 9.3 kg of opium), as well as a number of chemicals.

The production of 1 kilogram of high-quality 'white injection heroin' was reported to require, on average, about 2 kg of 'Bist heroin', equivalent to about 14 kg of opium. However, export of such high-quality white heroin from Afghanistan appears to be still limited as compared to 'brown heroin'.

While there are some indications as to the likely nature of the different products ('Bist heroin' could be some form of morphine, 'Chara heroin' and 'Battan heroin' could be what is commonly referred to as 'brown heroin' and injection heroin is what is typically known as 'white heroin') the different opiate products reported from eastern Afghanistan have not –so far - been properly analyzed in any scientific way. Most of the 'heroin' produced in Afghanistan appears to be in the form of 'Bist heroin' and 'Chara heroin'. Against this background, a decision was taken to continue using – for the purposes of this report - the conversion ratio of 7 kilograms of dry opium for the manufacture of 1 kilogram of morphine / brown heroin.

Opiates available for export

In order to arrive at the amounts available for export, seizures and local consumption have to be subtracted from the production figures.

As total seizures for 2008 are not as yet available, the Afghan seizures reported 2007 were used as proxy. According to information provided by the Afghan authorities and information collected by UNODC's Field Office in Kabul, 123 tons of opiates (expressed in opium equivalents) were seized by the Afghan authorities in 2007.⁵¹

The calculation of domestic consumption is based on results of UNODC's Afghanistan Drug Use Survey 2005. The survey results suggested that domestic opium consumption is equivalent to about 90 tons per year. The drug use survey also found important levels of heroin consumption, with almost 50,000 heroin users. The average quantities given were rather high: 1.4 grams of heroin per day by a male consumer and 0.9 grams by a female user, resulting in a potential total heroin consumption of 24.7 tons. One problem here relates to the unknown purity levels of the heroin consumed at the retail level. As the survey also asked for the amount of money a drug user would spend per month, an alternative approach was used to arrive at the heroin consumption figures. Annual amounts of funds used by heroin addicts were calculated and then divided by the average heroin price in Afghanistan. This resulted in a – probably - more realistic figure of 9.6 tons. Converting the heroin and the opium consumption estimates into an overall opiate

⁵¹ Preliminary data for the Afghan year 'Hot 1385' to 'Jaddi 1386' which cover the months January-December 2007 (as well as a few days at the end of 2005 and at the beginning of 2008) show seizures of 5038 kg of heroin, 5019 kg of morphine and 52,457 kg of opium. Using a 7:1 ratio for opium to heroin, seizures amounted to 123 tons in opium equivalents.

2005 includes: 90,990 tons of opium, 7,112.4 tons of heroin and 1,967 tons of morphine; seizures in 2006 – according to preliminary data - included 29,423.6 tons of opium, 3600.3 tons of heroin and 192.8 tons of morphine. (UNODC, Annual Reports Questionnaire Data and UNODC Field Office). Data were recalculated into opium equivalents using a 7:1 ratio for opium to morphine or heroin.

consumption estimate, results in 156 tons of opiates, expressed in opium equivalents, being consumed within Afghanistan.

Table 64: Domestic consumption by opium users

Opium users	No. of users	Grams per day	Grams per year	Total consumption per year in kg
Male opium users	132,000	1.7	620.5	81,906
Female opium users	16,000	1.2	438.0	7,008
	148,000			88,914

Source: UNODC, Afghanistan Drug Use Survey 2005.

Table 65: Domestic consumption by heroin users

Opium users	No. of users	Funds spent on heroin per month in Afs	Funds spent per year in Afs	Funds spent per year in \$	Average heroin prices in \$ per gram	Heroin in grams used per drug users per year	Total heroin consumption in kg
Male heroin users	46,000	2,400	28,800	587.8	2.95	199.5	9,176
Female heroin users*	3,500					128.2	449
	49,500						9,625

* female users consuming 64.3% of a male users according to the survey.

Source: UNODC, Afghanistan Drug Use Survey 2005.

Starting with a production of around 7,676 metric tons and taking the domestic 'leakages' into account (123 tons of seizures, expressed in opium equivalents and 156 tons of domestic consumption in opium equivalents), the amounts available for export, either in the form of opium or transformed into morphine and heroin, are equivalent to close to 7,400 metric tons opiates (expressed in opium equivalents).

Table 66: Estimated opium and heroin and morphine exports of Afghanistan in 2008

	Opium production (metric tons)	Opium exports (metric tons)	Heroin & morphine exports (metric tons)
Opium production in 2008 (not rounded)	7,676		
Less local consumption of opiates in opium equivalents	-156		
Less seizures (in opium equivalents)	-123		
Opiates available for export	7,397		
Distribution		40%	60%
Opium required		2,959	4,438
Conversion rate (opium to morphine/heroin)			7 : 1
End product exports (rounded)		2,960	630

Sources: UNODC, Opium Survey 2008; UNODC, Afghanistan Drug Use Survey 2005, UNODC Field Office, UNODC, Annual Reports Questionnaire Data .

Establishment of a distribution pattern of opium and heroin and morphine exports

Opium production in Afghanistan is primarily destined for export to foreign markets, either in the form of opium or in the form of morphine/heroin. One key question concerns the extent to which opium is transformed into morphine and heroin within Afghanistan. This is an important issue as there is clear evidence of significant morphine and heroin production taking place within Afghanistan:

- In 2003 Afghan authorities dismantled 120 'fixed laboratories' and 30 'movable laboratories', mainly in Hilmand, Nangarhar (notably in Shanwar district) and in Badakshan,⁵² accounting for more than 40% of all opiate laboratories dismantled worldwide in that year.⁵³
- In 2004, 125 clandestine morphine/heroin laboratories were dismantled in Afghanistan, located in various regions of the country: South (Hilmand, Nimroz, Kandahar: 30 laboratories), East (Nangarhar: 25 laboratories), North-East (Badakshan: 25 laboratories) and North (Jawzjan & Sari Pul: 18 laboratories; Kunduz 12).⁵⁴
- Data collected by UNODC's Field Office in Kabul (based on information received from CNPA and ASNF) suggested that 26 full-fledged heroin laboratories were dismantled in 2005; the total number of heroin laboratories dismantled – as reported in the ARQ – amounted to 188.⁵⁵
- A further 263 heroin processing laboratories were dismantled in 2006,⁵⁶ the highest such number reported worldwide. Most laboratories were located in the border areas, though growing numbers of laboratories are now also found in other locations as well. The number of dismantled laboratories declined, however, in 2007 (to 50 according to information provided by the US State Department⁵⁷), reflecting the difficulties of the Afghan authorities to operate in areas that are 'protected' by the insurgency.
- For 2008, UNODC surveyors identified at least 97 laboratories operating in Afghanistan (54 heroin and 43 morphine laboratories). Most of the laboratories were identified in western Afghanistan (31 laboratories) and in southern Afghanistan (31), followed by north-eastern (24) and eastern Afghanistan (11).
- Afghanistan is also faced with significant illegal imports of chemical precursors required to produce morphine and heroin. They are often smuggled into the country via Pakistan as well as other neighbouring countries. In Kabul, the authorities seized 300 litres of acetic anhydride in 2004, a further 390 litres in 2005, and in 2006 some 1,250 litres of acetic anhydride in Paktia province, close to Pakistan⁵⁸. Seizures of acetic anhydride in China, India and Turkey – partly linked to Afghan heroin production – amounted to over 16 tons in 2004. Precursor chemicals found in Afghan heroin laboratories were reported by the Afghan authorities⁵⁹ to have originated mainly from China, India, Russia and Hungary while in the morphine producing laboratories precursor chemicals were reported to have been from the Republic of Korea and Germany⁶⁰. In March 2008 14 tons of acetic anhydride were seized in the port of Karachi (Pakistan), and a further 5 tons of acetic anhydride were seized in the port of Bandar Abbas (Iran). These were the first major

⁵² Islamic Republic of Afghanistan, Annual Reports Questionnaire Data for the year 2003.

⁵³ UNODC, ARQ/DELTA.

⁵⁴ Islamic Republic of Afghanistan, Annual Reports Questionnaire Data for the year 2004.

⁵⁵ Islamic Republic of Afghanistan Annual Reports Questionnaire Data for the year 2005.

⁵⁶ UNODC Field Office Kabul, based on information received from CNPA.

⁵⁷ US Department of State, 2008 International Narcotics Control Strategy Report, Washington, March 2008.

⁵⁸ International Narcotics Control Board (INCB), 2006 Precursors Report, New York 2007 (and previous years).

⁵⁹ Islamic Republic of Afghanistan (Ministry of Counter Narcotics), Annual Reports Questionnaire Data for the year 2004.

⁶⁰ A subsequent analysis by a team of German experts from the Bundeskriminalamt found, however, that many of the alleged German precursor chemicals were forged products, with wrong labels put on them (some of them even having spelling mistakes), in order to indicate a high 'quality product' to the clandestine laboratory owners.

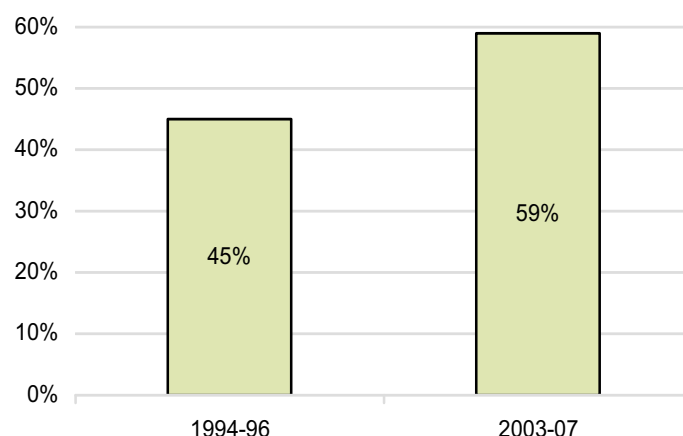
seizures of such precursor shipments in Pakistan and Iran in recent years, intended for final use in clandestine heroin laboratories in Afghanistan.

