



**UNODC**

United Nations Office on Drugs and Crime



Islamic Republic of Afghanistan  
Ministry of Counter Narcotics



# Afghanistan

## Opium Survey 2012

MAY 2013

## ABBREVIATIONS

AGE	Anti-government Elements
ANP	Afghan National Police
CNPA	Counter Narcotics Police of Afghanistan
GLE	Governor-led Eradication
ICMP	Illicit Crop Monitoring Programme (UNODC)
ISAF	International Security Assistance Force
MCN	Ministry of Counter-Narcotics
UNODC	United Nations Office on Drugs and Crime

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## Preface

Afghanistan cultivates, produces and process narcotics that are a threat to the region and worldwide. However, the international community also needs to understand that Afghanistan itself is a victim of this phenomenon. The existence of hundreds of thousands of problem drug users, as well as decades of civil war, terrorism and instability are all related to the existence of narcotics in the country.

According to the findings of this survey, the total area under cultivation was estimated at 154,000 hectares, an 18 per cent increase from the previous year. Comparisons of the gross and net values with Afghan's licit GDP for 2012 also serve to highlight the opium economy's impact on the country. In 2012, net opium exports were worth some 10 per cent of licit GDP, while the farm-gate value of the opium needed to produce those exports alone was equivalent to 4 per cent of licit GDP.

On the basis of shared responsibility and the special session of the United Nation's General assembly in 1998, the international community needs to take a balanced approach by addressing both the supply and the demand side equally. In addition, more attention needs to be paid to reduce demand and the smuggling of precursors as well as provide further support to the Government of Afghanistan.



Zarar Ahmad Muqbel Osmani  
Minister of Counter Narcotics

## Preface

One year ahead of the withdrawal of the international forces from Afghanistan, the results of the *Afghan Opium Survey 2012* show there is still much work to be done in countering opium poppy cultivation and production. According to the findings of the Survey, the total area under cultivation was estimated at 154,000 hectares, an 18 per cent increase from the previous year.

The Southern region, which accounts for 69 per cent of Afghan's total production, continues to produce the vast majority of opium in 2012. The Western region is the country's second most important opium-producing region, with around 23 per cent of national production.

In terms of the gross export value of opium and heroin/morphine exports, in 2012, UNODC estimated that figure at US\$ 2.0 billion. The net export value of Afghan opiates in 2012 was calculated at US\$ 1.94 billion. Regarding Afghanistan's domestic market, the gross value of this market was valued at US\$160 million.

Comparisons of the gross and net values with Afghan's licit GDP for 2012 also serve to highlight the opium economy's impact on the country. In 2012, net opium exports were worth some 10 per cent of licit GDP, while the farm-gate value of the opium needed to produce those exports alone was equivalent to 4 per cent of licit GDP.

Despite these far from positive results, it is worth stressing that Afghanistan still retains 17 provinces that are free of poppy cultivation. This includes every northern province, with the exception of 1 province. As a result, opium poppy cultivation is largely confined to the South and West of the country. Furthermore, while opium cultivation increased in most of the main poppy-cultivating provinces, including in Hilmand itself, less poppy was cultivated within the confines of the Hilmand "Food Zone", where agricultural support programmes are implemented.

Between 2011 and 2012, the per-hectare gross income from opium cultivation also decreased by 57 per cent to US\$4,600; this means that the income level is virtually the equivalent of the income figure of 2010.

UNODC is working hard to support the Afghan government, alongside its trusted partner, the Ministry of Counter-Narcotics. There were two key achievements in 2012. First, national policies in Law Enforcement, Alternative Livelihoods and Drug Demand Reduction are now guiding counter narcotics action in Afghanistan. Second, progress has been made in mainstreaming counter narcotics efforts more broadly within Afghanistan.

Regarding UNODC's Country Programme, it has been extended to 2014 and is founded on a strong working relationship with the government. The programme will continue to deliver an effective strategy to counter narcotics and crime by focusing on alternative livelihoods, reducing drug demand and preventing and treating drug-related HIV. The programme is one of UNODC's largest worldwide and is closely linked to the Regional Programme for Afghanistan and Neighbouring Countries, which has now completed its first year.

The problem of Afghan's opiates will not be solved in the short-term, but we do need to accelerate the process, especially as 2014 is fast approaching. Both UNODC, and the wider UN system, is doing everything possible to increase its assistance to Afghanistan. It will, however, take the concerted efforts of the entire international community to produce lasting successes for Afghanistan and its people.



Yury Fedotov

Executive Director, United Nations Office on Drugs and Crime

## Key Findings

- The total area under opium poppy cultivation in Afghanistan in 2012 was estimated at 154,000 hectares, a 18% increase from the previous year.
- The vast majority (95%) of opium cultivation took place in nine provinces in Afghanistan's Southern and Western regions, which include the country's most insecure provinces. In mirroring the polarization in the security situation between the lawless south and the relatively stable north of the country, this confirms the link between security and opium cultivation observed in previous years.
- Hilmand remained Afghanistan's major opium-cultivating province, followed by Farah, Kandahar, Uruzgan, Nimroz, Nangarhar, Badghis, Badakhshan, Kunar, Day Kundi, Hirat, Laghman, Zabul, Kapisa, Ghor and Kabul.
- Opium cultivation increased in most of the main poppy-cultivating provinces, including in Hilmand itself (19%). However, relatively less poppy was cultivated inside the Hilmand "Food Zone", where agricultural support programmes are implemented, than in the rest of the province.
- Based on preliminary results from other countries, opium cultivation in Afghanistan represented 64% of global cultivation in 2012.
- Total eradication of opium poppy increased by 154% in 2012 due to an increase in Governor-led eradication (GLE) in all regions, which accounted for 9,672 hectares.
- Even though the area eradicated was the equivalent of less than 6.5 % of the total area under opium cultivation, with a total of 102 fatalities and 127 injured, the human cost of the eradication campaign was far higher in 2012 than in the preceding year.
- Average opium yield amounted to 23.7 kilograms per hectare in 2012, which is 47% less than in 2011 (44.5 kilograms per hectare). This was due to a combination of a disease of the opium poppy and adverse weather conditions, particularly in the Eastern, Western and Southern regions of the country.
- Potential opium production was estimated at 3,700 tons in 2012. While a 36% decrease from the previous year, based on preliminary results for some countries and regions, this figure represented 74% of global potential production.
- The opium yield and production estimates of the years 2006 to 2009 were revised downward after a careful review revealed data quality problems which had led to an overestimation of the per-hectare yield.
- Accounting for 69% of national production, the Southern region continued to produce the vast majority of opium in Afghanistan in 2012. The Western region was the country's second most important opium-producing region, with 23% of national production.
- At US\$ 0.73 billion, or the equivalent of roughly 4% of the country's estimated GDP, the farm-gate value of opium production in 2012 fell by 49%.
- The *gross* export value of opium and heroin/morphine exports in 2012 was US\$ 2.0 billion (US\$ 2.6 billion in 2011). The *net* export value of Afghan opiates in 2012 was US\$ 1.94 billion. Far smaller, the gross value of the domestic market for the drugs was estimated to be US\$ 0.16 billion.
- A comparison of these gross and net values with the licit 2012 GDP of Afghanistan (US\$ 18.95 billion) shows the magnitude of the Afghan opium economy. In 2012, net opium exports were worth some 10% of licit GDP, while the farm-gate value of the opium needed to produce those exports alone was equivalent to 4% of licit GDP. The net value of the domestic market for opiates is small by comparison, but still worth approximately 1% of licit GDP.

- On average, poppy-growing households in Afghanistan continue to have a higher cash income than households that do not grow poppy.
- Between 2011 and 2012, per-hectare gross income from opium cultivation decreased by 57% to US\$ 4,600, virtually the same level as in 2010. Farmers reported average expenditure corresponding to 28% of gross income, leading to a net income of US\$ 3,300 per hectare.
- In 2012, opium prices remained very high but decreased slightly in all regions of Afghanistan, though in the Eastern, Western and Southern regions, in particular, they showed signs of stabilization at a high level. There is thus a clear incentive for Afghan farmers to continue cultivating opium.
- In general, opium-growing villages are situated significantly further from the nearest agricultural market than non-opium-growing villages, suggesting that market accessibility and farmers' options for cultivating legitimate agricultural produce and to cultivate opium are issues that need to be addressed.
- The link between opium cultivation and lack of development is shown by the fact that while over 90% of non-poppy-growing villages have a boys' school and almost three quarters a girls' school, these proportions drop to 61% (boys' school) and 19% (girls' school) in poppy-growing villages. The possible negative long-term effect of having less access to education than their contemporaries, and the absence of schools for girls in over four fifths of poppy-growing villages in particular, is worrying.
- Cannabis cultivation is closely related to poppy cultivation: 71% of poppy-growing villages reported cannabis cultivation in 2012, while only 2% of poppy-free villages reported it.

## Fact Sheet Afghanistan Opium Survey 2012<sup>1</sup>

	2011	Change from 2011	2012
Net opium poppy cultivation (after eradication)	131,000 hectares (109,000-155,000)	18%	154,000 hectares (125,000-189,000)
Percentage of global cultivation*	63%		64%
Number of poppy-free provinces <sup>2</sup>	17	No change	17
Number of provinces affected by poppy cultivation	17	No change	17
Eradication	3,810 hectares	+154%	9,672 hectares
Average opium yield (weighted by cultivation)	44.5 kg/ hectare	-47%	23.7 kg/ hectare <sup>3</sup>
Potential production of opium**	5,800 tons (4,800-6,800 tons)	-36%	3,700 tons (2,800-4,200 tons)
In % of global production*	83%		74%
Average farm-gate price (weighted by production) of fresh opium at harvest time	US\$ 180/kg	-9%	US\$ 163/kg
Average farm-gate price (weighted by production) of dry opium at harvest time	US\$ 241/kg	-19%	US\$ 196/kg
Current GDP <sup>4</sup>	US\$ 16.34 billion		US\$ 18.95 billion
Total farm-gate value of opium production	US\$ 1.4 billion	-49%	US\$ 0.73 billion (US\$ 0.5-0.8 billion)
In % of GDP	9%		4%
Potential gross export value of opiates	US\$ 2.6 billion (US\$ 2.1-3.4 billion)		US\$ 2.0 billion (US\$ 1.3-2.9 billion)
In % of GDP	16%		11%
Potential net export value of opiates	US\$ 2.4 billion (US\$ 2.1-2.9 billion)		US\$ 1.9 billion (US\$ 1.3-2.7 billion)
In % of GDP	15%		10%
Farmers' gross income from opium per hectare <sup>5</sup>	US\$ 10,700	-57%	US\$ 4,600
Farmers' net income from opium per hectare <sup>6</sup>	US\$ 9,300	-65%	US\$ 3,300
Ratio of farmers' gross (net) income from wheat to opium	1:11 (1:8)		1:4 (1:3)

\* Based on provisional estimates for some countries and regions.

\*\* Refers to oven-dry opium

<sup>1</sup> Numbers in brackets indicate the upper and lower bounds of the estimation range.