The existence of widespread morphine and heroin production within Afghanistan is thus well established. The question as to the extent of such production is, however, more difficult to answer.

Law enforcement agencies of the countries neighbouring Afghanistan (Pakistan, Iran, countries of Central Asia) claim that no or no significant morphine and heroin production takes place on their territories and that the opiates found on their territories all originate in Afghanistan. Thus, one approach to provide an estimate of the extent of domestic morphine/heroin production is to analyse seizure data among Afghanistan's neighbours. As long as there is no substance specific targeting of drug shipments by law enforcement, the breakdown of opiate seizures by substance should be a reasonably good proxy for the actual breakdown of the export of opiates that (i) have remained non-transformed (opium) and the opiates that (ii) have been transformed into intermediary products (morphine) or end products (heroin).

The problem here is that aggregated seizure data for 2008 are not as yet available. Thus a different approach is taken: average annual seizures of opium and of heroin & morphine over the last five years (2003-2007) are used as a proxy for the - so far - unknown seizure proportions for the year 2008. This analysis reveals that - expressed in heroin equivalents (using a ratio of 7 kg of opium equivalent to 1 kg of heroin) - 41% of opiate seizures in the countries neighbouring Afghanistan (Iran, Pakistan, Central Asia) were in the form of opium (2003-2007) and 59% in the form of either morphine or heroin, up from 45% over the 1994-96 period. These data suggest that heroin and morphine production gained in importance in Afghanistan over the last decade. However, as opium seizures rose disproportionately strong in recent years, notably in Iran and in some parts of Central Asia (Turkmenistan), the morphine and heroin proportions turn out to be lower than the ones reported in previous years (e.g. 66% in the 2006 Afghanistan Opium Survey).

Figure 67: Proportion of heroin and morphine in total opiate seizures* in countries neighbouring Afghanistan (Iran, Pakistan, Central Asia)



* based on 7:1 conversion ratio of opium to heroin

Source: UNODC, Annual Reports Questionnaire Data.

In addition to information based on past seizure data, UNODC also gathered information from its surveyors in the debriefing session. Based on this information gathered across Afghanistan and weighted by the opium production estimates in the various regions, it was established that around 61% of the opium produced may be subsequently transformed into heroin: 50-60% in southern Afghanistan; 57% in western Afghanistan and 99% in eastern Afghanistan.

Using the average of the two estimates (based on seizures and information from debriefing sessions), a UNODC estimate of 60% was established for the transformation of opium into morphine or heroin in Afghanistan which has then be applied for the subsequent estimates. Thus, 630 tons of morphine and heroin are estimated to have been produced and exported in 2008. The rest (40%) is estimated to have been exported in the form of opium (some 2,960 tons).

Table 67: Estimated opium and heroin and morphine exports of Afghanistan in 2008

	Opium production (metric tons)	Opium exports (metric tons)	Heroin & morphine exports (metric tons)
Opium production in 2008 (not rounded)	7,676		
Less local consumption of opiates in opium equivalents	-156		
Less seizures (in opium equivalents)	-123		
Opiates available for export	7,397		
Distribution		40%	60%
Opium required		2,959	4,438
Conversion rate (opium to morphine/heroin)			7 : 1
End product exports (rounded)		2,960	630

Distribution pattern of opiate shipments out of Afghanistan

Giving differences in opium and heroin prices in neighbouring countries, the next question relates to the quantities that are exported from Afghanistan across its borders. A distinction is made here between the export of opium and the export of heroin and morphine. The neighbouring countries are grouped into Iran, Pakistan, the Central Asian countries. In addition, UNODC obtained some indications of direct exports of opiates from Afghanistan to China and India, though the amounts of these direct exports are still very small.

Distribution of opium exports

As discussed above, the calculation suggested that some 2,960 tons are exported in the form of opium. Based on a three-year average of seizures in neighbouring countries the following patterns emerges:

Table 68: Distribution of opium exports based on seizures

	Opium seizures (average 2005-2007)	
	in kg	in %
Iran	323,602	95.5%
Pakistan	10,265	3.0%
Central Asia	4,883	1.4%
Total	338,750	100%

Given the strong enforcement efforts by Iran, there is probably a strong bias towards seizures made by the Iranian authorities, and thus an over-reporting of opium exports to Iran (96%). On the other hand, Iran is also the only country in the region where widespread 'opium addiction' is reported. In the other countries of the region, use of other opiates is more widespread. Thus, there is a strong likelihood that the bulk of the exported opium is indeed destined for the Iranian market. This does not exclude the possibility that some of the 2,960 tons of opium leave Afghanistan via Pakistan for final destination in Iran. In such cases, the involvement of Afghan traffickers (often Baluch traffickers) does not necessarily stop across the border in Pakistan but may well continue until the borders of Iran are crossed. In other words, the total gross income for Afghan traffickers does not change much whether Iran is targeted directly, or indirectly via Pakistan. This was the approach taken in previous years.

Nonetheless, the exclusive reliance on seizure data for the establishment of a distribution pattern was considered to be problematic. Against this background, an alternative estimation attempt has been made last year, and was repeated this year. This is based on production estimates in the various regions of Afghanistan and information on drug trafficking flows collected as part of the survey activities.

Table 69: Geographical distribution of opium production in Afghanistan in 2008

	Production	Distribution
Southern	6,917	90.1%
Western	655	8.5%
Eastern	45	0.6%
Northern	42	0.5%
Central	11	0.1%
North-Eastern	6	0.1%
Total	7,676	100.0%

Source: UNODC/Ministry of Counter-Narcotics , 2008 Afghanistan Opium Survey.

Table 70: Distribution of opium exports based on production estimates in Afghanistan in 2008

	Distribution	Production for opium export
Southern	90.1%	2,667
Western	8.5%	253
Eastern	0.6%	17
Northern	0.5%	16
Central	0.1%	4
North-Eastern	0.1%	2
Total	100%	2,960

Source: UNODC/Ministry of Counter-Narcotics , 2008 Afghanistan Opium Survey.

For the purposes of defining the trafficking flows within and out of Afghanistan, a systematic monitoring survey was implemented in March 2008. Drug flow monitoring surveyors were recruited, trained and deployed to the field. Their task was to carry out a nation-wide assessment of trafficking flows in all poppy growing zones as well as in the areas and districts adjacent to the main international border crossing points. The surveyors were trained to collect information on various aspects of the opium economy from primary and secondary data sources, including on drug trafficking flows. Data collection was mainly based on semi-structured interviews with key informants. Based on their observations and interviews with key informants, the following structure of opium trafficking emerged:

Table 71: Opium movements within and out of Afghanistan

	Western Region	Southern Region	Eastern Region	Northern Region	North-Eastern Region	Central Region	Iran	Pakistan	Central Asia	China	India	Total
Southern	49.5%						31.1%	11.6%	7.8%			100.0%
Western*							80%		20%			100.0%
Northern							22.9%	14.6%	62.5%			100.0%
North-Eastern	3.7%		6.2%	10.1%		9.5%	5.9%	6.6%	50.3%	4.9%	2.9%	100.0%
Eastern		70%			30.0%							100.0%
Central		70%			30.0%							100.0%

* data for western Afghanistan was re-adjusted as only one province, located next to Turkmenistan (Badghis) was covered.

Source: UNODC, "Monitoring of Drug Flows in Afghanistan" (internal data-base), Sept 2008.

The trafficking flows identified by the surveyors indicate, for instance, that significant amounts of opium are trafficked from southern Afghanistan (Hilmand, Kandahar) to western Afghanistan (46%), mainly for further export to Iran, the world's largest opium market. Most of the opium produced in northern (63%) and north-eastern Afghanistan (50%) leaves Afghanistan for Central Asia. Opium produced in eastern Afghanistan used to go almost exclusively to Pakistan. However, given the decline in opium production in eastern Afghanistan, most of the remaining opium is being transformed into heroin before being exported. The remaining (and now very moderate) opium exports have been mainly directed towards southern Afghanistan (70%), mainly for subsequent export to Iran where opium prices are still comparatively high.

Combining the data sets of production distribution and information on trafficking flows provided a new set of estimates of the likely distribution pattern of opium exports. The ranking turned out to be the same as for the distribution based on seizure data. However, the individual proportions were lower for Iran and higher for the other countries.

Though all attempts have been made to obtain the best possible information, one should not over-interpret the accuracy of these results. In line with the methodology developed in last year's report, the calculations rely not exclusively on these results, but are used in combination with the 'traditional' seizure distributions. This should increase the likelihood to arrive at a picture of opium flows out of Afghanistan that is a better reflection of reality than any individual estimate.

Table 72: Distribution of opium exports based on 'production and trafficking 'flows' and on 'seizures'

	Distribution based on seizures (2005-07)	Distribution based on production and trafficking flows	Average distribution	Estimates of opium exports
	in %	in %	in %	
Iran	95.5	71.0	83.3	2464
Pakistan	3.0	10.6	6.8	202
Central Asia	1.4	18.4	9.9	293
China	0.0	0.015	0.007	0.2
India	0.0	0.009	0.004	0.1
Total	100%	100%	100	2960

Sources: UNODC, Annual Reports Questionnaire Data and UNODC, "Monitoring of Drug Flows in Afghanistan" (internal data-base), Sept 2008.

Distribution of morphine and heroin exports

The estimates for the distribution pattern of morphine & heroin exports are based on three approaches:

- The first approach analyses the seizures of morphine & heroin in the neighbouring countries.
- The second approach is based on the distribution of identified morphine and heroin laboratories in Afghanistan and the assumption that drug traffickers tend to select the nearest border to ship opiates out of the country.
- The third approach is based on the distribution of identified morphine and heroin laboratories in Afghanistan and trafficking flow information obtained by surveyors from key informants.

All three approaches have strengths and weaknesses. Basing the heroin and morphine export distribution exclusively on seizure data (2005-07 averages) would result in more than half (51%) being exported to Pakistan, 41% being exported to Iran and 8% to Central Asia. The problem with this approach is that it – de-facto – assumes that the capabilities of the authorities to intercept opiates are basically the same in all neighbouring regions. This does not seem to be the case. The capabilities of intercepting drugs in Central Asia are widely believed to be lower than in Iran or

Pakistan. Seizures of heroin and morphine in China and India were not considered. The analysis of individual drug seizure cases reported by these countries to UNODC did not provide evidence of direct shipments (e.g. by air) of such drugs from Afghanistan to these countries. This does not mean that such shipments do not take place. However, even if they are taking place, they are likely to be of only minor importance.

Table 73: Distribution of heroin and morphine exports to neighbouring countries based on seizures

	Seizures (average 2004-2006)	
	in kg	in %
Pakistan	24,518	51.2%
Iran	19,781	41.3%
Central Asia	3,593	7.5%
Total	47,892	100%

A second approach was based on the analysis of the regional distribution of the identified laboratories (by UNODC surveyors) in Afghanistan as a proxy for the manufacture of heroin and morphine in Afghanistan, and the assumption that heroin and morphine exports to neighbouring countries tend to take place at the closest border in order to avoid bribes and other payments for shipping the drugs across Afghanistan. Such a behaviour of Afghan traffickers was frequently described in the literature.

The UNODC surveyors identified a total of 97 laboratories that were in operation as of March/April 2008 (a similar number as a year earlier (90)). According to these data, most morphine and heroin appears to be produced in southern Afghanistan (32%) and western Afghanistan (32%), followed by north-eastern Afghanistan (25%) and eastern Afghanistan (11%). Using the number of laboratories for the distribution of morphine and heroin production implicitly assumes that there has been no bias in the identification of laboratories across the country by UNODC surveyors and that the identified laboratories have had, on average, a similar production capacity.

Table 74: Distribution of identified heroin and morphine laboratories across regions in Afghanistan

Region	Number of heroin labs	Number of morphine labs	Total	in %
Southern	16	15	31	32.0%
Western	14	17	31	32.0%
North-eastern	13	11	24	24.7%
Eastern	11	0	11	11.3%
Northern	0	0	0	0.0%
Central	n.a	n.a	n.a	n.a.
Total	54	43	97	100%

Using the breakdown of identified laboratories and applying the assumption that export shipments are typically targeting the closest border, heroin and morphine produced in eastern, central and southern Afghanistan is likely to be mainly destined for Pakistan (i.e. 43% of the total). Opiates produced in western Afghanistan would be mainly destined for Iran (i.e. 32% of the total), and opiates produced in northern and north-eastern Afghanistan would be mainly shipped to Central Asia (25% of the total).

There are two problems with this method. First, it can be argued that the distribution of the identified laboratories is not necessarily a valid proxy for actual morphine and heroin production. Second, the assumption of exports towards the closest border can be questioned. The assumption that morphine and heroin exports typically leave the country via the closest border was in the past repeatedly confirmed, by both anecdotal information as well as by the price structure of opium and heroin which showed strong regional differences. However, there have been indications that this pattern may have changed. UNODC has received reports of increasing trafficking activities within Afghanistan in recent years. In line with this, drug prices, which used to differ substantially across regions, have been showing a stronger trend towards convergence, indirectly confirming the observation of stronger intra-regional trafficking activities across Afghanistan.

Against this background, a third approach was developed, making use of the findings of the UNODC survey to monitor drug flows (undertaken in March/April 2008). This approach was again based again on the breakdown of identified laboratories, while taking trafficking flows from key informants into account. The trafficking flow calculations shown below are based on the average of the percentages given by key informants in the various regions of Afghanistan. The reported trafficking flows suggest, for instance, that 77% of the heroin manufactured in southern Afghanistan went first towards western Afghanistan (Nimroz, Hirat etc.) for subsequent trafficking to neighbouring countries (Iran, Pakistan and Turkmenistan). Most of the production of heroin in north-eastern Afghanistan is destined for Central Asia (45%) and most of the heroin manufactured in eastern Afghanistan is destined for Pakistan (34%). Heroin seen in northern Afghanistan (where no labs could be identified) was reported to be mainly destined for north-eastern Afghanistan (53%) and thus probably for Central Asia.

Using the geographical breakdown of morphine and heroin laboratories as a proxy for the regional distribution of morphine and heroin production within Afghanistan and combining this information with the trafficking flow information of UNODC surveyors, suggests that 44% of the heroin may have been destined for Iran, 28% for Pakistan, 25% for Central Asia, 2% for China and 0.6% for India. However, such a pattern, notably for the proportions calculated for Iran and Pakistan, would be very different from the patterns reported in previous years and would not tally with seizure information.

Table 75: Heroin flows within and out of Afghanistan

	Western region	Eastern region	North Eastern region	Northern Region	Central Region	Iran	Pak	Central Asia	China	India	Total
Southern	77%					11%	6%	6%			100%
Northern		47%	53%								100%
Western*						60%	30%	10%			100%
North-eastern	7%	8%		12%	10%	7%	6%	45%	5%		100%
Eastern	7%		12%	20%		5%	34%	16%	3%	3%	100%

* data for western Afghanistan was re-adjusted as only one province, located next to Turkmenistan (Badghis) was covered.

Source: UNODC, "Monitoring of Drug Flows in Afghanistan" (internal data-base), Sept. 2008.

However, such information, gathered by UNODC surveyors from key informants must still be treated with caution. What is really being captured here is anecdotal information from the field. Moreover, the number of key informants providing such information is limited and information could not be obtained from all provinces. This is a problem for information from western Afghanistan. Such information was only available from Badghis, bordering Turkmenistan, but not from the provinces that are mainly affected by large-scale trafficking such as Hirat and Farah bordering Iran or Nimroz bordering Pakistan and Iran. In addition, it cannot be guaranteed that the perceptions of the key informants, typically selected by UNODC surveyors on the basis of personal contacts, reflect the true pattern of heroin trafficking flows. Such activities, for obvious reasons, are largely being kept secret by the traffickers, notably by traffickers that are involved in multi-ton shipments. Several of the reported trafficking flows are probably correct and the

exercise is definitely useful. But some trafficking flows would still need to be re-confirmed. For instance, why is heroin that is manufactured in eastern Afghanistan being shipped to northern Afghanistan while the heroin found in northern Afghanistan is then again being shipped to eastern Afghanistan? There is also a problem that many laboratories were identified in north-eastern and eastern Afghanistan though there was hardly any opium production and the reported trafficking flows did not indicate opium shipments from southern Afghanistan (where most of the production did take place) to such laboratories. Even more important, given the amounts involved: Why are – according to the reported trafficking flows – so few heroin shipments from southern Afghanistan currently being destined for Pakistan? Is this a truly new phenomenon that more of the morphine and heroin is going towards western Afghanistan for subsequent export to Iran? This information is not really in line with (past) seizure information and not in line with the information on the existence of a large number of heroin laboratories along the border with Pakistan in Hilmand and Nimroz provinces. Thus, the question remains whether the reported trafficking flows are a fair reflection of reality or whether the results had to do with the selection of the key informants who may have been aware of the trafficking activities of some neighbours but may not necessarily have had a good overview of the overall morphine and heroin trafficking activities.

Given the fact that each approach to identify the distribution of morphine and heroin exports has its strengths and weaknesses, UNODC's overall estimate of the most likely distribution pattern was calculated as the average of all three approaches. The overall estimate suggests that most of the morphine and heroin is being shipped out of Afghanistan via Pakistan (41%) and Iran (39%), followed by the countries of Central Asia (19%). Direct shipments via China (0.7%) and India (0.2%) seem to be of only secondary importance. The ranges of the estimates – as discussed above – are, however, rather large: 28%-52% for Pakistan, 32% - 44% for Iran and 8% -25% for the countries of Central Asia.

Table 76: Distribution of heroin and morphine exports to neighbouring countries

	Estimates based on			Average (UNODC estimate)
	seizures (2005-07)	distribution of identified laboratories and assumption of exports to closest border	distribution of identified laboratories and reported trafficking flows	
Pakistan	51.2%	43.3%	28.4%	40.9%
Iran	41.3%	32.0%	43.7%	39.0%
Central Asia	7.5%	24.7%	25.2%	19.2%
China	0.0%	0.0%	2.2%	0.7%
India	0.0%	0.0%	0.6%	0.2%
	100%	100%	100%	100%

Prices of opiates in neighbouring countries

The next key parameters investigated were the opium and morphine/heroin prices in countries neighbouring Afghanistan, notably in the border regions with Afghanistan. Such prices were collected primarily by the UNODC field offices in the region. Prices in border areas of Tajikistan were used as a proxy for prices in border areas of Central Asian countries. For some of the countries, adjustments had to be done.

- Opium prices (per kilogram)

Iran (2008):

No prices could be collected by UNODC's field office in Iran in 2008. The Iranian authorities were not in a position to provide such information, on a regional basis, for the year 2008. The latest officially reported opium prices date back to August-September 2006 (published in the 2006 Afghanistan Opium Survey):

Eastern region (Sistan Baluchistan):	\$ 650 per kg;
Tehran	\$1,200 per kg (retail: \$1.5/gram)
Western Iran:	\$1,700 per kg

Given the strong increase of opium production in Afghanistan, and opium price declines reported from Afghanistan and other countries, it would not be very realistic to assume that prices remained unchanged in Iran in 2007 and 2008. Following the analysis of price trends in the Afghan provinces bordering Iran (and taking also other information into account), UNODC estimated that average opium prices in the Eastern Region (Sistan Baluchistan) are likely to have fallen to around US \$600 per kg in 2007, down from \$650 in 2006 (August-September) and US \$915 in 2004 (August-September). The declines of opium prices in western Afghanistan in 2008 (-17% over the May-August 2008 on a year earlier) suggest that opium prices may have also fallen further in the eastern regions of Iran (Sistan Baluchistan) to around US\$500 per kilogram.

UNODC estimate for 2008:

Eastern region (Sistan Baluchistan):	\$ 500 per kg (min: \$400 max: \$600)
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In fact, strong declines of opium prices in Iran were also indicated in the latest replies to UNODC's Annual Reports Questionnaire, received from the Iranian authorities in February 2008. An average opium wholesale price of around US\$ 650 per kg for Iran as a whole was reported, down from US\$ 1,600 per kg in 2003. Given the opium price patterns found in previous years, an average opium price of US\$ 650 for the country as a whole would suggest that the opium prices in the border regions with Afghanistan should be significantly lower.