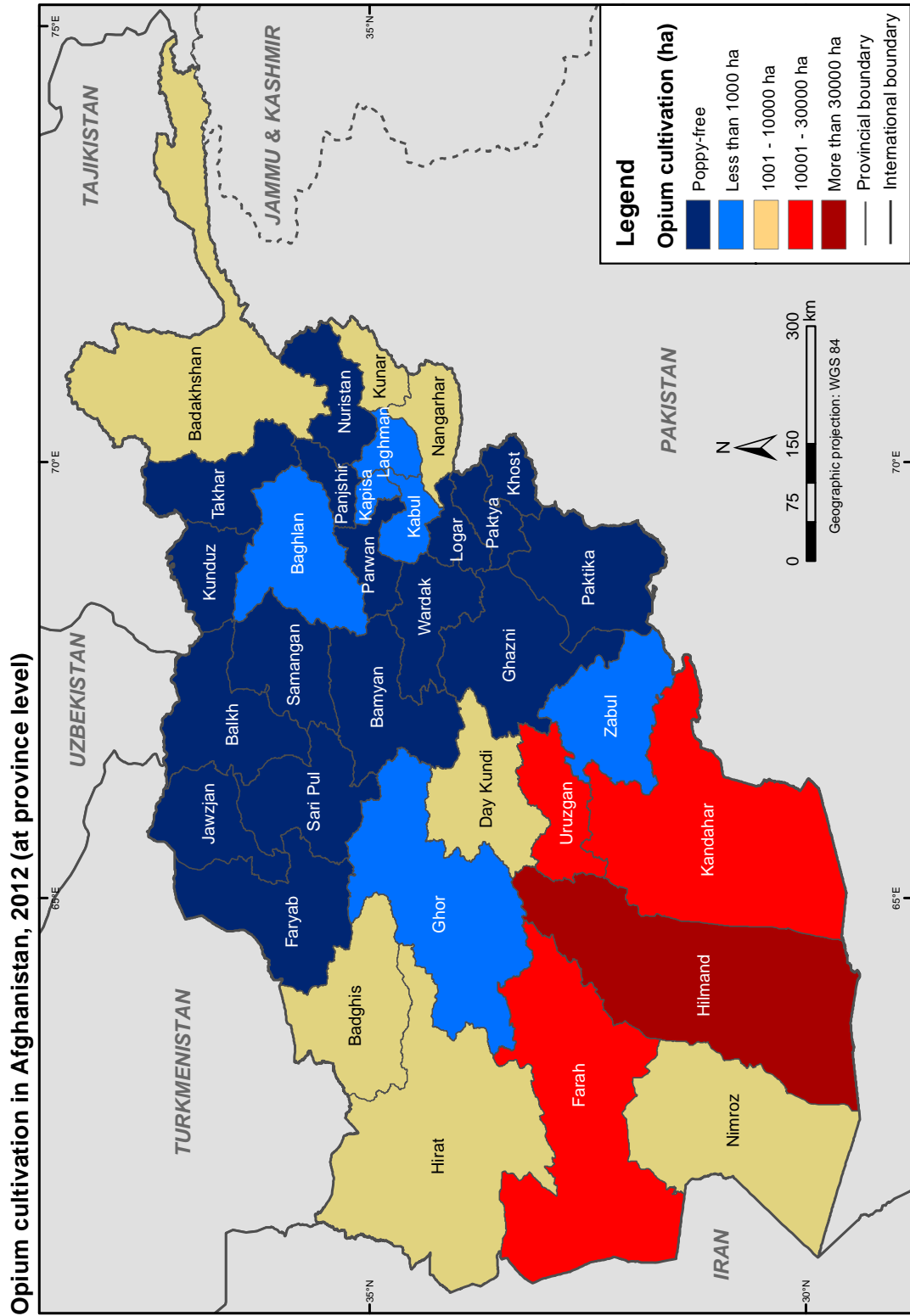
<sup>2</sup> Poppy-free provinces are those estimated to have less than 100 hectares of opium cultivation.

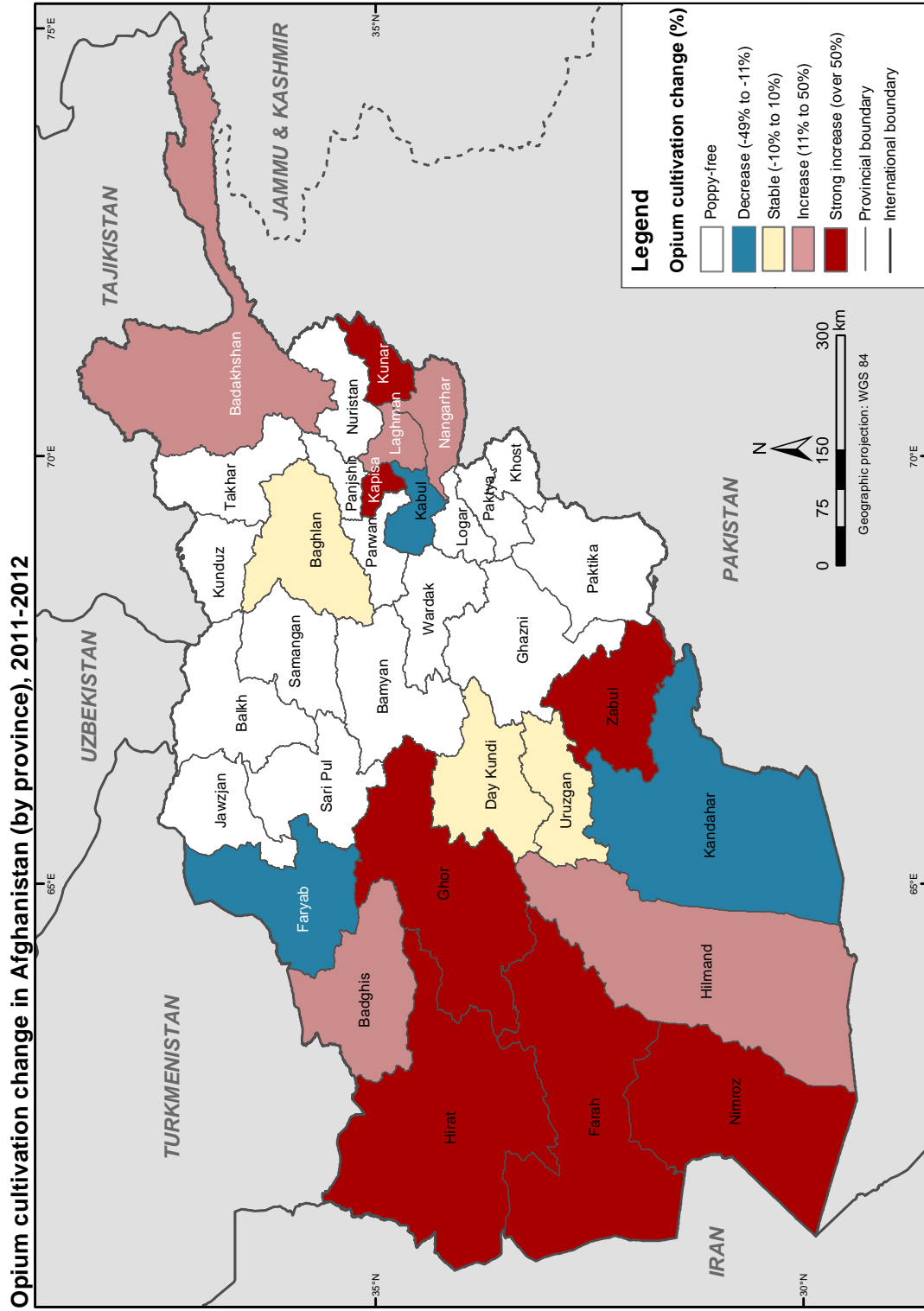
<sup>3</sup> There have been reports from the Eastern, Western and Southern regions that a significant area was affected by disease and/or adverse weather conditions, which reduced the opium yield. The yield survey captured this impact at least partially. However, a stronger reduction of yield cannot be excluded.

<sup>4</sup> Relation to nominal GDP of the respective year. Source: Government of Afghanistan, Central Statistical Office.

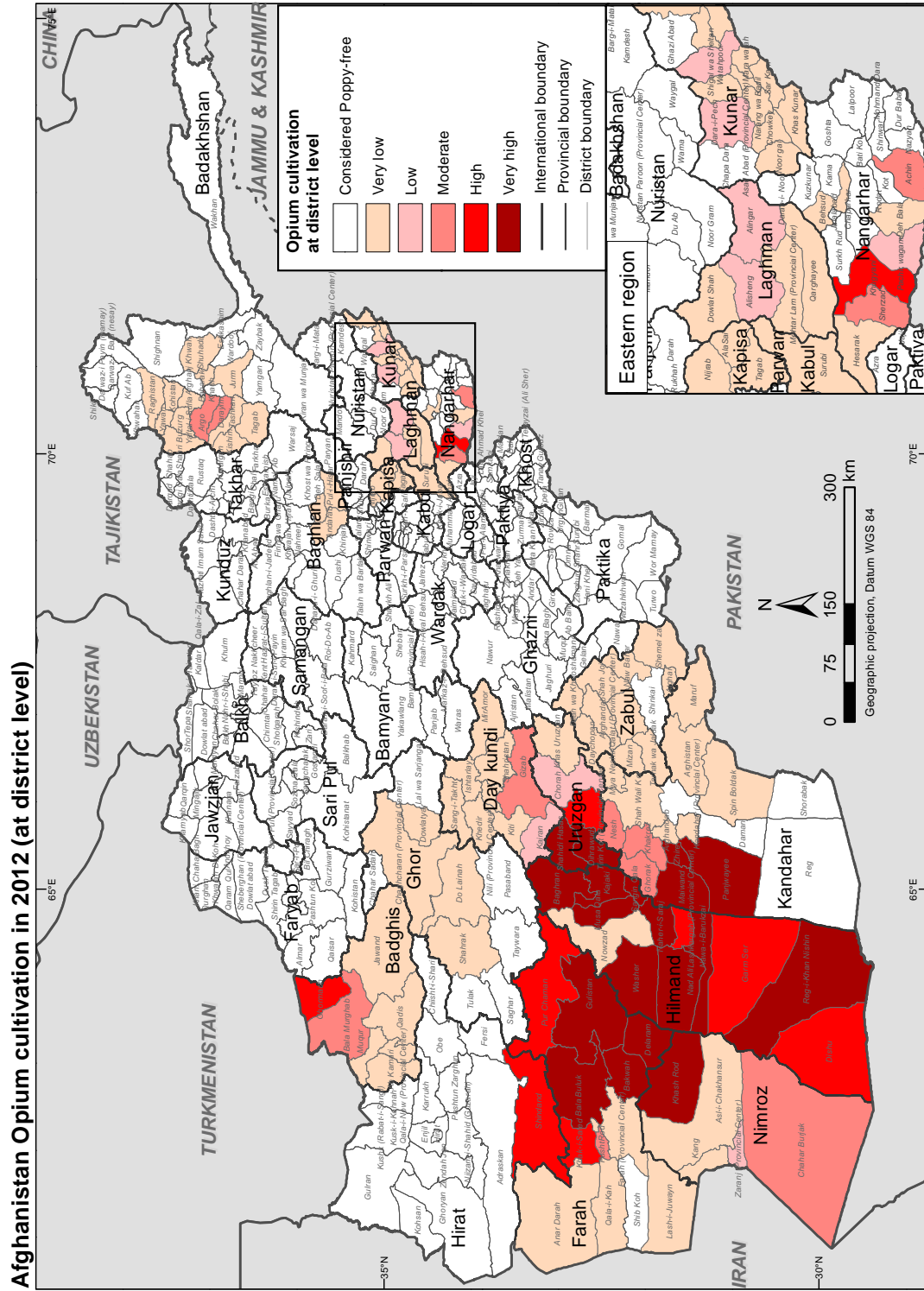
<sup>5</sup> Income figures are indicative only as they do not include all expenditure and income components associated with opium cultivation.

<sup>6</sup> The expenditure reported by poppy farmers was used to calculate the net income instead of a proportional estimate of cultivation costs. The 2011 value was updated accordingly. See MCN/UNODC Afghanistan Opium Survey 2011, December 2011, p. 73 for more details.





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.



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## 1. Introduction

The *Afghanistan Opium Survey* is implemented annually by the Ministry of Counter Narcotics (MCN) of Afghanistan in collaboration with the United Nations Office on Drugs and Crime (UNODC). The survey team collects and analyses information on the location and extent of opium cultivation, potential opium production and the socio-economic situation in rural areas. Since 2005, MCN and UNODC have also been involved in the verification of opium eradication conducted by provincial governors and poppy eradication forces. The results provide a detailed picture of the outcome of the current year's opium season and, together with data from previous years, enable the identification of medium-and long-term trends in the evolution of the illicit drug problem. This information is essential for planning, implementing and monitoring the impact of measures required for tackling a problem that has serious implications for Afghanistan and the international community.

The opium survey is implemented within the technical framework of the UNODC Illicit Crop Monitoring Programme (ICMP). The objective of ICMP is to assist the international community in monitoring the extent and evolution of illicit crops within the context of the Plan of Action adopted by the United Nations (the 53<sup>rd</sup> session of the Commission on Narcotic Drugs in March 2009). Under ICMP, monitoring activities currently supported by UNODC exist also in other countries affected by illicit crop cultivation, namely in Myanmar and the Lao People's Democratic Republic in Asia, and in the Plurinational State of Bolivia, Colombia, Ecuador, Mexico and Peru in Latin America.

The *2012 Afghanistan Opium Survey* was implemented under project AFG/F98, "Monitoring of Opium Production in Afghanistan", with financial contributions from the Governments of Germany, Norway, the United Kingdom, and the United States of America.