Pakistan (May -August 2008):

Prices for Peshawar

Peshawar:	\$ 210 per kg (min: \$168; max: \$270)
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Opium prices in Peshawar (Pakistan) are monitored on a monthly basis as part of UNODC's ongoing price monitoring activities. Given the decline of opium production in eastern Afghanistan, opium prices in Peshawar increased from \$175 per kg in 2007 to \$210 per kg in 2008 (May-August).

Tajikistan (2008)

Border areas with Afghanistan:

Gorno Badakshan:	\$300 per kg	(min \$250; max \$350)
Kathlon:	\$375 per kg	(min \$350; max \$400)

Average border region: \$337.5 per kg (min \$250; max \$400) per kg

Opium prices (US\$338) increased slightly as compared to a year earlier (\$325) reflecting a decline in opium exports, linked to the reduction of opium production in northern and north-eastern Afghanistan.

China

No current opium prices from China are available. The latest opium wholesale prices, reported to UNODC in reply to its Annual Reports Questionnaire (ARQ), date back to 2002. For that year, China reported opium prices to range from \$870 to \$2500. The minimum price (\$870 per kg) is used here as a proxy for the unknown opium price in the border regions with Afghanistan in 2008. As the amounts of opium trafficked directly from Afghanistan to China are still minimal, the potential error from using such a price should not affect the final results of the calculations.

India

Prices for India are only available from replies to UNODC's Annual Reports Questionnaire, referring to the year 2006. These prices are used as a proxy for the prices in 2008. Given the small amounts that are being trafficked directly from Afghanistan to India, any potential error will not affect the final results.

Average: US\$ 670 per kg (min: US\$ 610 max: US\$730)

- Heroin prices (per kilogram)

Iran

The most up to date heroin prices were provided by the Iranian authorities in reply to UNODC's Annual Reports Questionnaire in February 2008.

Average: US\$ 3,271 per kg

The order of magnitude of such a price is in line with previous calculation.

Prices collected in Iran in 2006 (August-September):

Eastern region (Sistan Baluchistan):	\$2,200 per kilogram (40%-50% purity)
Tehran:	\$3,450 per kilogram
Western provinces:	\$4,900 per kilogram

Such prices are not directly comparable with those in Afghanistan due to dilutions with other substances.

Calculation of the purity adjustment ratio:

Afghanistan:	brown heroin (base):	68% purity ⁶¹
Sistan Baluchistan:	(brown) heroin :	45% (40%-50% purity):
Purity adjustment ratio:		1.5

Purity adjusted prices in Sistan Baluchistan

(adjusted to Afghan purity levels)	US\$ 3,300 (\$2200 *1.5) per kilogram in 2006
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In contrast to indications of falling opium prices, no indications of any significant declines of heroin prices were received.

Pakistan (May – August 2008):

Peshawar:	US\$ 3,256 (min: \$3,144; max: \$3,299)
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Heroin prices in Peshawar (Pakistan) are monitored on a monthly basis as part of UNODC's ongoing price monitoring activities in Afghanistan. Given the massive decline of opium production in eastern Afghanistan, heroin prices increased slightly in Peshawar, from US\$3,205 reported in last year's report to US\$ 3,256 over the May-August 2008 period.

Tajikistan (2008)**High-quality heroin prices:**

Gorno-Badakhshan (Pamir) area	\$2,800 per kg
Khatlon	\$3,500 per kg
Average: border region	\$3,150 per kg

Following a decline in the first few months of 2006, heroin prices increased in the border regions of Tajikistan from \$4,125 in early 2007 to \$4,500 in early 2007 before falling again in 2008 to US\$ 3,150 as heroin trafficking out of north-eastern Afghanistan regained in importance. As opium production was falling in the northern and north-eastern provinces of Afghanistan, increases in heroin trafficking, and thus falling heroin prices, can be only linked to the use of accumulated opium stocks in northern and north-eastern Afghanistan for the manufacture and subsequent export of heroin to Central Asia. There were no indications of any significant heroin shipments from southern Afghanistan to northern or north-eastern Afghanistan and no signs of any large-scale opium transports from southern Afghanistan to supply the heroin laboratories operating in north-eastern Afghanistan.

Results

Combining all the elements discussed in detail above, the calculations result in a likely overall gross income ('value added') of around \$3.4billion for Afghanistan (farmers and traffickers) from the opium sector for 2008. This would be equivalent to about 33% of licit GDP (\$10.2 bn in 2007/08 (April 2007-March 2008) according to estimates by the Afghan Central Statistical Office, or 25% of overall GDP (legal GDP plus opium sector) in Afghanistan.

Illegal income from Afghan opium exports increased from \$1.25 bn in 2006 to \$1.7 bn in 2007 before falling to \$1.4 bn in 2008. Illegal income from heroin and morphine exports rose from

⁶¹ Bundeskriminalamt, Dokumentation einer authentischen Heroinherstellung in Afghanistan, Wiesbaden 2005.

\$1.85 in 2006 to \$2.3 bn in 2007, before falling to \$2.1 bn in 2008. Overall gross income generated by the opiate sector rose from \$3.1 in 2006 to \$4 bn in 2007 before falling again to US\$ 3.4 bn in 2008. Deducting the farmers' income from the cultivation of opium poppy of \$0.73 billion, the overall gross profits for Afghan traffickers amount to \$2.7 billion in 2008. Gross profits of traffickers thus increased from \$2.14 bn in 2005 to \$2.34 billion in 2006 to \$3 billion in 2007 before falling again to \$2.7 bn in 2008.

The estimates do not take changes of opium stocks into account. (The estimates are based on the assumption that all of the opiates produced in Afghanistan are also sold in the same year. But this may not be the case any longer). This could have resulted in a slight over-estimate of the results in 2007 and 2008 when stocks were apparently being built-up in Afghanistan. The estimates also do not take into account that some Afghan traffickers ship the opium or heroin not only across the border but onwards to major transshipment locations where prices are typically far higher. On the other hand, not all of the opiates are smuggled out of the country by Afghan traffickers. Some of it is also being trafficked by traders from neighbouring countries (notably Pakistan, Iran and Tajikistan) to markets outside Afghanistan. The estimate for 2008 (as well as those of previous years) implicitly assumes that these additional factors more or less offset each other.

Table 77: Estimate of Afghan gross income from the opium sector in 2008

	Opium exports	Opium prices (wholesale per kg) in US\$	Opium export distribution		Heroin & morphine exports	Heroin prices (wholesale per kg) in US\$	Heroin & morphine export distribution		Total (billion US\$)
			Best estimate	Range			Best estimate	Range	
Total exports in tons	2,960				630				
Iran		500.0	83.3%	71%-96%		3,271	39.0%	32%-44%	
Pakistan		210.0	6.8%	3%-11%		3,256	40.9%	28%-51%	
Central Asia		337.5	9.9%	1%-18%		3,150	19.2%	8%-25%	
China		870.0	0.01%	0%-0.015%		10,000	0.7%	0%-2%	
India		670.0	0.004%	0%-0.009%		6,100	0.2%	0%-0.6%	
Average export price (weighted by distribution)		464.1				3,284			
Value in billion US\$ (exports in kg × export price in \$)	1.37				2.07				3.44

Confidence interval

The best available mid-point estimate has been given above. Nonetheless, it must be clear that there could be significant variations, if actual values of the key parameters used were to fall towards the lower or the higher end of the respective ranges. In the following sub-chapter, the 90% confidence interval of the various indicators will be calculated and discussed.

- **Production (90% confidence interval)**

The calculation of the range of opium production was already discussed in the methodology sub-chapter on the value of opium production. Afghan opium production – at the 90% confidence interval – should fall within the range of 6,330 to 9,308 metric tons. Deducting domestic leakages due to seizures and domestic consumption (279 mt), the amounts available for export would range from 6,051 to 9,029 mt.

Based on this confidence interval, Afghan opium exports range from 2,420 to 3,612 metric tons, and morphine & heroin exports from 519 to 774 metric tons.

Calculation of 90% confidence interval for opium and heroin & morphine exports:

Opium production:

range: 6,330 – 9,308 metric tons (- 17.5% of mean to + 21.3% of mean of 7,646 mt)

less seizures: 123 metric tons

less local consumption: 156 metric tons

Available for export:

Range: 6,051 – 9,029 metric tons (-18% of mean to +22% of mean of 7,397 mt)

Opium exports (40% of production)

Range: 2,420 – 3,612 metric tons (- 18.2% of mean to +22.0% of mean of 2,960 mt)

Heroin & morphine exports (60% of production; 7:1 ratio)

Range: 519-774 metric tons (- 17.6% of mean to 22.8% of mean of 630 mt)

The calculation of a confidence interval for price data in the countries neighbouring Afghanistan is more difficult as UNODC is not directly involved in the data collection process. Thus, UNODC does not have all of the necessary raw data at its disposal. Calculated price ranges, aiming to reflect a 90% confidence interval, must thus be treated with caution.

In the case of Tajikistan minimum and maximum prices have been available. In the case of availability of minimum and maximum prices, it was assumed that the reported range included 99% of all reported prices (and that there were no important outliers). This would be equivalent to a value of 2.576 x standard error (assuming a normal distribution). As the calculations are aiming at a 90% confidence interval, the range could be reduced by dividing it by the z-value for 99% (2.576) and multiplying it with the z-value for a 90% (1.645) confidence interval (assuming a normal distribution).

In the case of Pakistan (Peshawar), no minimum and maximum prices as such are available. However, monthly time series data exist which enable the calculation of a 90% confidence interval.

In the case of Iran, opium prices were derived from prices reported in the border regions of Iran with Afghanistan in 2006 and price changes in the Afghan provinces bordering Iran in 2007 and 2008. The maximum range was based on the assumption that there was no change in prices over the last two years; the alternative scenario was that price declines were twice as significant as found in western Afghanistan. As the calculations were again aiming at a 90% confidence interval, the maximum range was subsequently reduced again by dividing it by the z-value for a 99% (2.576) confidence interval and multiplying it with the z-value for a 90% (1.645) confidence interval (assuming a normal distribution). Based on this approach, a likely 90% confidence interval around the mean opium price was established. For heroin, last year's prices were used as benchmarks for the identification of a likely confidence interval.