## 2 Opium Cultivation

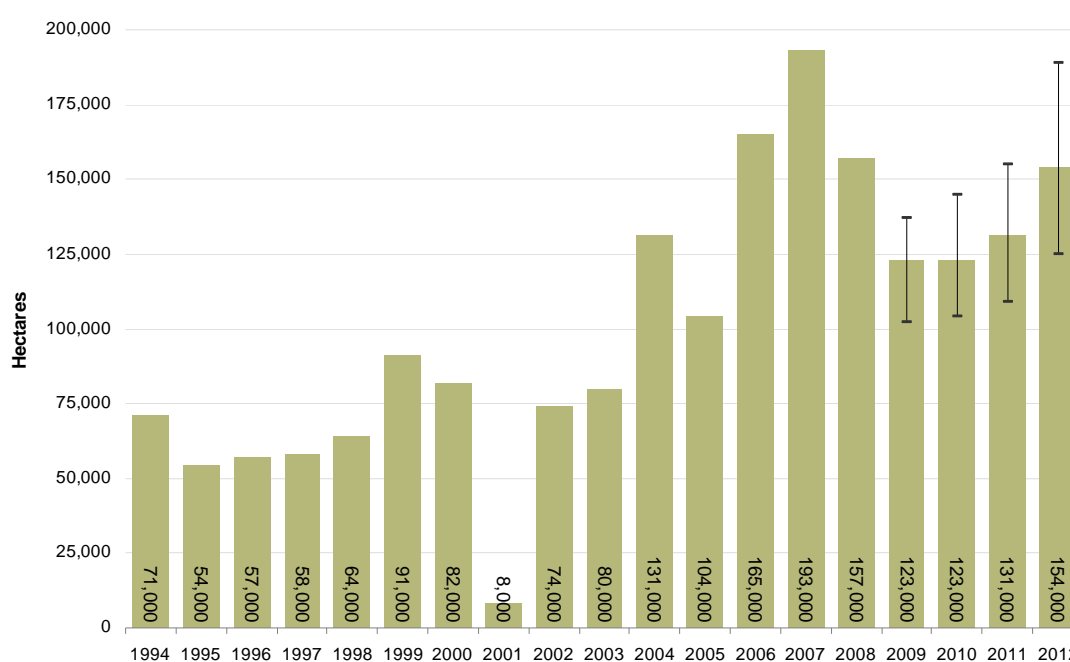
### 2.1 National and regional opium cultivation trends

Despite the eradication of opium poppy by Governor-led Eradication (GLE) having increased by 154% in comparison to its 2011 level (9,672 hectares eradicated in 2012), the total area under opium poppy cultivation in Afghanistan was estimated at 154,000 hectares (125,000-189,000) in 2012.

While that represents an 18% increase in cultivation, potential opium production was estimated at 3,700 tons (2,800-4,200 tons) in 2012, a 36% decrease from the previous year. This was due to a decrease in opium yield caused by a combination of a disease of the opium poppy and adverse weather conditions, particularly in the Eastern, Western and Southern regions<sup>7</sup> of the country. Based on preliminary results from other countries, opium cultivation in Afghanistan represented 64% of global cultivation in 2012.

Hilmand remained the country's major opium-cultivating province (75,176 hectares), followed by Farah (27,733 hectares), Kandahar (24,341 hectares), Uruzgan (10,508 hectares), Nimroz (3,808 hectares), Nangarhar (3,151 hectares), Badghis (2,363 hectares), Badakhshan (1,927 hectares), Day Kundi (1,058 hectares), Kunar (1,279 hectares), Laghman (877 hectares), Hirat (1,080 hectares), Zabul (424 hectares), Kapisa (290 hectares), Ghor (125 hectares) and Kabul (120 hectares).

**Figure 1: Opium cultivation in Afghanistan, 1994-2012 (Hectares)**



Sources: UNODC and UNODC/MCN opium surveys 1994-2012. The high-low lines represent the upper and lower bounds of the 95% confidence interval.

At the regional level, different trends could be observed in opium cultivation. Opium cultivation increased in the Western (58%), Eastern (37%), North-eastern (13%) and Southern regions (9%). However, it decreased in the Central region (-45%) — where the only opium-cultivating province is Kabul — and also in the Northern region (-42%), which was due to the poppy-free status Faryab province regained in 2012.

<sup>7</sup> Regions as designated by UNODC for analytical purposes. Please refer to table 2 for a full list.

The vast majority (95%) of total opium cultivation took place in nine provinces in Afghanistan's Southern and Western regions, which include the country's most insecure provinces where insurgency and organized criminal networks dominate. This mirrors the sharper polarization in the security situation between the lawless south and the relatively stable north of the country. The total area under opium cultivation in the Southern region in 2012 (111,507 hectares) was similar to total national opium cultivation in 2005. A total of 5,368 hectares of opium cultivation were eradicated in the Southern region, though that was negligible considering the total area under opium cultivation in the region.

Opium cultivation increased in most of the main opium poppy-growing provinces, including Farah, Nangarhar, Badghis and Nimroz, whereas cultivation remained stable in Uruzgan and decreased by 11% in Kandahar, the second most important poppy-cultivating province between 2009 and 2011.

Opium cultivation rose by 19% in Hilmand, but a separate estimate was also available for the Hilmand "Food Zone" alternative livelihood project,<sup>8</sup> which showed that relatively less poppy was cultivated within the Food Zone than outside it.

**Table 1: Regional distribution of opium cultivation, 2011-2012 (Hectares)**

REGION	2011 (ha)	2012 (ha)	Change 2011-2012 (%)	2011 (ha) as % of total	2012 (ha) as % of total
Central	220	120	-45%	0.2%	0.1%
Eastern	4,082	5,596	+37%	3%	4%
Northern	305	177	-42%	0.2%	0.1%
North-eastern	1,705	1,927	+13%	1%	1%
Southern	102,405	111,507	+9%	78%	72%
Western	22,348	35,109	+57%	17%	23%
<b>Rounded Total</b>	<b>131,000</b>	<b>154,000</b>	<b>+18%</b>	<b>100%</b>	<b>100%</b>

In the **Eastern region**, cultivation increased in Kunar, Kapisa, Laghman and Nangarhar province by 121% (1,279 hectares), 60% (290 hectares), 41% (877 hectares) and 17% (3,151 hectares), respectively.

In the **North-Eastern region**, Badakhshan saw a 13% increase in opium poppy cultivation from 1,705 hectares in 2011 to 1,927 hectares in 2012.

In the **Northern region**, with the exception of Baghlan all provinces remained poppy-free. Faryab regained the poppy-free status it had in 2010. Opium cultivation in Baghlan increased by 10% from 161 hectares in 2011 to 177 hectares in 2012.

In the **Southern region**, opium cultivation increased in all provinces with the exception of Kandahar, where cultivation decreased by 11% from 27,213 hectares in 2011 to 24,341 hectares in 2012. Cultivation increased by 19% (75,176 hectares), 62% (424 hectares) and 5% (1,058 hectares) in Hilmand, Zabul and Day Kundi provinces, respectively. Cultivation remained stable in Uruzgan province with 10,508 hectares, following 485 hectares of eradication.

In the **Western region**, significant increases in cultivation took place in Farah province (58%: from 17,499 hectares to 27,733 hectares in 2012) and Nimroz province (53%: from 2,493 hectares to 3,808 hectares in 2012). In Badghis province, cultivation increased by 19% from 1,990 hectares to 2,363 hectares in 2012. With 125 hectares of opium cultivation, just a little above the 100 hectare poppy-free threshold, Ghor lost its poppy-free status.

<sup>8</sup> Food zone activities include inter alia that 42,000 farmers in 10 districts in Hilmand province were provided with fertilizer, certified wheat seed and high-value horticultural seeds during a 45-day period that competes directly with the poppy planting season for 2012. See [http://afghanistan.usaid.gov/en/USAID/Activity/255/Hilmand\\_Food\\_Zone\\_Project\\_HFZP](http://afghanistan.usaid.gov/en/USAID/Activity/255/Hilmand_Food_Zone_Project_HFZP).

At 17 out of 34, the number of poppy-free<sup>9</sup> provinces in Afghanistan remained unchanged in 2012. However, the Western region's Ghor province lost its poppy-free status in 2012, while the Northern region's Faryab province regained the poppy-free status it had in both 2009 and 2010.

**Table 2: Number of provinces by opium cultivation trends, 2006-2012**

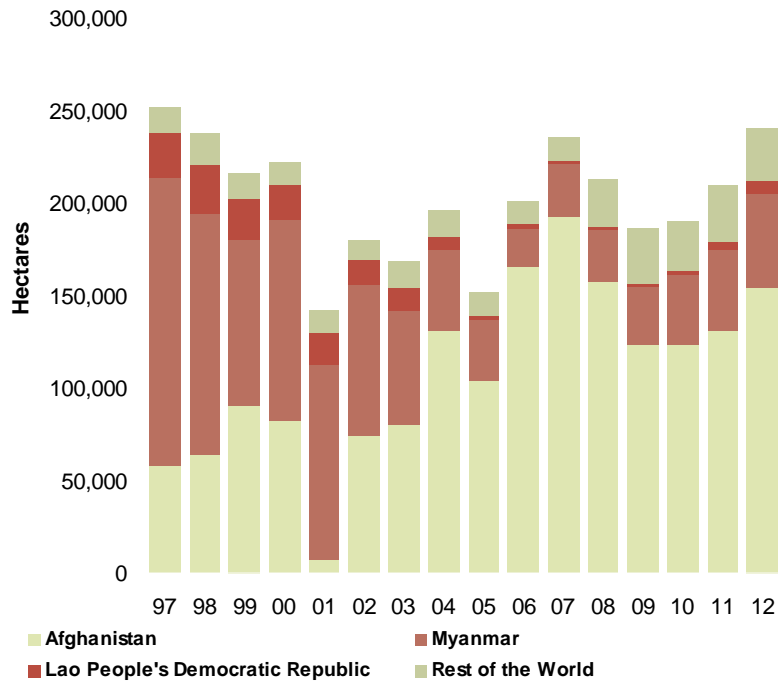
Opium cultivation trend	Number of provinces						
	2006	2007	2008	2009	2010	2011	2012
Increase	14	8	1	6	7	13	14
Decrease	2	11	11	7	7	4	2
Stable	12	2	4	1	0	0	1
Poppy-free	6	13	18	20	20	17	17

**Table 3: Main opium-cultivating provinces in Afghanistan, 2007-2012 (Hectares)**

PROVINCE	2007	2008	2009	2010	2011	2012	Change 2011-2012 (%)	2012 (ha) as % of total
Hilmand	102,770	103,590	69,833	65,045	63,307	75,176	+19%	49%
Farah	14,865	15,010	12,405	14,552	17,499	27,733	+58%	18%
Kandahar	16,615	14,623	19,811	25,835	27,213	24,341	-11%	16%
Uruzgan	9,204	9,939	9,224	7,337	10,620	10,508	-1%	7%
Nimroz	6,507	6,203	428	2,039	2,493	3,808	+53%	2%
Nangarhar	18,739	Poppy-free	294	719	2,700	3,151	+17%	2%
Badghis	4,219	587	5,411	2,958	1,990	2,363	+19%	2%
Badakhshan	3,642	200	557	1,100	1,705	1,927	+13%	1%
Day Kundi	3,346	2,273	3,002	1,547	1,003	1,058	+5%	1%
Rest of the country	13,074	4,828	2,131	1,383	2,535	4,371	+72%	3%
<b>Rounded Total</b>	<b>193,000</b>	<b>157,000</b>	<b>123,000</b>	<b>123,000</b>	<b>131,000</b>	<b>154,000</b>	<b>+18%</b>	<b>100%</b>

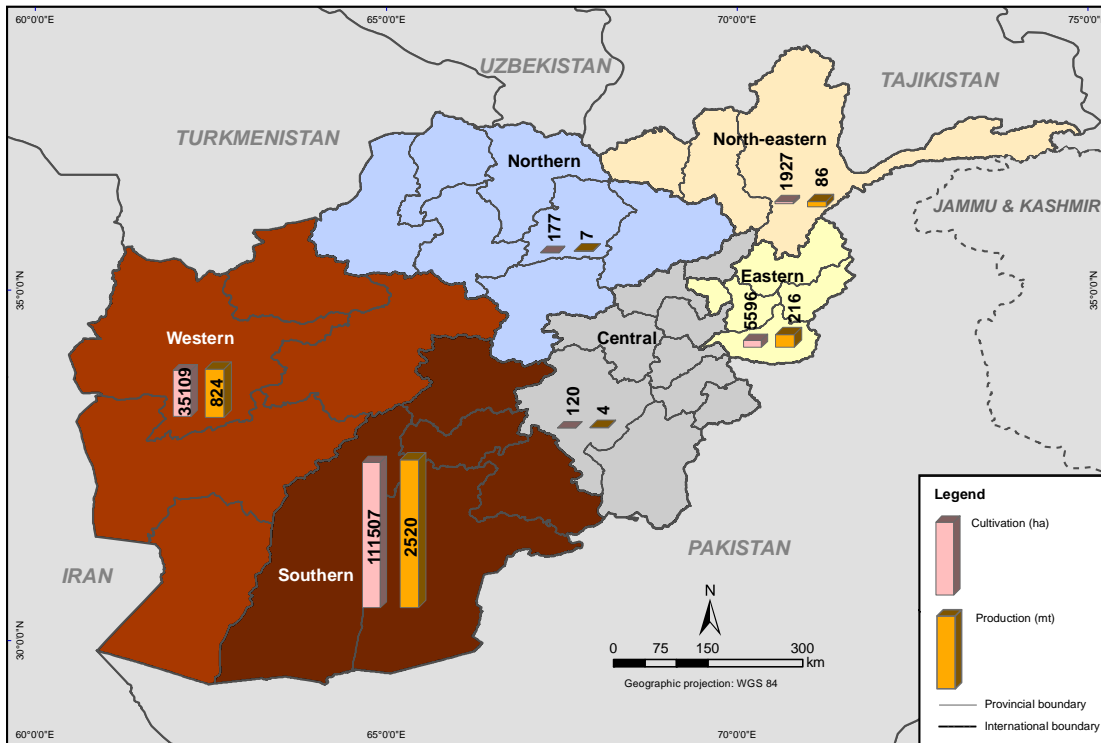
<sup>9</sup> Poppy-free provinces are those which are estimated to have less than 100 hectares of opium cultivation.

**Figure 2: Global opium cultivation, 1997-2012 (Hectares)**



Source: UNODC, World Drug Report 2012; UNODC South-East Asia Opium Survey 2012. 2012 results for Rest of the World are preliminary.

**Regional opium cultivation and production in Afghanistan, 2012**



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.

**Table 4: Opium cultivation (2007-2011) and eradication (2011-2012) in Afghanistan (Hectares)**

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Estimation method 2012	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Ghazni	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Kabul	500	310	132	152	220	120	-45%	T	80	103
Khost	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Logar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Paktika	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Paktya	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Panjshir	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Parwan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Wardak	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
<b>Central Region</b>	<b>500</b>	<b>310</b>	<b>132</b>	<b>152</b>	<b>220</b>	<b>120</b>	<b>-45%</b>		<b>80</b>	<b>103</b>
Kapisa	835	436	Poppy-free	Poppy-free	181	290	+60%	T	5	54
Kunar	446	290	164	154	578	1,279	+121%	S	1	70
Laghman	561	425	135	234	624	877	+41%	T	21	76
Nangarhar	18,739	Poppy-free	294	719	2,700	3,151	+17%	T	61	784
Nuristan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
<b>Eastern Region</b>	<b>20,581</b>	<b>1,151</b>	<b>593</b>	<b>1,107</b>	<b>4,082</b>	<b>5,596</b>	<b>+37%</b>		<b>89</b>	<b>985</b>
Badakhshan	3,642	200	557	1,100	1,705	1,927	+13%	S	367	1,784
Takhar	1,211	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Kunduz	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
<b>North-eastern Region</b>	<b>4,853</b>	<b>200</b>	<b>557</b>	<b>1,100</b>	<b>1,705</b>	<b>1,927</b>	<b>+13%</b>		<b>367</b>	<b>1,784</b>
Baghlan	671	475	Poppy-free	Poppy-free	161	177	+10%	T	31	252
Balkh	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Bamyan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Faryab	2,866	291	Poppy-free	Poppy-free	145	Poppy-free	NA	T	2	50
Jawzjan	1,085	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Samangan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Sari Pul	260	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
<b>Northern Region</b>	<b>4,882</b>	<b>766</b>	<b>Poppy-free</b>	<b>Poppy-free</b>	<b>305</b>	<b>177</b>	<b>-42%</b>		<b>34</b>	<b>302</b>
Day Kundi	3,346	2,273	3,002	1,547	1,003	1,058	+5%	S	235	236
Hilmand	102,770	103,590	69,833	65,045	63,307	75,176	+19%	S	1,940	3,637
Kandahar	16,615	14,623	19,811	25,835	27,213	24,341	-11%	S	287	922
Uruzgan	9,204	9,939	9,224	7,337	10,620	10,508	-1%	S	154	485
Zabul	1,611	2,335	1,144	483	262	424	+62%	S	85	88
<b>Southern Region</b>	<b>133,546</b>	<b>132,760</b>	<b>103,014</b>	<b>100,247</b>	<b>102,405</b>	<b>111,507</b>	<b>+9%</b>		<b>2,701</b>	<b>5,368</b>
Badghis	4,219	587	5,411	2,958	1,990	2,363	+19%	S	36	53
Farah	14,865	15,010	12,405	14,552	17,499	27,733	+58%	S	212	316
Ghor	1,503	Poppy-free	Poppy-free	Poppy-free	Poppy-free	125	NA	T	43	11
Hirat	1,525	266	556	360	366	1,080	+195%	T	227	600
Nimroz	6,507	6,203	428	2,039	2,493	3,808	+53%	S	20	148
<b>Western Region</b>	<b>28,619</b>	<b>22,066</b>	<b>18,800</b>	<b>19,909</b>	<b>22,348</b>	<b>35,109</b>	<b>+57%</b>		<b>539</b>	<b>1,130</b>
<b>Total (rounded)</b>	<b>193,000</b>	<b>157,000</b>	<b>123,000</b>	<b>123,000</b>	<b>131,000</b>	<b>154,000</b>	<b>+18%</b>		<b>3,810</b>	<b>9,672</b>

Area estimation method: S=remote sensing sample survey, T=remote sensing target survey, V=village sample survey and field observation. Cf. Methodology chapter for detailed description of methods used. A province is defined as poppy-free when it is estimated to have less than 100 hectares of opium cultivation. Due to administrative boundary changes, since 2009, estimates for Farah and Nimroz were calculated considering parts of Khash Rod district, the main opium-cultivating district in Nimroz, as being part of Farah province. The 2008 figures include all of Khash Rod district in Nimroz province.

Table 5: Opium production in Afghanistan 2010-2012, by province (Tons)

Province	Production 2010 (mt)	Production 2011 (mt)	Production 2012 (mt)	Change 2011-2012 (mt)	Change 2011-2012 (%)
Ghazni	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kabul	8	9	4	-5	-54%
Khost	Poppy-free	Poppy-free	Poppy-free	NA	NA
Logar	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktika	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktya	Poppy-free	Poppy-free	Poppy-free	NA	NA
Panjshir	Poppy-free	Poppy-free	Poppy-free	NA	NA
Parwan	Poppy-free	Poppy-free	Poppy-free	NA	NA
Wardak	Poppy-free	Poppy-free	Poppy-free	NA	NA
<b>Central Region</b>	<b>8</b>	<b>9</b>	<b>4</b>	<b>-5</b>	<b>-54%</b>
Kapisa	Poppy-free	7	11	+4	+52%
Kunar	8	23	49	+26	+110%
Laghman	12	25	34	+9	+34%
Nangarhar	37	110	122	+12	+11%
Nuristan	Poppy-free	Poppy-free	Poppy-free	NA	NA
<b>Eastern Region</b>	<b>56</b>	<b>166</b>	<b>216</b>	<b>+50</b>	<b>+30%</b>
Badakhshan	56	39	86	+46	+118%
Takhar	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kunduz	Poppy-free	Poppy-free	Poppy-free	NA	NA
<b>North-eastern Region</b>	<b>56</b>	<b>39</b>	<b>86</b>	<b>+46</b>	<b>+118%</b>
Baghlan	Poppy-free	7	7	0	0%
Balkh	Poppy-free	Poppy-free	Poppy-free	NA	NA
Bamyan	Poppy-free	Poppy-free	Poppy-free	NA	NA
Faryab	Poppy-free	6	Poppy-free	NA	NA
Jawzjan	Poppy-free	Poppy-free	Poppy-free	NA	NA
Samangan	Poppy-free	Poppy-free	Poppy-free	NA	NA
Sari Pul	Poppy-free	Poppy-free	Poppy-free	NA	NA
<b>Northern Region</b>	<b>Poppy-free</b>	<b>12</b>	<b>7</b>	<b>-5</b>	<b>-44%</b>
Day Kundi	46	48	24	-24	-50%
Hilmand	1,933	3,044	1,699	-1345	-44%
Kandahar	768	1,308	550	-759	-58%
Uruzgan	218	511	237	-273	-54%
Zabul	14	13	10	-3	-24%
<b>Southern Region</b>	<b>2,979</b>	<b>4,924</b>	<b>2,520</b>	<b>-2404</b>	<b>-49%</b>
Badghis	71	61	55	-6	-9%
Farah	349	536	651	+115	+21%
Ghor	Poppy-free	Poppy-free	3	NA	NA
Hirat	9	11	25	14	126%
Nimroz	49	76	89	+13	+17%
<b>Western Region</b>	<b>478</b>	<b>685</b>	<b>824</b>	<b>139</b>	<b>+20%</b>
<b>Total (rounded)</b>	<b>3,600</b>	<b>5,800</b>	<b>3,700</b>	<b>-2,100</b>	<b>-36%</b>

## 2.2 Regional Breakdown

### 2.2.1 Central region

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

Opium cultivation in the Central region decreased by 45% in 2012, with the total area cultivated decreasing to 120 hectares from 220 hectares in 2011. Opium cultivation was limited to the Uzbeen valley of Surobi district in Kabul province, where security is extremely poor. Due to cold prevailing weather conditions before the harvesting season the opium crops in the upper reaches of Uzbeen valley failed. A total of 103 hectares of opium poppy cultivation were eradicated in Surobi district of Kabul province in 2012. With the exception of Kabul, all provinces in the Central region have been poppy-free since 2008 and remained so in 2012.

**Table 6: Opium cultivation and eradication in the Central region, 2009-2012 (Hectares)**

PROVINCE	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Ghazni	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Kabul	132	152	220	120	-45%	80	103
Khost	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Logar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Paktika	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Paktya	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Panjshir	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Parwan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Wardak	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
<b>Central Region</b>	<b>132</b>	<b>152</b>	<b>220</b>	<b>120</b>	<b>-45%</b>	<b>80</b>	<b>103</b>

### 2.2.2 Eastern region

(Kapisa, Kunar, Laghman, Nangarhar, Nuristan)

Although the Eastern region accounted for a very small proportion of opium cultivation (4% of the total area cultivated in Afghanistan), the region continued to experience an increase in 2012 (37%). A total of 5,596 hectares of opium were cultivated in 2012. The increase was significant in 2011 (269%) when opium cultivation rose to 4,082 hectares from 1,107 hectares in 2010.

**Table 7: Opium cultivation and eradication in the Eastern region, 2009-2012 (Hectares)**

PROVINCE	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Kapisa	Poppy-free	Poppy-free	181	290	+60%	5	54
Kunar	164	154	578	1,279	+121%	1	70
Laghman	135	234	624	877	+41%	21	76
Nangarhar	294	719	2,700	3,151	+17%	61	784
Nuristan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
<b>Eastern Region</b>	<b>593</b>	<b>1,107</b>	<b>4,082</b>	<b>5,596</b>	<b>+37%</b>	<b>89</b>	<b>985</b>

#### 2.2.2.1 Nangarhar

Traditionally, Nangarhar was an important poppy-growing province, with an estimated 18,739 hectares of opium cultivation in 2007, but it became poppy-free for the first time in 2008. In 2009, however, despite 226 hectares being eradicated, 294 hectares of opium poppy were detected there. Security continued to deteriorate and opium cultivation increased by 145%, from 294 hectares in 2009 to 719 hectares in 2010 and 2,700 hectares in 2011 (an increase of 276%). In 2012, there was a 17% increase in opium cultivation in Nangarhar (from 2,700 hectares in 2011 to 3,151 hectares),

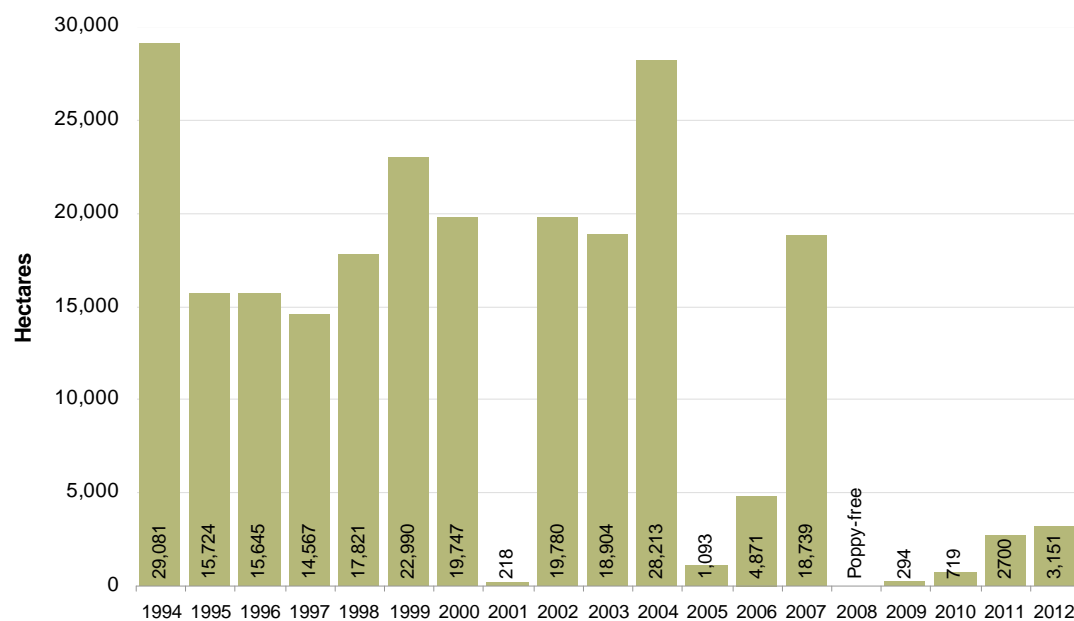


with opium cultivation mainly taking place in Achin, Khogyani, Pachir Wagam and Sherzad districts where security was very poor. Cultivation increased significantly in Achin and Khogyani districts (128% and 166%, respectively), while there was a 64% decrease in opium cultivation in Sherzad from 2011, with cultivation decreasing to 550 hectares from 1,510 hectares.