Prices for India were used as reported to UNODC by the Indian authorities in the annual reports questionnaire (for the year 2006, the latest year available).

Prices for China date back to 2002. In this case, the assumption was made, that the confidence interval would be equivalent to the unweighted average of the confidence intervals found for Iran, Pakistan, Tajikistan and India.

- Prices (90% confidence interval)

OPIUM PRICES:

Opium prices in Iran (Sistan Baluchistan):	\$400 - \$600; +/- 20% of mean (\$500)
Opium prices in Pakistan (Peshawar):	\$175 - \$245; +/- 16.8% of mean (\$210)
Opium prices in Tajikistan (border region):	\$298 - \$377; +/- 11.7% of mean (\$337.5)
Opium prices in India:	\$610 - \$730; +/- 9.0% of mean (\$670)
Opium prices in China (border region):	\$668 - \$892; +/- 14.4% of mean (\$780)

HEROIN PRICES:

Heroin prices in Iran (border region):	\$3,000 - \$3,542; +/- 8.3% of mean (\$3,271)
Heroin prices in Pakistan (Peshawar):	\$3,194 - \$3,317; +/- 18.9% of mean (\$3,256)
Heroin prices in Tajikistan (border region):	\$2,800 - \$3,500; +/- 11.1% of mean (\$3,150)
Heroin prices in India:	\$3,658 - \$9,760; -40% to +60% of mean (\$6,100)
Heroin price in China (in border region)	\$7,800 - \$12,200; +/- 22% of mean (\$10,000)

Based on these price ranges and opiate export ranges, the following confidence intervals (90%) can be calculated:

- Keeping production levels constant and multiplying them with the prices at the lower and upper end of the confidence interval results in a range of US\$3.0 to US\$3.8 billion for Afghan opiate exports in 2008;
- Keeping the average prices and calculating the confidence intervals based on minimum and maximum export levels (derived from minimum and export production levels), results in a range of US\$2.8 to US\$4.2 billion;
- Using the lower estimates of the confidence interval of the overall export prices (\$375 for opium and 3,070 for heroin), the upper estimate of the interval for the export prices (\$554 for opium and \$3,498 for heroin) as well as the minimum and maximum export estimates for the 90% confidence interval (2,420 mt - 3,612 mt for opium and 519 mt - 774 mt for heroin/morphine), and applying the formula shown below, gives a range of the value of the Afghan opiates market of \$2.7 to \$4.3 billion in 2008.

$$= \text{Avg}(j_1) \times \text{Avg}(j_2) \times \left(1 - \sqrt{\sum_{j=1}^2 \left(\frac{\text{Min}(j) - \text{Avg}(j)}{\text{Avg}(j)}\right)^2}\right) \quad (\text{minimum})$$

$$\text{Avg}(j_1) \times \text{Avg}(j_2) \times \left(1 + \sqrt{\sum_{j=1}^2 \left(\frac{\text{Max}(j) - \text{Avg}(j)}{\text{Avg}(j)}\right)^2}\right) \quad (\text{maximum})$$

where $j=1$ for prices and $j=2$ for production

= for opium: $\$1.37 \text{ bn} \times (1 - (18.24\%^2 + 19.28\%^2)^{(1/2)}) = \1.01 bn (min)
 $\$1.37 \text{ bn} \times (1 + (22.03\%^2 + 19.31\%^2)^{(1/2)}) = \1.77 bn (max)

= for heroin/morphine: $\$2.07 \text{ bn} \times (1 - (17.62\%^2 + 6.52\%^2)^{(1/2)}) = \1.68 bn (min)
 $\$2.07 \text{ bn} \times (1 + (22.86\%^2 + 6.52\%^2)^{(1/2)}) = \2.056 bn (max)

= for opiates: **minimum:** **\$2.7 bn**
 maximum: **\$4.3 bn**

The last estimate is considered to be the best for the overall 90% confidence interval of the figure of \$3.4 billion. It can be thus stated that the size of the Afghan opiate industry is – based on a 90% confidence interval - equivalent to between 26% and 42% of licit Afghan GDP (\$10.2 bn) in 2007/08 (April 2006-March 2008), as reported by the Afghan Central Statistical Office, with the best estimate suggesting a proportion equivalent to 33% of licit GDP.

ANNEX I: OPIUM POPPY CULTIVATION IN AFGHANISTAN PER PROVINCE (HECTARES), 2002-2008

PROVINCE	2002	2003	2004	2005	2006	2007	2008	Change 2007-2008 (ha)	Change 2007-2008 (%)
Badakhshan	8,250	12,756	15,067	7,370	13,056	3,642	200	-3,442	-95%
Badghis	26	170	614	2,967	3,205	4,219	587	-3,632	-86%
Baghlan	152	597	2,444	2,563	2,742	671	475	-196	-29%
Balkh	217	1,108	2,495	10,837	7,232	-	0	0	0%
Bamyan	-	610	803	126	17	-	0	0	0%
Day Kundi	-	2,445	3,715	2,581	7,044	3,346	2,273	-1,073	-32%
Farah	500	1,700	2,288	10,240	7,694	14,865	15,010	145	1%
Faryab	28	766	3,249	2,665	3,040	2,866	291	-2,575	-90%
Ghazni	-	-	62	9	-	-	0	0	0%
Ghor	2,200	3,782	4,983	2,689	4,679	1,503	0	-1,503	-100%
Hilmand	29,950	15,371	29,353	26,500	69,324	102,770	103,590	820	1%
Hirat	50	134	2,531	1,924	2,287	1,525	266	-1,259	-83%
Jawzjan	137	888	1,673	1,748	2,024	1,085	0	-1,085	-100%
Kabul	58	237	282	-	80	500	310	-190	-38%
Kandahar	3,970	3,055	4,959	12,989	12,619	16,615	14,623	-1,992	-12%
Kapisa	207	326	522	115	282	835	436	-399	-48%
Khost	-	375	838	2	133	-	0	0	0%
Kunar	972	2,025	4,366	1,059	932	446	290	-156	-35%
Kunduz	16	49	224	275	102	-	0	0	0%
Laghman	950	1,907	2,756	274	710	561	425	-136	-24%
Logar	-	-	0	-	-	-	0	0	0%
Nangarhar	19,780	18,904	28,213	1,093	4,872	18,739	0	-18,739	-100%
Nimroz	300	26	115	1,690	1,955	6,507	6,203	-304	-5%
Nuristan	-	648	764	1,554	1,516	0	0	0	0%
Paktika	-	-	-	-	-	-	0	0	0%
Paktya	38	721	1,200	-	-	-	0	0	0%
Panjshir	-	-	-	-	-	-	0	0	0%
Parwan	-	-	1,310	-	124	-	0	0	0%
Samangan	100	101	1,151	3,874	1,960	-	0	0	0%
Sari Pul	57	1,428	1,974	3,227	2,252	260	0	-260	-100%
Takhar	788	380	762	1,364	2,178	1,211	0	-1,211	-100%
Uruzgan	5,100	4,698	7,365	2,024	9,703	9,204	9,939	735	8%
Wardak	-	2,735	1,017	106	-	-	0	0	0%
Zabul	200	2,541	2,977	2,053	3,210	1,611	2,335	724	45%
Total (rounded)	74,000	80,000	131,000	104,000	165,000	193,000	157,000	-36,000	-19%

ANNEX II: INDICATIVE DISTRICT LEVEL ESTIMATION OF OPIUM POPPY CULTIVATION, 1994-2008 (HECTARES⁶²)

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Badakhshan	Arghanj Khwa														54	0
	Argo														210	60
	Babaraki	111	64	116	9	202	23	86	345	180		5,544	1,635	710	0	14
	Darayim														682	43
	Darwaz													0	0	0
	Darwazi Bala														0	0
	Fayz Abad	77	2,344	1,592	1,634	1,282	906	1,073	868	2,370	3,109	2,362	3,111	7,154	83	64
	Ishkashim			3										0	0	0
	Jurm	433	555	1,326	1,051	1,198	1,249	773	2,897	2,690	4,502	4,818	1,460	2,027	170	6
	Khash														999	7
	Khowahan													0	0	0
	Kishim	1,093	3	177	62	62	383	507	2,191	2,840	4,530	2,883	1,076	3,163	0	2
	Kohistan														0	0
	Kuf Ab														0	0
	Kuran Wa Munjan												48	0	10	0
	Ragh			8	31	2	8							0	400	0
	Shahri Buzurg					71	113	19	41	170	615		39	0	313	0
	Shighnan													0	0	0
	Shiki														0	0
	Shuhada														0	0
	Tagab (Kishmi Bala)														93	0
	Tishkan														136	0
	Wakhan													0	0	0
	Warduj														9	3
	Yaftali Sufla														305	0
	Yamgan (Girwan)														10	0
	Yawan														166	0
	Zebak		4	8	115									0	0	0
Badakhshan Total		1,714	2,966	3,230	2,902	2,817	2,684	2,458	6,342	8,250	12,756	15,607	7,369	13,056	3,642	200
Badghis	Ab Kamari													127	0	11
	Ghormach							20		4	101		944	624	250	328
	Jarwand											226	134	431	66	13
	Muqur													220	149	7
	Murghab							21		22	69	345	1,889	1,034	3,557	81
	Qadis													391	198	146
	Qala-i- Naw											43		378	0	0
	Badghis Total	0	0	0	0	0	0	41	0	26	170	614	2,967	3,205	4,219	587
Baghlan	Andarab								81	31	301	564	548	947	130	475
	Baghlan *							152		120	16	154	374	72		0
	Baghlani Jadid											81	248	371	287	0
	Burka											198	242	39	31	0
	Dahana-I- Ghori				328	929	967	27			37	200	24	35	0	0
	Dih Salah														14	0
	Dudhi											89	116	174	68	0
	Firing Wa Ghari														0	0
	Guzargahi Nur														30	0
	Kahmard *											327	263	255		0
	Khinjan										9	21	92	137	23	0
	Khost Wa Firing										21	0	295	442	56	0
	Khowaja Hijran (Jilga Nahrin)														10	0
	Nahrin								1		63	276	35	36	0	0
	Puli Hesar														0	0
	Puli Khomri						38	20		1	37	173	224	81	21	0
	Tala Wa Barfak										113	161	102	153	0	0
Baghlan Total		0	0	0	328	929	1,005	199	82	152	597	2,444	2,563	2,742	671	475

⁶² District estimates may not be statistically significant as the sample size at the district level is not appropriate to produce estimate at such level.