Due to strong resistance by Anti-Government Elements (AGE), a total of only 784 hectares of opium cultivation were eradicated by Governor-led eradication in the province in 2012.

Over the past seven years, the level of opium cultivation in Nangarhar has been erratic. In 2004, cultivation was at 28,213 hectares, the following year it dropped dramatically to 1,093 hectares and was confined to remote parts of the province. In 2006, it increased to 4,872 hectares. Opium cultivation in Nangarhar reached a peak in 1994 with 29,081 hectares of land under poppy cultivation.

**Figure 3: Opium cultivation in Nangarhar province, 1994-2012 (Hectares)**

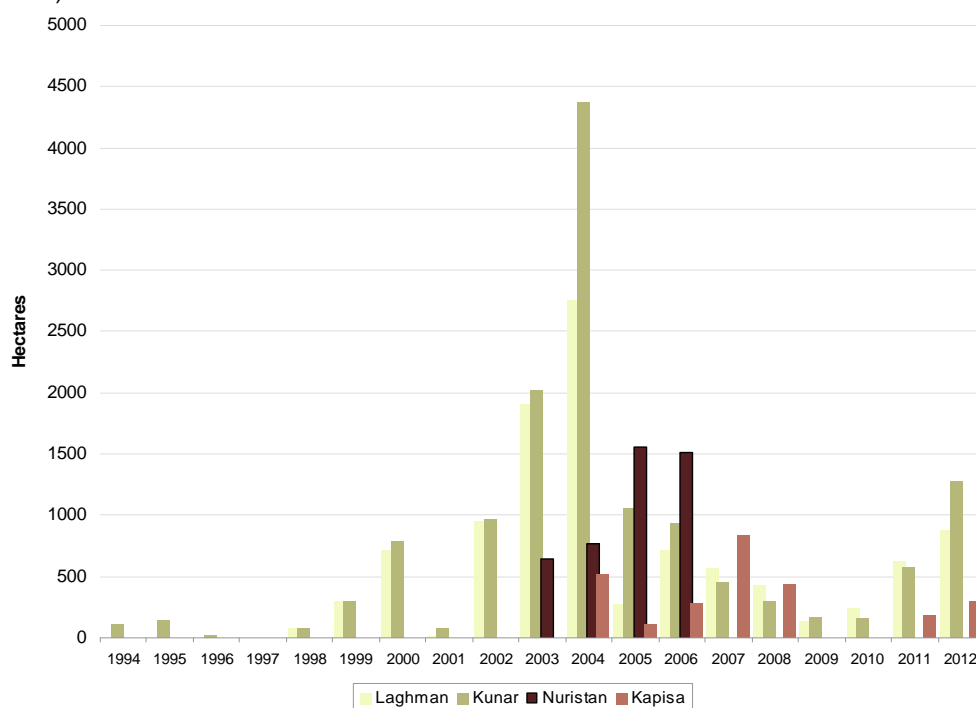


#### **2.2.2.2 Kunar, Kapisa, Laghman and Nuristan**

Containing only limited amounts of cultivation (154 hectares and 234 hectares, respectively), Laghman and Kunar provinces in the Eastern region were close to gaining poppy-free status in 2010. However, the two provinces saw a significant increase in cultivation (166% and 275%, or 624 hectares and 578 hectares, respectively) in 2011. In 2012, with Kunar seeing an increase of 121% to 1,279 hectares from 578 hectares in 2011, the main opium cultivation districts in the province were Shigal Wa Sheltan and Dara-i-Pech.

In Laghman province, opium cultivation rose by 41% from 624 hectares to 877 hectares in 2012. At district level, significant increases took place in comparison to the previous year in Dowlat Shah (201%) and Alishing (169%). Cultivation rose to 158 hectares and 335 hectares in Dowlat Shah and Alishing districts in 2012 from 52 hectares and 124 hectares, respectively, in 2011.

In 2011, Kapisa lost the poppy-free status it regained in 2009 and 2010 due to its 181 hectares of land under poppy cultivation. In 2012, that figure rose by 60% to 290 hectares, the province's main opium-growing district being Tagab, which, with very poor security, saw a 41% increase in opium cultivation on 2011. In 2012, Nuristan maintained the poppy-free status it achieved in 2007.

**Figure 4: Opium cultivation in Laghman, Kunar, Nuristan and Kapisa provinces, 1994-2012 (Hectares)**

### 2.2.3 North-eastern region

(Badakhshan, Kunduz and Takhar)

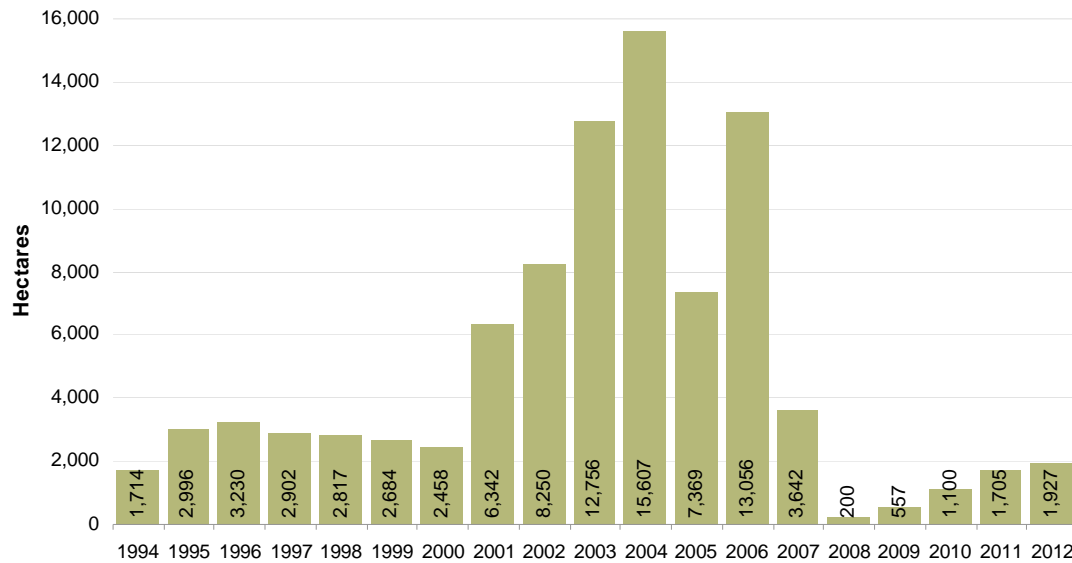
Opium cultivation in the North-eastern region reached 1,927 hectares in 2012, an increase of 13% on 2011 (1,705 hectares), while opium production increased by 46% from 39 tons in 2011 to 86 tons in 2012. However, the increase in opium cultivation only occurred in Badakhshan province as the two other provinces in the region, Kunduz and Takhar, were poppy-free.

**Table 8: Opium cultivation and eradication in the North-eastern region, 2009-2012 (Hectares)**

PROVINCE	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Badakhshan	557	1,100	1,705	1,927	+13%	367	1,784
Kunduz	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Takhar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
<b>North-eastern Region</b>	<b>557</b>	<b>1,100</b>	<b>1,705</b>	<b>1,927</b>	<b>+13%</b>	<b>367</b>	<b>1,784</b>

#### 2.2.3.1 Badakhshan

Opium cultivation in Badakhshan province was 3,642 hectares in 2007, 200 hectares in 2008, 557 hectares in 2009 and 1,100 hectares in 2010. It increased by 11% to 1,927 hectares in 2012 from 1,705 hectares in 2011 and was mostly confined to rain-fed areas cultivated in spring, mainly in Argo district, where opium cultivation remained stable, and Darayim where there was an increase of 36%. A total of 1,784 hectares of opium cultivation were eradicated and verified by MCN/UNODC in Badakhshan province in 2012.

**Figure 5: Opium cultivation in Badakhshan province, 1994-2012 (Hectares)**

### 2.2.3.2 Kunduz and Takhar

Poppy-free since 2007 and well known for growing a wide range of licit crops, from vegetables and fruits to cotton, Kunduz remained poppy free in 2012. An insignificant amount of cultivation has been observed in this province in recent years, but it remained under 100 hectares in 2012, the threshold for obtaining poppy-free status.

Also poppy-free since 2008, Takhar province maintained its poppy-free status in 2012. In 2005, 2006 and 2007, opium cultivation in Takhar was 1,364 hectares, 2,178 hectares and 1,211 hectares, respectively.

### 2.2.4 Northern region

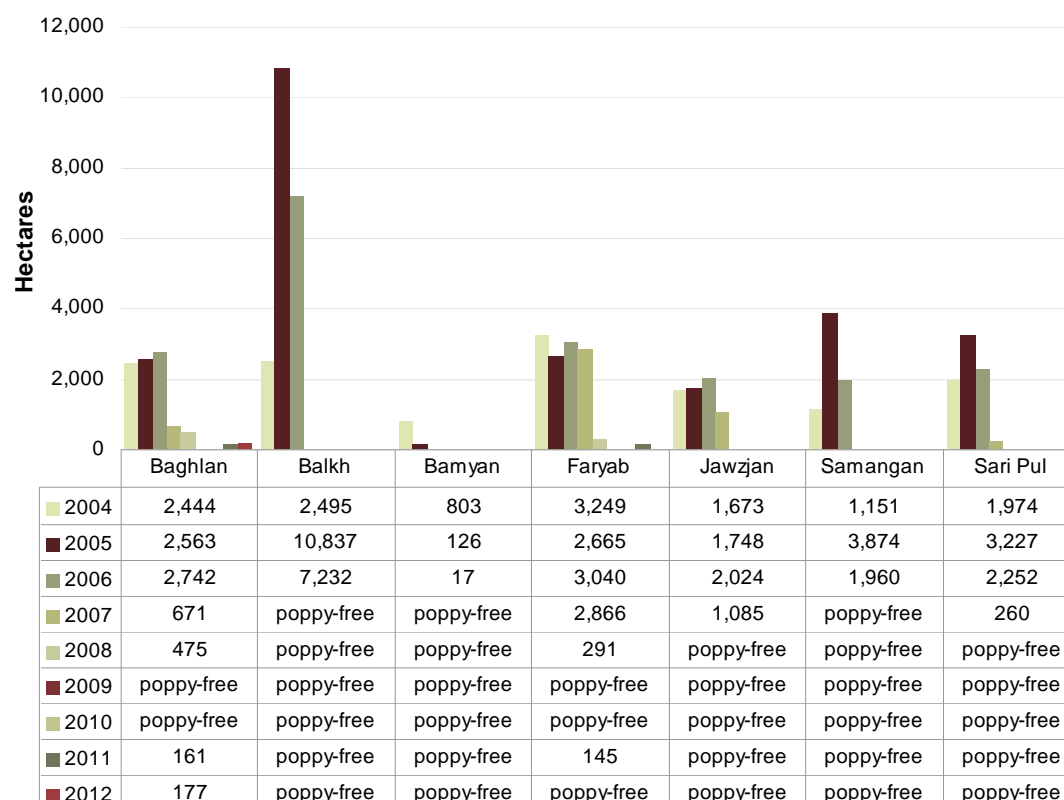
(Baghlan, Balkh, Bamyan, Faryab, Jawzjan, Samangan, Sari Pul)

All the provinces in the Northern region were poppy-free in 2009 and 2010, but the situation changed in 2011. Two provinces, Baghlan and Faryab, resumed opium cultivation (161 hectares and 145 hectares, respectively), with poor security and the high price of opium in 2010 probably being the main factors that encouraged farmers to recommence opium cultivation. In 2012, the situation changed again, with Faryab regaining its poppy-free status of 2009 and 2010 also because eradication was undertaken while Baghlan remained the only poppy-growing province in the region.

Most of the provinces in the Northern region sustained moderate levels of opium cultivation in the past, with the exception of Balkh, which emerged as a major opium-cultivating province in 2005 and 2006 (10,837 hectares and 7,232 hectares, respectively), whereas cultivation in the other Northern provinces ranged from 2,000 to 3,000 hectares. The decline in opium cultivation in the Northern region began due to strict law enforcement and counter-narcotic initiatives, and by 2008 poppy cultivation was already negligible. In 2007, three provinces (Balkh, Bamyan and Samangan) became poppy-free, with Balkh has remaining so, while Sari Pul province also became poppy-free in 2008.

**Table 9: Opium cultivation and eradication in the North-eastern region, 2009-2012 (Hectares)**

PROVINCE	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Baghlan	Poppy-free	Poppy-free	161	177	+10%	31	252
Balkh	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Bamyan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Faryab	Poppy-free	Poppy-free	145	Poppy-free	NA	2	50
Jawzjan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Samangan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
Sari Pul	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	0	0
<b>Northern Region</b>	<b>Poppy-free</b>	<b>Poppy-free</b>	<b>305</b>	<b>177</b>	<b>-42%</b>	<b>34</b>	<b>302</b>

**Figure 6: Opium cultivation in the Northern region, 2004-2012 (Hectares)****2.2.4.1 Balkh**

In 2012, Balkh province remained poppy-free for the sixth year in a row. Opium cultivation was introduced into the province in 1996 (1,065 hectares), but Balkh did not become a major producer of opium until 2004. A high level of cultivation (10,837 hectares) was recorded in 2005 and again in 2006 (7,232 hectares).

**2.2.4.2 Faryab**

Faryab province lost the poppy-free status it obtained in 2009 and 2010 due to its 145 hectares of opium cultivation in 2011, which mainly took place in Kohistan and Gurziwan and could have been due to poor security and the high price of opium in 2010. However, the province, which had

291 hectares of opium cultivation in 2008 and 2,866 hectares in 2007, became poppy-free again in 2012.

#### 2.2.4.3 Samangan, Bamyan and Sari Pul

Samangan and Bamyan were poppy-free in 2007, 2008, 2009 and 2010 and remained so in 2011. Sari Pul has been poppy-free since 2008 and maintained its poppy-free status in 2012. Prior to that, opium cultivation in Bamyan was negligible, whereas from 2004 to 2006 it ranged between 1,000 and 4,000 hectares in Samangan province.

#### 2.2.4.4 Jawzjan and Baghlan

Jawzjan province was found to be poppy-free since 2008 and maintained its poppy-free status in 2012. Baghlan became poppy-free for the first time in 2009 and remained poppy-free in 2010 (in 2008 there were 475 hectares of cultivation concentrated in Andarab district only). In 2011, with 161 hectares of land under opium cultivation, Baghlan lost its poppy-free status and as it did in 2012 with 177 hectares of opium cultivation representing an increase of 10% in comparison to 2011 despite 252 hectares of eradication. The main opium-cultivating districts were Pul-i-Hisar where opium cultivation significantly increased by 364% in 2012. Poor security and the high price of opium may have been the main factors for the province's return to opium cultivation.

### 2.2.5 Southern region

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

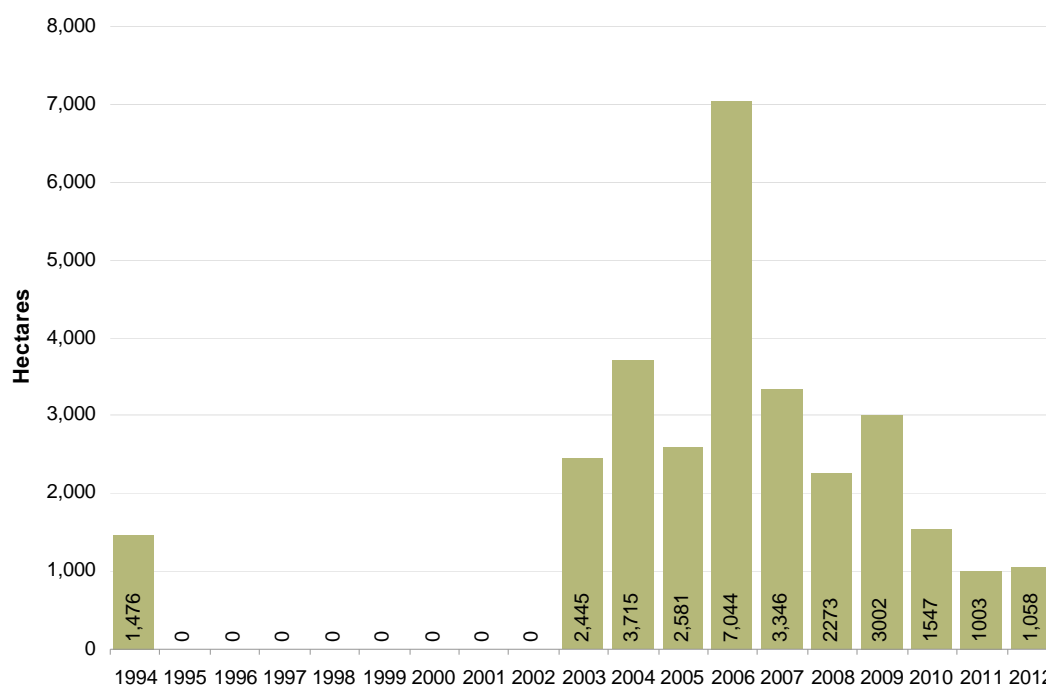
Opium cultivation in the Southern region increased by 9% in 2012, while production decreased by 49%. The reduction in production was due to the low opium yield in the region caused by poppy diseases and/or adverse weather conditions. However, a total of 111,507 hectares of opium poppy were cultivated in the Southern region, which accounted for 72% of total opium cultivation in Afghanistan.

**Table 10: Opium cultivation and eradication in the Southern region, 2008-2012 (Hectares)**

PROVINCE	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Day Kundi	3,002	1,547	1,003	1,058	+5%	235	236
Hilmand	69,833	65,045	63,307	75,176	+19%	1940	3,637
Kandahar	19,811	25,835	27,213	24,341	-11%	287	922
Uruzgan	9,224	7,337	10,620	10,508	-1%	154	485
Zabul	1,144	483	262	424	+62%	85	88
<b>Southern Region</b>	<b>103,014</b>	<b>100,247</b>	<b>102,405</b>	<b>111,507</b>	<b>+9%</b>	<b>2,701</b>	<b>5,368</b>

#### 2.2.5.1 Day Kundi

There was a slight increase of 5% in opium cultivation in Day Kundi province in 2012, which reached 1,058 hectares, whereas it stood at 1,003 hectares in 2011 and 1,547 hectares in 2010. The main opium-cultivating districts in Day Kundi were Gizab and Kejran, where security is poor and opium cultivation increased by 10% and 88%, respectively, in 2012.

**Figure 7: Opium cultivation in Day Kundi province, 1994-2012**

### 2.2.5.2 Hilmand

With 75,176 hectares in 2012 (49% of total cultivation in Afghanistan), an increase of 19% from 2011 (63,307 hectares), Hilmand remains Afghanistan's single largest opium-cultivating province. Between 2002 and 2008, opium cultivation in Hilmand province more than tripled and was estimated at 65,045 hectares and 63,307 hectares in 2010 and 2011, respectively, accounting for 48% of the country's total opium cultivation in the latter, whereas it accounted for 53% of it in 2010, 57% in 2009, 66% in 2008, 53% in 2007, 42% in 2006, 25% in 2005, 23% in 2004 and 19% in 2003.

In 2012, a separate estimate for opium cultivation in the "Food Zone" in Hilmand province was also calculated, when, estimated at 24,241 hectares, opium cultivation represented about a seventh of the Food Zone's total agricultural area. Outside the Food Zone, the extent of poppy cultivation was much greater, as almost a third of available land was under poppy cultivation, showing that relatively less opium poppy is cultivated within the Food Zone than outside it. Worryingly, however, in areas bordering the food zone a large amount of poppy is cultivated, particularly north of the Boghra canal where a large amount of arable land was created by the installation of tube wells for irrigation.

**Table 11: Poppy cultivation inside and outside the Hilmand food zone, 2012**

	2012 poppy cultivation	% of agricultural land with poppy
Inside the food zone	24,241	13%
Outside the food zone	50,935	30%
<b>Total province</b>	<b>75,176</b>	<b>21%</b>

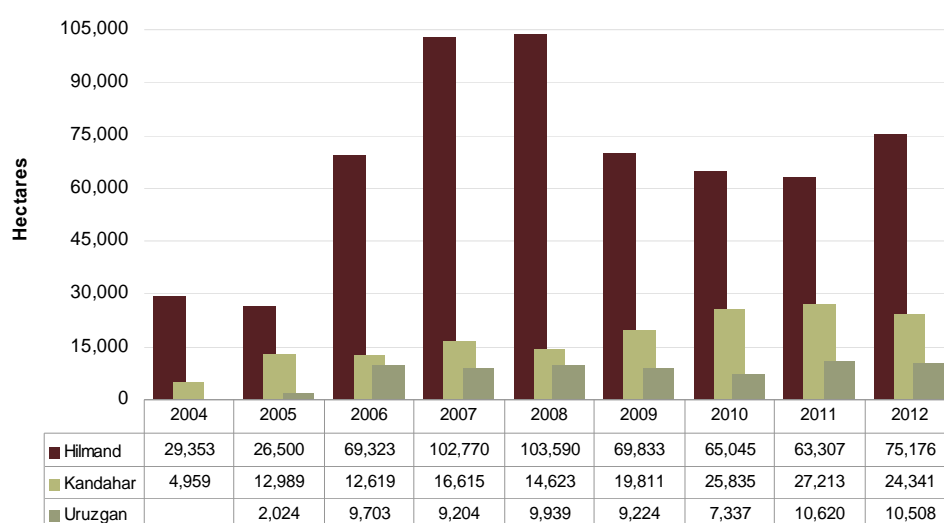
At the district level, opium cultivation levels were highest in Naher-i-Saraj, Nawzad, Kajaki, Nad Ali, Musa Qala, Sangin Qala, Baghran, Washer and Regi-i-Khan districts in 2012. Significant increases in comparison to 2011 (131%, 126%, 78%, 48% and 41%, respectively) occurred in opium cultivation in Nawzad, Lashkargah (Provincial Centre), Naher-i-Saraj, Nad Ali and Kajaki districts. In contrast, significant decreases took place in opium cultivation in Nawa-i-Barukzai, Garm Ser, Baghran and Musa Qala districts (97%, 71%, 59% and 30%, respectively).

A total of 3,637 hectares of Governor-led opium poppy eradication were verified by MCN/UNODC in 2012, which corresponds to only 5% of estimated opium cultivation.

### 2.2.5.3 Kandahar

In Kandahar province, opium cultivation decreased by 11% from 27,213 hectares in 2011 to 24,341 hectares in 2012. Kandahar saw a similar decrease in 2008 when opium cultivation dropped by 12% to 14,623 hectares from 16,615 hectares in 2007, but thereafter opium cultivation showed an increasing trend up to 2011. The increase in opium cultivation began after 2004 when only 4,959 hectares were cultivated and since then the area under opium poppy has increased more than five fold. The main opium cultivation districts are Maiwand, Zhire and Panjwayee, the second of which saw a 27% decrease in opium cultivation (from 5,288 hectares in 2011 to 3,867 hectares) in 2012, whereas opium cultivation rose by 25% in Maiwand district (from 10,114 hectares in 2011 to 12,690 hectares in 2012), and remained stable in Panjwayee district.

**Figure 8: Opium cultivation in Hilmand, Kandahar and Uruzgan provinces, 2004-2012 (Hectares)**



### 2.2.5.4 Uruzgan

After 485 hectares of eradication, opium cultivation in Uruzgan province remained stable in 2012 (10,620 hectares), when the province accounted for 7% of total Afghan opium cultivation.

Dihrawud, Shahidi Hassas and Tirin Kot (provincial centre) were the main opium poppy-cultivating districts in Uruzgan province. A significant decrease (90%) took place in Khas Uruzgan district (from 384 hectares in 2011 to 38 hectares in 2012), while in Tirin Kot (Provincial Center), opium cultivation decreased by 26% from 2,895 hectares in 2011 to 2,129 hectares in 2012. By contrast, there were increases of 27% and 16%, respectively, in opium cultivation in Dihrawud and Chorah districts (which are adjacent to Hilmand and Kandahar provinces) in comparison to the previous year. Between 2009 and 2010, however, there was a significant decrease in opium cultivation in those two districts, from 2,038 hectares in 2009 to 145 hectares in 2010. Opium cultivation in other districts was negligible.

### 2.2.5.5 Zabul

Opium cultivation in Zabul increased significantly (62%) in 2012, to 424 hectares from 262 hectares in 2011, though opium cultivation has decreased in Zabul province between 2008 and 2011. Prior to 2007, opium cultivation in Zabul ranged between 2,000 and 3,000 hectares. The province's main opium-cultivating district is Mizan.

## 2.2.6 Western region

(Badghis, Farah, Ghor, Hirat, Nimroz)

In the Western region, opium cultivation increased in 2012 by 57% to 35,109 hectares from 22,348 hectares in 2011. This increase took place in all the region's four provinces, namely Badghis, Farah, Hirat and Nimroz, with Farah seeing the strongest increase (58%). Only 1,130 hectares of opium poppy eradication took place in the region in 2012.