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Balkh	Balkh				13	29	29	82	1	22	332	411	2,786	1,975	0	0
	Chahar Bolak				165	530	2,600	53			68	877	2,701	799	0	0
	Chahar Kint											23	25	16	0	0
	Chimtal			1,065	532	485	1,428	2,451		153	617	258	1,878	2,074	0	0
	Dawlat Abad								3	-		141	202	181	0	0
	Dihdadi							22		8	35	16	990	307	0	0
	Feroz Nakhchir														0	0
	Kaldar											152	395	123	0	0
	Khulm											50	367	0	0	0
	Kishindih											111	290	189	0	0
	Marmul											3	18	12	0	0
	Mazari Sharif											50	119	78	0	0
	Nahri Shahi							33		14	30	139	425	833	0	0
	Sholgara							28		19	28	256	543	245	0	0
	Shortepa											8	98	401	0	0
	Zari														0	0
Balkh Total		0	0	1,065	710	1,044	4,057	2,669	4	217	1,108	2,495	10,837	7,233	0	0
Bamyan	Bamyan										20	93	19	17	0	0
	Panjah										250	31		0	0	0
	Sayghan														0	0
	Shibar										36	492	107	0	0	0
	Waras										191	64		0	0	0
	Yakawlang										112	123		0	0	0
Bamyan Total											610	803	126	17	0	0
Day Kundi	Day Kundi *								0	-	836	1,996		1,948		
	Gizab	1,476	16	8	0	0	0	0	0	-	776	1,109		1,243	1,054	665
	Ishtarlay														535	214
	Kijran								0	-	418	189		1,633	366	357
	Khadir														531	289
	Kiti														282	168
	Miransor														512	281
	Nili														0	214
	Sangi Takht														2	1
	Shahristan								1	-	415	421		2,220	64	85
Day Kundi Total		1,476	16	8	0	0	0	0	1	0	2,445	3,715	2,581	7,044	3,346	2,273
Farah	Anar Dara											91	1,828	143	16	239
	Bakwa		1	13	129	31	129	259				39	390	1,093	3,458	3,090
	Bala Buluk		8	19	169	36	186	183			313	336	1,665	1,669	5,312	1,509
	Farah			18	18	10	44	73				87	729	905	1,328	1,013
	Gullatan			581	252	94	428	849			1,187	447	163	202	1,132	4,756
	Khaki Safed											84	432	537	99	609
	Lash Wo Juwayn											41	1,568	215	233	109
	Pur Chamun											409	293	363	1,549	1,046
	Pushi Rod											554	2,482	1,709	1,314	1,588
	Qalay-I-Kah											189	407	506	337	888
	Shib Koh											12	283	352	87	163
Farah Total		0	9	631	568	171	787	1,364	0	500	1,700	2,289	10,240	7,694	14,865	15,010
Faryab	Almur											239	57	338	213	0
	Andkhoy											15	13	31	0	0
	Bilchiragh							6		26	232	24		322	620	102
	Dawlatabad											78	133	27	0	0
	Gurziwan														101	0
	Khani Chahar Bagh											205	6	490	0	0
	Khwanja Sabz Push											129	451	375	238	0
Kohistan	Kohistan											640	50	84	152	10
	Maymana							1				248		218	66	10

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	Pashtun Kot							11		1	281	429	97	60	249	0
	Qaramsqol											55	138	43	0	0
	Qaysar							16			150	1,050	579	880	303	168
	Qurghan														0	0
	Shirin Tagab							3			103	137	1,141	172	924	0
Faryab Total		0	0	0	0	0	0	36	0	28	766	3,249	2,665	3,040	2,966	291
Ghazni	Ab Band													0	0	0
	Ajristan	313								-		62		0	0	0
	Andar													0	0	0
	Bahrami Shahid(Jaghata)												9	0	0	0
	Dih Yak													0	0	0
	Gelan													0	0	0
	Ghazni													0	0	0
	Giro													0	0	0
	Jaghata *													0		0
	Jaghuri													0	0	0
	Khawaja Umari													0	0	0
	Malistan													0	0	0
	Muqur													0	0	0
	Nawa													0	0	0
	Nawur													0	0	0
	Qarabagh													0	0	0
	Rashidan													0	0	0
	Waghaz													0	0	0
	Wali Mohammad Shahid													0	0	0
	Zana Khan													0	0	0
Ghazni Total		313	0	0	0	0	0	0	0	0	0	62	9	0	0	0
Ghor	Chaghcharan									700	1,189	872	1,149	1,233	910	0
	Charsada														41	0
	Dawlat Yar														132	0
	Du Layna														131	0
	Lal Wu Sarjangal											1,055	718	771	200	0
	Paraband									700	805	175	48	241	17	0
	Saghar									300	256	340	120	283	18	0
	Shahrak										640	902	18	1,398	0	0
	Taywara									500	808	649	240	608	39	0
	Tulak										84	990	396	145	16	0
Ghor Total										2,200	3,782	4,983	2,689	4,679	1,503	0
Hilmand	Baghran		2,519	1,267	2,734	2,910	2,794	2,653		1,800	2,309	2,232	2,507	2,890	4,287	4,279
	Dodlu (Rajistan)									-		369	911	851	1,160	688
	Garmser (Hazarjufi)	786	725	942	1,993	1,205	2,643	2,765		2,020	462	1,922	1,912	6,168	6,523	8,000
	Kajaki	979	4,087	2,814	3,904	3,959	5,746	4,625		2,640	1,392	1,676	1,639	6,760	5,807	6,240
	Lashkar Goh	2,256	885	1,054	1,325	1,869	2,528	3,145		1,140	605	1,380	1,332	4,008	6,320	7,857
	Musa Qala	1,154	5,137	3,924	4,360	5,574	7,013	5,686		3,690	2,455	2,404	1,664	6,371	8,854	12,687
	Nad Ali	12,529	5,983	4,035	5,102	5,156	8,667	8,323		5,880	870	4,177	2,356	11,652	20,045	20,824
	Nahri Sarmaj	490	4,716	4,509	4,807	5,476	4,041	4,378		1,850	1,475	6,486	3,548	10,386	22,760	13,270
	Naw Zad	2,345	2,799	3,596	1,585	3,605	4,424	5,085		2,650	3,096	1,051	3,737	2,707	6,192	3,863
	Naway-i Barakzayi Reg (khan Nishin)	6,074	1,254	505	722	1,150	2,581	3,246		2,730	1,240	3,506	2,552	10,168	6,314	13,978
	Sangin	2,866	973	1,909	1,971	1,734	2,646	1,711		1,940		1,893	2,772	3,765	8,484	4,720
	Washer		676	555	877	1,084	1,469	1,014		800	590	892	380	735	865	1,653
Hilmand Total		29,579	29,754	24,910	29,400	30,672	44,552	42,853	0	29,950	15,371	29,353	26,500	69,323	102,770	unana
Hirat	Adruskan											133	9	99	196	22
	Chishti Sharif											166	42	42	0	0
	Farsi										134	28	110	111	0	0

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	Ghoryan											60	238	204	302	0
	Gulistan											240	33	32	0	0
	Guzara											88	231	233	0	0
	Hirat											0	16	16	0	0
	Injil											41	394	582	0	0
	Karukh											265	124	121	0	0
	Kohistan											4	72	73	146	0
	Kushk											73	64	30	367	43
	Kushki Kohistan											3	15	15	0	0
	Obe											842	144	131	0	0
	Pashkun				38			38				154	249	242	0	0
	Shindand							146				427	54	408	516	201
	Zinda Jan											7	128	129	0	0
Hirat Total		0	0	0	38	0	0	184	0	50	134	2,531	1,924	2,288	1,526	266
Jawzjan	Aqcha						532	208		47	171	247	631	30	0	0
	Darab											625	272	16	803	0
	Fayzabad						43	105		24	280	218	112	473	21	0
	Khamyab							6		30	51	40	68	2	0	0
	Khanika														0	0
	Khwaja Da Koh											19	15	271	0	0
	Mardyan						43	111		4	228	174	21	348	62	0
	Mingajik						1,789	141		7	64	101	77	38	0	0
	Qarqin						186	10		24	58	151	43	17	0	0
	Qush Tepa														43	0
	Shibirghun							19		1	36	98	508	828	156	0
Jawzjan Total		0	0	0	0	0	2,593	600	0	137	888	1,673	1,748	2,023	1,086	0
Kabul	Bagrani													0	0	0
	Chahar Asyab													0	0	0
	Dih Sabz													0	0	0
	Farza														0	0
	Guldara													0	0	0
	Istailif													0	0	0
	Kabul													0	0	0
	Kalakan													0	0	0
	Khaki Jabbar													0	0	0
	Mir Bacha Kot													0	0	0
	Musayi													0	0	0
	Paghman													0	0	0
	Qarabagh													0	0	0
	Shakar Dara													0	0	0
	Surobi						132	340	29	58	237	282		80	500	310
Kabul Total		0	0	0	0	0	132	340	29	58	237	282	0	80	500	310
Kandahar	Arghandab	211	87	331	561	399	750	459		330	139	261	287	735	1,016	57
	Argistan						38	13		80	14	651	2,449	784	310	28
	Daman						110	50		190	357	895	775	183	375	19
	Ghnrak	347	803	692	1,503	1,126	1,109	574		380	166	241	233	336	1,445	232
	Kandahar (Dand)	320	53	234	21	73	227	156		640	293		0	1,367	1,220	590
	Khakrez	362	274	627	286	518	632	320		560	312	145	185	217	132	1,224
	Maruf	30	16	1		3	5	17		-	63	117	150	464	914	182
	Maywand	256	333	618	1,278	2,497	2,022	995		1,090	353	514	1,281	1,362	2,878	3,375
	Miya Nishin														322	1,603
	Nesh														432	3,284
	Panjwayi *	250	357	266	255	134	132	184		150	482	864	4,687	4,714		
	Reg											0	327		4	0
	Shah Wali Kot	678	97	94	127	162	236	238		260	489	923	2,379	1,593	1,258	560
	Shorabak										111	45	19	409	308	4