Due to administrative boundary changes, the opium cultivation estimates for Farah and Nimroz after 2009 included parts of Khash Rod district, the main opium-cultivating district in Nimroz, in Farah province, whereas opium cultivation figures for 2008 and earlier include Khash Rod district in Nimroz province.

The Western region consistently shows very high levels of opium cultivation. Insecurity continues to be a major problem as it compromises the rule of law by the Government and limits counter-narcotic interventions.

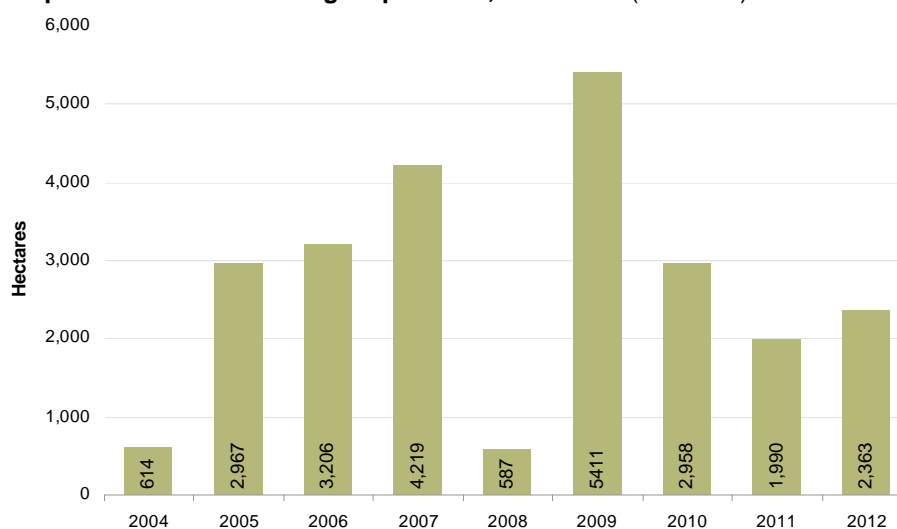
**Table 12: Opium cultivation and eradication in the Western region, 2009-2012 (Hectares)**

PROVINCE	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Cultivation 2012 (ha)	Change 2011-2012 (%)	Eradication in 2011 (ha)	Eradication in 2012 (ha)
Badghis	5,411	2,958	1,990	2,363	+19%	36	53
Farah	12,405	14,552	17,499	27,733	+58%	212	316
Ghor	Poppy-free	Poppy-free	Poppy-free	125	NA	43	11
Hirat	556	360	366	1,080 <sup>10</sup>	+195%	227	600
Nimroz	428	2,039	2,493	3,808	+53%	20	148
<b>Western Region</b>	<b>18,800</b>	<b>19,909</b>	<b>22,348</b>	<b>35,109</b>	<b>+57%</b>	<b>539</b>	<b>1,130</b>

### 2.2.6.1 Badghis

Opium poppy cultivation in 2012 in Badghis jumped to 2,363 hectares from 1,990 hectares in 2011, an increase of 19%. Its main opium-growing districts were Ghormach and Bala Murghab, with opium cultivation increasing by 206% in the latter. This is noteworthy given that the opium cultivation level in Badghis province rose steadily between 2004 and 2010. In 2008, cultivation was expected to be high but the total failure of rain-fed crops resulted in a drop in opium cultivation. In 2009, good rainfall resulted in extensive cultivation in the province's rain-fed areas, enabling farmers to grow more poppy, which contributed to a large increase in opium cultivation (from 587 hectares in 2008 to 5,411 hectares in 2009), with most cultivation taking place in difficult areas to access.

**Figure 9: Opium cultivation in Badghis province, 2004-2012 (Hectares)**



### 2.2.6.2 Farah

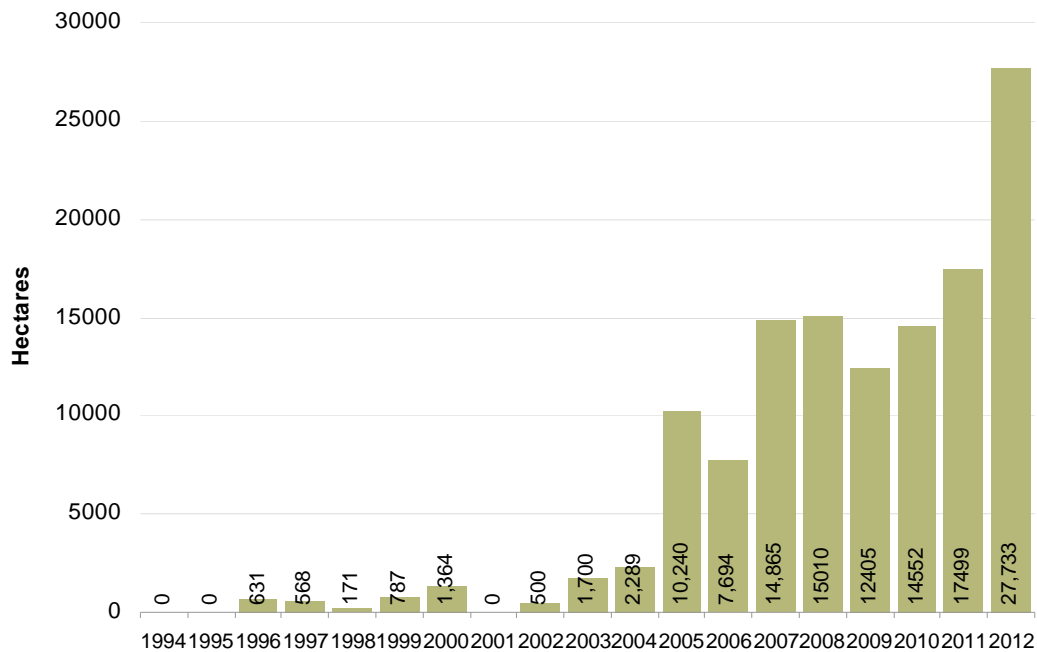
Opium cultivation in Farah province, which has been increasing since 2009, rose to 27,733 hectares in 2012 from 17,449 hectares in 2011, an increase of 58%. The main opium-cultivating districts in Farah, where security is very poor, were Delaram, Bakwah, Bala Buluk, Gulistan,

<sup>10</sup> Due to difficulties in acquiring satellite imagery (normally used for the annual opium survey) for the province of Hirat, a different estimation methodology was used, which limits comparability with previous years.



Khak-i-Safed and Shib Koh. A large increase in opium cultivation occurred in Bakwah (628%) and significant increases were also observed in Delaram (109%) and Khak-i-Safed (101%) in 2012.

**Figure 10: Opium cultivation in Farah province, 1994-2012 (Hectares)**



### 2.2.6.3 Hirat and Ghor

The level of opium poppy cultivation in Hirat province increased substantially from 366 hectares in 2011 and 360 hectares in 2010 to 1,080 hectares in 2012. The only district in Hirat province where opium cultivation took place was Shindand, where security is very poor. In comparison to 2004 and 2007, however, in 2012, opium cultivation was significantly lower in Hirat province.

In 2012, Ghor lost its poppy-free status of 2011 due to its 125 hectares of opium cultivation, which was slightly above the 100 hectare poppy-free threshold. Only 11 hectares of eradication took place in Ghor province in 2012, not enough for the province to retain its poppy-free status.

### 2.2.6.4 Nimroz

Nimroz witnessed an increase of 53% in opium cultivation, which rose to 3,808 hectares in 2012 from 2,493 hectares in 2011, with the main opium-cultivating district in Nimroz province being Khash Rod, where opium cultivation increased by 92% from 1,323 hectares in 2011 to 2,536 hectares in 2012.

## 3 Eradication

### 3.1 Poppy eradication increased by 154% in 2012

There was no Poppy Eradication Force (PEF) eradication in 2010, 2011 and 2012. Although only Governor-led eradication (GLE) was implemented, the eradication of opium fields in Afghanistan increased by 154% in 2012 compared to 2011.

In 2012, MCN/UNODC field surveyors verified the eradication of 25,486 fields in 1,027 villages in 18 provinces. Quality control using high-resolution satellite images was carried out to authenticate the figures reported by surveyors in the field, particularly in Badakhshan, Baghlan, Day Kundi, Farah, Hilmand, Hirat, Kabul, Kandahar, Kapisa, Laghman, Nangarhar, Uruzgan and

Zabul provinces. In 2011, MCN/UNODC verifiers visited 593 villages (10,774 poppy fields) in 18 provinces where eradication had been carried out by Governor-led eradication teams.

Major observations on eradication campaigns in 2011 and 2012 are given below (see also tables):

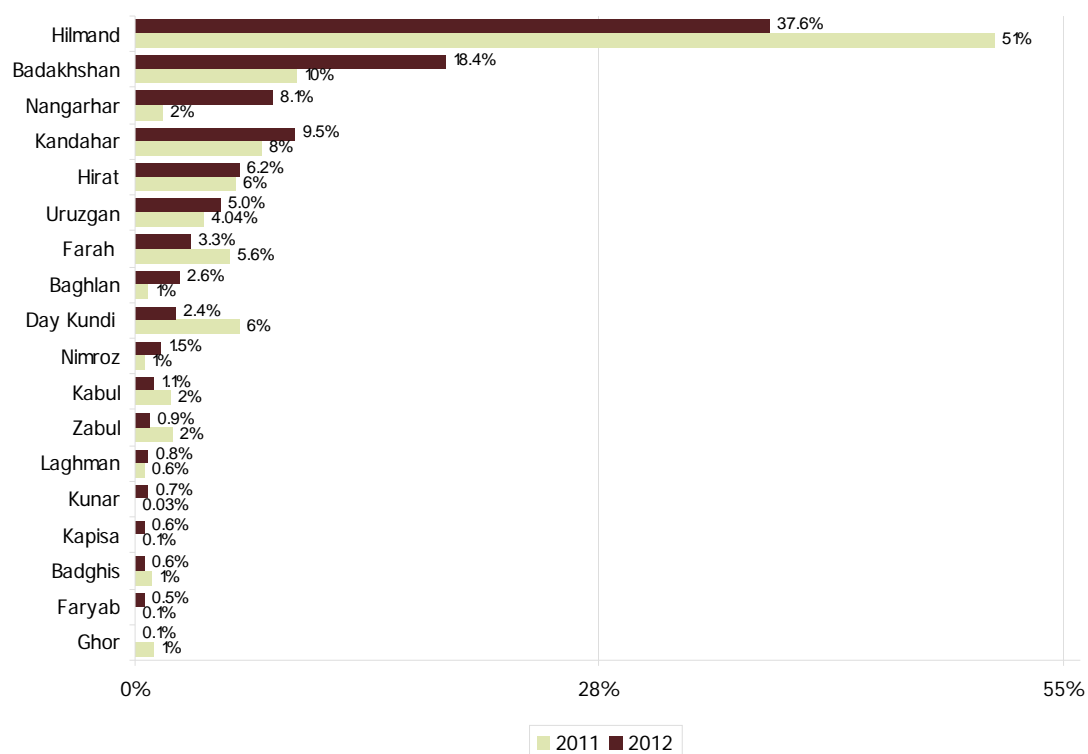
- Total Governor-led poppy eradication carried out in 2012 was 9,672 hectares in the same 18 provinces as in 2011 when 3,810 hectares were eradicated.
- The Governor-led poppy eradication campaign commenced in March 2012 in most regions, while eradication activities in 2011 began in February in Hilmand and Kandahar provinces in the Southern region. Eradication started later in 2012 because of a delay in the growth stages of opium poppy due to cold weather. The best time to carry out the eradication of opium is when the poppy is at the cabbage stage, because poppy plants can be clearly recognized. In the three-month period from March 2012 to May 2012, 79% of eradication was carried out.
- In comparison to 2011, Governor-led poppy eradication campaigns were more active in all regions in 2012.
- The number of security incidents (farmers and AGE resistance) during the eradication campaign was far greater in 2012 than in 2011. GLE teams were attacked 117 times in 2012, while there were only 48 attacks on GLE teams in 2011. The increase in security incidents could have been due to the larger amount of eradication carried out in 2012. The number of fatalities in 2012 was significantly higher than in 2011, with a total of 102 people killed and 127 injured during the poppy eradication campaign (29 National Police, 12 National Army, 60 farmers and 1 verifier killed; 89 National Police, 8 National Army and 30 farmers injured). In 2011, 20 people were killed (13 Police and 7 farmers) and 45 were injured (40 Police and 5 farmers/tractor driver). Resistance took different forms, such as direct attack, mine explosions, flooding poppy fields and demonstrations. Most of the attacks took place against GLE operations in Hilmand and Nangarhar provinces, where most of the fatalities were reported.
- GLE teams used several methods, including tractors, manual eradication (sticks, blades, hands and uprooting) and animal ploughs. In 2012, 67% of Governor-led eradication was carried out by tractor/ATV, 33% by manual means and 0.04% by animal ploughs.