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	Spin Boldak	1,170	107	194	91	317	261	26		290	277	303	218	454	768	541
	Zhəri														5,232	2,923
Kandahar Total		3,624	2,127	3,657	4,122	5,229	5,522	3,034	0	3,970	3,055	4,959	12,990	12,618	16,615	14,623
Kapisa	Alasay											77	82	0	367	0
	Hisa-i-Awali Kohistan														0	0
	Hisa-i-Dawumi Kohistan														0	0
	Koh Band											111	33	0	0	0
	Kohistan *											116		0		0
	Mahmud Razi											10		0	0	0
	Nijrab											92		0	0	0
	Tagab						5	104	0	207	326	116		282	468	436
Kapisa Total		0	0	0	0	0	5	104	0	207	326	522	115	282	835	436
Khost	Bak											0		14	0	0
	Gurbuz											47		10	0	0
	Jaji Maydan											8		16	0	0
	Khowi(Matun)											0		0	0	0
	Mando Zayi											125		0	0	0
	Musa Khel											86		0	0	0
	Nadir Shah Kot											75		0	0	0
	Qalandar											39		0	0	0
	Sabari											0		0	0	0
	Sharnai														0	0
	Spera										118	0		5	0	0
	Tani								6		237	458	2	88	0	0
	Tere Zayi											0		0	0	0
Khost Total		0	0	0	0	0	0	0	6	0	375	838	2	133	0	0
Kunar	Asad Abad						73	230	1	140	306	841	270	346	42	242
	Bar Kunar						47	72	31	40	163	52	14	10	111	7
	Chapa Dara											535	147	23	0	0
	Charukay	13	11			8	9	50	8	140	83	571	284	111	19	9
	Dangam								4	49		44	22	9	90	0
	Ghaziabad														5	0
	Khas Kunar	75	82	10		12	50	173		70		298	41	18	8	1
	Marawara										345	170	22	33	6	0
	Narang		15	1		13	27	84	10	100	173	425	55	25	57	0
	Nari								1	-	60	0	19	0	80	15
	Nurgal	27	19	5		8	28	98	9	70	353	460	58	88	7	0
	Pech								11	263	310	585	76	183	0	0
	Shaygal wa Shifin														5	0
	Sirkunay		25	2		34	54	71	8	100	141	385	50	75	11	6
	Wata Pur														3	0
Kunar Total		115	152	18	0	75	288	786	82	972	2,025	4,366	1,059	931	446	290
Kunduz	Ali Abad						3	51		3	5	41		0	0	0
	Archi											9		102	0	0
	Chuhar Dara						8	30		6	15	37		0	0	0
	Imam Sahib						3					38		0	0	0
	Khan Abad						2	36			11	70		0	0	0
	Kunduz						9	51		3	9	32		0	0	0
	Qalay-i- Zal						11	321		5	8	7	275	0	0	0
Kunduz Total		0	0	0	0	0	38	489	0	16	49	224	275	102	0	0
Laghman	Alingar					2	71	131	3	146	354	593	107	259	23	13
	Alishing					3	26	88	0	104	148	597	69	192	237	370
	Dawlat Shuh								12	-	571	233	44	118	124	3
	Miharlani					14	72	190		240	366	580	25	0	0	16
	Qarghayi					58	128	298	0	460	468	753	30	140	177	23

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Laghman Total		0	0	0	0	77	297	707	15	950	1,907	2,756	274	709	561	425
Logar	Azra														0	0
	Baraki Barak													0	0	0
	Charkh													0	0	0
	Khurwar														0	0
	Khunbi													0	0	0
	Muhamamad Agha													0	0	0
	Puli Alam													0	0	0
Logar Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nangarhar	Achin	5,354	2,187	2,315	1,640	1,693	2,209	1,317	1	940	2,131	1,907	198	1,274	1,797	0
	Bati Kot	3,797	329	392	1,013	2,034	603	335		2,390	1,994	4,683	166	550	1,774	0
	Bihsod														0	0
	Chuparhar	1,089	1,377	1,750	1,234	1,365	977	832	2	990	1,169	1,818	20	209	878	0
	Dara-I-Nur	1,302	392	199	73	199	734	421		380	24	472	2	0	322	0
	Dih Bala	307	646	354	569	511	468	439	11	650	927	358	17	68	1,075	0
	Dar Baba	29	78	38	39	56	50	33		40	31	99	5	19	36	0
	Goshda	1,249	467	116	77	122	240	238	99	150	13	217	10	41	109	0
	Hisaruk	202	453	253	370	436	741	541	2	620	1,016	1,392	64	283	295	0
	Jalalabad	458	31	51	123	397	979	1,021		90	4	1,658	77	0	0	0
	Kama		18			198	389	589		1,120	558	1,898	82	0	0	0
	Khogyani	4,347	2,577	2,628	3,385	3,808	5,338	4,913	3	2,640	2,986	2,269	117	750	3,253	0
	Kot														0	0
	Kuz Kunar	293	233	115	15	105	236	399		500	102	801	37	151	153	0
	Lal Pur	302	267	79	66	137	270	248	95	250	1	362	17	68	356	0
	Muhamad Dara	1,630		156	83	125	290	255		720	19	1,170	54	221	995	0
	Nazyan	343	138	251	111	252	184	177		150	98	168	8	160	266	0
	Pachir Wa Agam	768	571	681	400	488	731	630	3	420	1,142	1,091	35	143	594	0
	Rodat	1,026	2,038	1,959	1,583	2,147	3,649	2,302		2,760	3,313	3,633	50	0	3,755	0
	Sherrod	1,954	2,351	1,646	1,689	1,302	1,741	1,719	2	1,470	1,641	1,229	57	430	864	0
	Shinwar	3,881	1,265	2,075	1,478	1,374	1,559	1,300		2,060	1,616	1,759	79	504	2,218	0
	Surkh Rod	747	106	587	619	1,072	1,602	1,840	0	1,440	118	1,229	0		0	0
Nangarhar Total		29,081	15,724	15,645	14,567	17,821	22,990	19,747	218	19,780	18,904	28,213	1,093	4,871	18,739	0
Nimroz	Chahar Burja											65	526	1,119	87	4
	Chakhansur											0		0	0	1
	Kang	10	2	1	107	5	2					0		40	0	0
	Khash Rod	672	117	135	535	6	201	219			26	50	1164	661	6,421	6,197
	Zaranj													135	0	0
Nimroz Total		682	119	136	642	11	203	219	0	300	26	115	1,690	1,955	6,507	6,203
Nuristan	Bargi Matal											2	535	522	0	0
	Du Ab														0	0
	Kandesh										210	307	269	262	0	0
	Mandol											0	731	713	0	0
	Nurgaram														0	0
	Nuristan										438	185	19	19	0	0
	Wama											66		0	0	0
	Waygal											205		0	0	0
Nuristan Total											648	765	1,554	1,516	0	0
Paktika	Barmal													0	0	0
	Dila													0	0	0
	Gayan													0	0	0
	Gomal													0	0	0
	Jani Khel														0	0
	Mata Khan													0	0	0
	Nika													0	0	0
	Omna													0	0	0
	Sar Hawza													0	0	0

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	Sarobi													0	0	0
	Sharan													0	0	0
	Turwo														0	0
	Uegun													0	0	0
	Waza Khlwa													0	0	0
	Wor Mamay													0	0	0
	Yahya Khel														0	0
	Yosuf Khel														0	0
	Zarghun Shahr													0	0	0
	Zirak													0	0	0
Paktika Total		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paktya	Azra					4	29	46	1	38	419	603		0	0	0
	Chamkani								0	-	76	275		0	0	0
	Dand Wa Patan											175		0	0	0
	Gardez													0	0	0
	Jadran											0		0	0	0
	Jaji								0	-	185	11		0	0	0
	Jani Khel											18		0	0	0
	Lija Mangal								0	-		118		0	0	0
	Sayid Karam								0	-	41	0		0	0	0
	Shamul *											0		0		0
	Shwak											0		0	0	0
	Zarmat											0		0	0	0
Paktya Total		0	0	0	0	4	29	46	1	38	721	1,200	0	0	0	0
Panjshir	Bazarak														0	0
	Dara														0	0
	Khinj (Hisa-I-Awal Panjshir)											0		0	0	0
	Hisa-I-Darwumi Panjshir											0		0	0	0
	Panjshir											0		0	0	0
	Paryan														0	0
	Rukha														0	0
	Shutal														0	0
	Unaba														0	0
Panjshir Total												0		0	0	0
Parwan	Bagram											274		0	0	0
	Chaharikar											181		0	0	0
	Ghorband											141		0	0	0
	Jabalussaraj											21		0	0	0
	Kobi Safi											41		124	0	0
	Salang											0		0	0	0
	Sayd Khel														0	0
	Shekh Ali											263		0	0	0
	Shinwari											389		0	0	0
	Surkh Parsa											0		0	0	0
Parwan Total		0	0	0	0	0	0	0	0	0	0	1,310	0	124	0	0
Samangan	Aybak										14	27	0	0	0	0
	Dara-I-Sufi Bala								614		34	196	1,454	1,182	0	0
	Dara-I-Sufi Payin														0	0
	Hazrat Sultan										29	83	280	90	0	0
	Khuram Wa Sarbagh							54	0		24	238	307	99	0	0
	Ruyi Du Ab											605	1,833	389	0	0
Samangan Total		0	0	0	0	0	0	54	614	100	101	1,151	3,874	1,960	0	0
Sari Pul	Balkhab										453	204	95	188	0	0
	Gosfandi														0	0
	Kobistanat											471	1,424	377	0	0

Province	District	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
	Sangcharak											687	441	1,122	16	0
	Sari Pul										595	476	959	415	203	0
	Sayyad											23	52	25	41	0
	Sozma Qala	0	0	0	0	0	0	146	0	57	380	113	256	124	0	0
Sari Pul Total								146	0	57	1,428	1,974	3,227	2,251	260	0
Takhar	Baharak														0	0
	Bangl							8	0		20	13		0	79	0
	Chah Ab						17	45	19		4	27		70	0	0
	Chal						8	17	20			30		15	9	0
	Daraqad											15		0	0	0
	Dashti Qala														0	0
	Farkhar						6	6	26		43	27	43	118	32	0
	Hazar Sumuch														32	0
	Ishkamish							10	19		77	40		2	47	0
	Kalafgan						101	93	27		77	69		609	318	0
	Khwaja Bahawuddin														0	0
	Khwaja Ghar						9	57	32		26	35		109	0	0
	Namak Ab														0	0
	Rustaq						10	151	24		34	194	1,321	816	118	0
	Taluqan						16	97	16		14	113		77	577	0
	Warsaj						12	9	10		14	66		46	0	0
	Yangi Qala						22	154	20		71	131		317	0	0
Takhar Total		0	0	0	0	0	201	647	211	788	380	762	1,364	2,179	1,211	0
Uruzgan	Chora	694	424	1,574	233	652	932	1,179	0	1,330	975	1,402	259	2,024	71	316
	Dihmud	909	938	2,923	1,870	1,033	1,243	726	0	1,340	1,282	2,523	209	1,704	3,538	2,849
	Khas Uruzgan	0	4	0	0	0	0	130	0	-	580	358	338	886	173	304
	Nesh *	410	334	104	399	373	510	394	0	490	59	426	352	614		
	Shahidi Hovvas	1,337	12	0	0	1,158	1,110	802	0	1,190	1,333	782	646	1,127	3,109	4,403
	Tirin Kot	1,428	1,180	3,271	2,484	1,445	1,194	1,494	0	730	469	1,874	221	3,348	2,312	2,067
Uruzgan Total		4,778	2,892	7,872	4,986	4,661	4,989	4,725	0	5,100	4,698	7,365	2,025	9,703	9,203	9,939
Wardak	Chuk										211	284		0	0	0
	Day Mirdad										0	90	106	0	0	0
	Hisa-i-Awali Bihmad										22	0		0	0	0
	Jalrez										331	78		0	0	0
	Markazi Bihmad										472	0		0	0	0
	Maydan Shahr										527	102		0	0	0
	Nirakh										780	215		0	0	0
	Sayd Abad										192	248		0	0	0
Wardak Total											2,735	1,017	106	0	0	0
Zabul	Arghandab	0	0	0	0	0	74	139	0		302	526	205	346	79	55
	Atghar										188	32	86	36	16	3
	Daychopan	0	0	0	0	0	41	114	0		646	431	1,016	742	389	422
	Kakar (Khak-e Afghan)														104	110
	Mizon	54	0	255	154	160	373	383	0		309	251	56	123	129	289
	Naw Bahar														63	44
	Qalai	0	0	0	0	1	46	40	0		689	317	188	657	78	310
	Shahjoy								0		178	679	240	538	320	237
	Shamulzayi										65	44	16	35	159	153
	Shinkay										164	287	102	228	139	105
	Tarnak wa Jiddak	0	0	0	0	0	77	48	1			410	145	506	136	608
Zabul Total		54	0	255	154	161	537	585	1	200	2,541	2,977	2,083	3,211	1,611	2,335
TOTAL		69,940	53,743	56,819	58,417	63,672	90,909	82,033	7,606	74,045	80,482	126,899	103,919	164,969	192,981	157,253
Rounded Total		70,000	54,000	57,000	58,000	64,000	91,000	82,000	8,000	74,000	80,000	131,000	104,000	165,000	193,000	157,000

ANNEX III: ERADICATION FIGURES BY DISTRICT (2008)

Province	District	Eradication (ha) verified (includes eradication during lancing stage)	No. of fields where eradication reported	No. of villages where eradication reported	Total ha of poppy remaining after eradication in surveyed villages	% of opium poppy eradication in surveyed villages
Badakhshan	Arghanj Khwa	1	2	1	0	100
	Argo	181	287	48	242	43
	Baharak	283	379	49	15	95
	Darayim	373	736	48	113	77
	Fayzabad	35	116	16	1	97
	Jurm	192	361	29	124	61
	Kishim	109	316	43	17	87
	Shahri Buzurg	2	10	3	0	100
	Tishkan	13	12	4	0	100
	Warduj	22	94	20	1	95
	Yaftali Sufla	100	162	12	4	96
Badghis	Ghormach	23	100	15	13	64
	Jawand	8	56	3	10	46
	Murghab	177	1072	12	3458	5
	Qadis	24	94	4	11	68
Baghlan	Andarab	6	8	1	0	100
	Baghlani Jadid	48	63	6	0	100
	Burka	15	26	4	0	100
	Dih Salah	27	26	5	9	75
	Dushi	10	17	2	0	100
	Nahrin	12	20	1	0	100
	Puli Hisar	22	28	2	6	78
	Tala Wa Barfak	46	85	12	1	97
Balkh	Chimtal	13	20	2	10	56
	Sholgara	1	5	1	1	52
Day Kundi	Shahristan	5	102	5	13	29
Farah	Bakwa	17	55	11	378	4
	Bala Buluk	80	142	15	804	9
	Khaki Safed	21	56	8	382	5
	Pusht Rod	26	48	2	62	29
Faryab	Bilchiragh	8	63	5	0	100
	Gurziwan	28	109	18	23	55
	Khwaja Sabz	43	177	12	2	96
	Pashtun Kot	26	139	8	0	99
	Qaysar	220	925	63	61	78
	Shirin Tagab	12	43	4	0	100
Ghor	Chaghcharan	85	73	10	200	30
	Charsada	51	100	19	276	16
	Dawlat Yar	52	69	8	54	49
Hilmand	Lashkar Gah	1,511	509	71	2,714	36
	Nahri Sarraj	435	139	22	992	30
Hirat	Adraskan	0.3	3	3	0	100
	Ghoryan	12	58	16	6	68
	Kohsan	3	13	2	2	63

Province	District	Eradication (ha) verified (includes eradication during lancing stage)	No. of fields where eradication reported	No. of villages where eradication reported	Total ha of poppy remaining after eradication in surveyed villages	% of opium poppy eradication in surveyed villages
	Kushk	20	28	8	166	11
	Shindand	35	157	36	96	27
Jawzjan	Darzab	24	51	3	0	100
	Qush Tapa	83	95	6	0	100
	Shibirghan	16	63	8	0	100
Kabul	Surobi	14	53	5	8	64
Kandahar	Arghandab	519	174	42	352	60
	Daman	1,017	482	57	262	80
	Dand	1,084	582	104	1,079	50
	Maywand	1,814	466	59	273	87
	Panjwayi	1,346	679	58	2,207	38
	Shah Wali Kot	90	35	10	22	80
	Takhta Pul	877	399	48	755	54
	Zhari	1,160	211	47	0	100
Kapisa	Hisa-i-Duwumi Kohistan	0.2	6	3	0	100
	Koh Band	5	225	17	16	25
	Mahmud Raqi	1	14	7	0	100
	Nijrab	4	153	7	29	12
Khost	Gurbuz	1	5	1	0	100
	Jaji Maydan	3	78	2	0	100
	Spera	2	21	1	0	100
	Tani	12	67	8	0	100
Kunar	Asad Abad	0.5	18	2	0	100
	Chawkay	0.5	9	3	0	100
	Dangam	4	38	2	0	100
	Marawara	7	109	9	9	42
	Narang	5	49	5	0.1	98
	Nurgal	10	40	2	0	100
	Shaygal wa Shiltan	12	86	5	0	100
	Sirkanay	17	93	5	0	100
Kunduz	Khan Abad	5	17	2	0	100
Laghman	Alingar	442	1498	56	38	92
	Alishing	125	353	16	23	84
	Dawlat Shah	202	532	20	25	89
	Mihtarlam	4	15	1	0	100
	Qarghayi	29	99	7	25	54
Nangarhar	Achin (Spin Ghar)	207	980	83	994	17
	Bati Kot	479	554	35	3311	13
	Bihsud	1	19	1	2	42
	Chaparhar	78	301	24	78	50
	Dara-I-Nur	9	84	10	16	35
	Dih Bala	106	640	36	180	37

Province	District	Eradication (ha) verified (includes eradication during lancing stage)	No. of fields where eradication reported	No. of villages where eradication reported	Total ha of poppy remaining after eradication in surveyed villages	% of opium poppy eradication in surveyed villages
	Dur Baba	1	26	5	6	20
	Goshta	85	194	22	261	25
	Khogyani	196	747	40	681	22
	Kot	242	361	44	1918	11
	Kuz Kunar (Khewa)	3	31	1	1	77
	Lal Pur	249	408	32	582	30
	Muhmand Dara	361	795	42	1034	26
	Nazyan	54	274	30	205	21
	Pachir wa Agam	56	249	15	383	13
	Rodat	120	413	40	2949	4
	Sherzad	25	139	13	20	56
	Shinwar (Ghani Khil)	755	1722	70	1150	40
	Surkh Rod	21	65	5	4	83
Nimroz	Chahar Burja	14	45	6	1	91
	Chakhansur	2	5	1	0	100
	Khash Rod	19	37	9	124	13
Nuristan	Nurgaram	0.4	8	2	13	3
Parwan	Kohi Safi	4	144	4	0	100
Sari Pul	Balkhab	1	10	1	0	100
	Kohistanat	14	18	1	0	100
	Sayyad	104	205	39	25	80
Takhar	Chal	21	32	5	0	100
	Kalafgan	105	407	21	110	49
	Rustaq	240	990	54	96	71
	Taluqan	350	820	60	63	85
Uruzgan	Tirin Kot	121	156	18	445	21
Zabul	Shahri Safa	183	67	23	61	75
Grand Total		17,587	24,864	2,109	30,103	37