**Table 13: Governor-led eradication, by province, 2012 (Hectares)**

PROVINCE	Eradication verified (hectares)	No. of fields eradication reported	No. of villages eradication reported	Districts
Badakhshan	1,784	4,871	208	Argo, Baharak, Darayim, Jurm, Khash, Kishim, Shahri Buzurg and Tashkan
Badghis	53	40	5	Muqur
Baghlan	252	435	57	Andarab (Bano), Deh Salah and Pul-i-Hisar
Day Kundi	236	807	13	Kejran and Kiti
Farah	316	700	28	Bala Buluk and Farah (Provincial Center)
Faryab	50	226	19	Kohistan, Pashtun Kot and Qaisar
Ghor	11	47	8	Chighcheran (Provincial Center)
Hilmand	3,637	6,594	289	Garm Ser, Lashkargah (Provincial Centre), Musa Qala, Nad-Ali (Marja), Naher-i-Saraj, Nawa-i-Barukzai, Nawzad, Regi-i-Khan Nishin, Sangin
Hirat	600	2,484	69	Shindand
Kabul	103	937	35	Surubi
Kandahar	922	1,364	106	Arghandab, Kandahar (Provincial Center), Maiwand, Panjwayee, Shah Wali Kot and Zhire
Kapisa	54	731	11	Hissa-i-Awal Kohistan, Koh Band, Nijrab and Tagab
Kunar	70	313	26	Chawkay, Dangam, Narang, Noor Gal, Pech (Manogay), Sar Kani and Shigal Wa Sheltan
Laghman	76	460	7	Alingar, Alishing and Mehterlam (Provincial Center)
Nangarhar	784	3,756	65	Achin, Chaparhar, Deh Bala, Hesarak, Khugyani, Nazyan and Pachir Wagam
Nimroz	148	238	9	Chakhansur, Char Burjak, Khashrod and Zaranj (Provincial Center)
Uruzgan	485	1,259	42	Dihrawud and Tirinkot (Provincial Center)
Zabul	88	224	30	Arghandab, Mizan, Qalat (Provincial Center) and Tarnak Wa Jaldak
<b>Grand Total</b>	<b>9,672</b>	<b>25,486</b>	<b>1,027</b>	

**Table 14: Governor-led eradication, 2011-2012 (Hectares and percentage change)**

PROVINCE	Eradication verified (ha) 2011	Eradication verified (ha) 2012	% Change
Badakhshan	367	1,784	386%
Badghis	36	53	47%
Baghlan	31	252	705%
Day Kundi	235	236	0.6%
Farah	212	316	49%
Faryab	2	50	1967%
Ghor	43	11	-73%
Hilmand	1,940	3,637	87%
Hirat	227	600	164%
Kabul	80	103	28%
Kandahar	287	922	221%
Kapisa	5	54	920%
Kunar	1	70	6689%
Laghman	21	76	260%
Nangarhar	61	784	1178%
Nimroz	20	148	639%
Uruzgan	154	485	215%
Zabul	85	88	3%
<b>Total</b>	<b>3,810</b>	<b>9,672</b>	<b>154%</b>

**Figure 11: Percentage of total opium poppy eradication, by province, 2011-2012**

**Table 15: Poppy eradication and cultivation in Afghanistan, 2005-2012 (Hectares)**

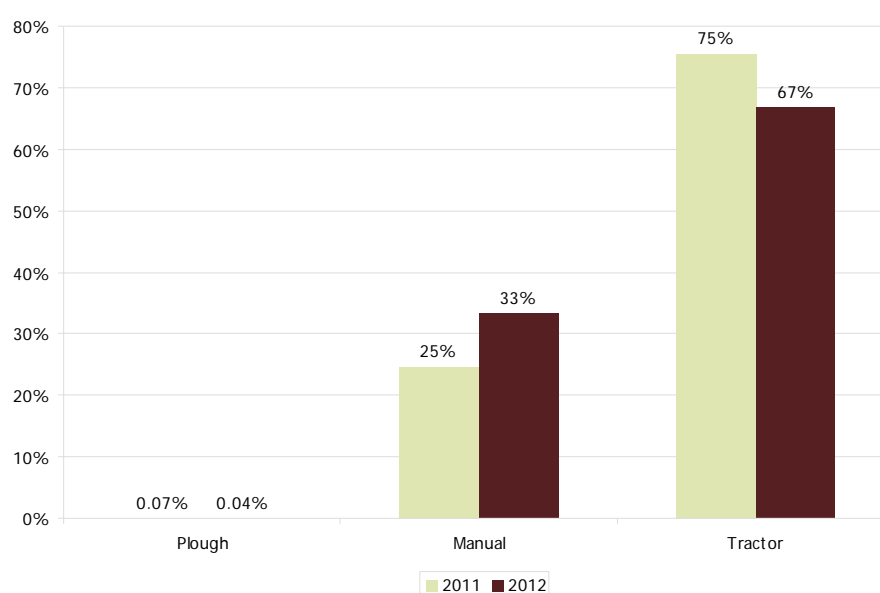
Year	2005	2006	2007	2008	2009	2010	2011	2012
Number of provinces where eradication was carried out	11	19	26	17	12	11	18	18
Governor-led Eradication (GLE), (ha)	4,000	13,050	15,898	4,306	2,687	2,316	3,810	9,672
Poppy Eradication Force (PEF), (ha) *	210	2,250	3,149	1,174	2,663	n.a.	n.a.	n.a.
<b>Total (Hectares)</b>	<b>4,210</b>	<b>15,300</b>	<b>19,510</b>	<b>5,480</b>	<b>5,351</b>	<b>2,316</b>	<b>3,810</b>	<b>9,672</b>
Cultivation (ha) **	104,000	165,000	193,000	157,253	119,141	123,000	131,000	154,000
% of poppy in insecure provinces of Southern and Western regions	56%	68%	80%	98%	99%	95%	95%	95%
Poppy-free provinces	8	6	13	18	20	20	17	17

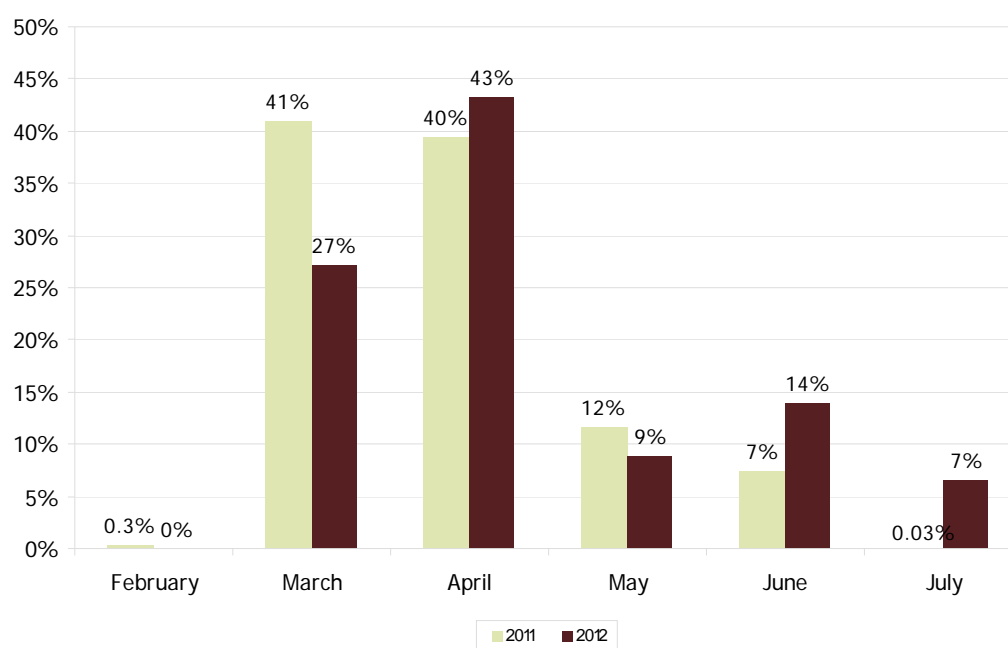
\* In 2010, 2011 and 2012, no PEF eradication took place. \*\* Net opium cultivation after eradication.

**Table 16: Eradication area in targeted provinces inside/outside target area (Hectares)**

PROVINCE	Eradication inside target area (ha)	Eradication outside target area (ha)	Eradication area (ha) - could not be confirmed inside/outside target area	% of Eradication inside target area	Total eradication verified (ha)
Farah	206	110	0	65%	316
Hilmand	3,143	495	0	86%	3,637
Kandahar	485	97	340	53%	922
Uruzgan	323	162	0	67%	485
<b>Total</b>	<b>4,157</b>	<b>864</b>	<b>340</b>	<b>78%</b>	<b>5,361</b>

Note: Initially, a target area for eradication activities was also defined for Nangarhar province. However, the Eradication Working Group, which is in charge of defining such areas, decided at a later stage to exclude Nangarhar province.

**Figure 12: Area of opium poppy eradication by different methods, 2011- 2012 (Percentage of total)**

**Figure 13: Area of opium poppy eradication in each month, 2011-2012 (Percentage of total)****Table 17: Start and end dates of Governor-led eradication (GLE), 2012**

Region	Province	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Eradication (ha)
Central	Kabul			05-May 22-May			103
	Kapisa		29-Apr	16-May			54
East	Kunar		07-Apr	15-May			70
	Laghman	27-Mar		15-May			76
	Nangarhar	11-Mar		13-May			784
North	Baghlan			30-May		19-Jul	252
	Faryab			21-May	20-Jun		50
North-east	Badakhshan			23-May		16-Jul	1,784
South	Day Kundi		30-Apr	09-May			236
	Hilmand	07-Mar	27-Apr				3,637
	Kandahar	17-Mar		08-May			922
	Uruzgan		19-Apr	11-May			485
	Zabul		30-Apr	05-May			88
West	Badghis		23-Apr	03-May			53
	Farah	17-Mar	29-Apr				316
	Ghor				11-Jun	04-Jul	11
	Hirat	26-Mar		09-May			600
	Nimroz	27-Mar	08-Apr				148

**Table 18: Summary of security incidents during opium poppy eradication, 2012**

PROVINCE	Number of attacks	Number of people dead	Number of people injured	Eradication (Hectares)
Badakhshan	3	0	1	1,784
Badghis	6	5	3	53
Baghlan	0	0	0	252
Day Kundi	0	0	0	236
Farah	3	0	6	316
Faryab	10	2	4	50
Ghor	0	0	0	11
Hilmand	46	29	48	3,637
Hirat	2	0	2	600
Kabul	4	0	2	103
Kandahar	11	5	9	922
Kapisa	0	0	0	54
Kunar	5	0	1	70
Laghman	4	13	4	76
Nangarhar	21	48	47	784
Nimroz	2	0	0	148
Uruzgan	0	0	0	485
Zabul	0	0	0	88
<b>Total:</b>	<b>117</b>	<b>102</b>	<b>127</b>	<b>9,672</b>

*Resistance to Governor-led eradication*

### 3.2 Quality control of reported eradication with satellite images

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

The Governor-led eradication of opium poppy in Badakhshan, Baghlan, Day Kundi, Farah, Hilmand, Hirat, Kabul, Kandahar, Kapisa, Laghman, Nangarhar, Uruzgan and Zabul provinces was checked with satellite images. Satellite images were supported with heli-pictures collected during over-flights in the provinces of Baghlan, Nangarhar and Laghman.

Satellite images of eradicated fields were interpreted and compared with the figures available on the ground and, in general, a good match was observed between them. The verification of the quality of eradication with satellite images as well as field pictures indicated that the quality of

eradication in Hilmand, Hirat and Farah provinces was very good. Kandahar province was an exception, as 62% of eradication was over-reported.

In Badakhshan province, over-reporting to the extent of 610 hectares was observed. The final eradication figure in Badakhshan province was corrected to 1,784 hectares.

Out of 480 hectares of GLE reported by verifiers in Farah province, 339 hectares of eradicated poppy fields were checked with satellite images and over-reporting to the extent of 163 hectares was detected. The final eradication figure in Farah province was corrected to 316 hectares.

Out of 3,958 hectares of GLE reported by verifiers in Hilmand province, 2,280 hectares of eradicated poppy fields were checked with satellite images and over-reporting to the extent of 321 hectares was observed. The final eradication figure in Hilmand province was corrected to 3,637 hectares. The quality of eradication as seen on satellite images as well as heli-pictures was generally very good and effective in most places in Hilmand province.

Out of 2,458 hectares of GLE reported by verifiers in Kandahar province, 2,030 hectares of eradicated poppy fields were checked with satellite images and over-reporting to the extent of 1,536 hectares was discovered. The final eradication figure in Kandahar province was corrected to 922 hectares.

Out of 1,204 hectares of GLE reported by verifiers in Nangarhar province, 809 hectares of eradicated poppy fields were checked with satellite images and over-reporting to the extent of 420 hectares was noted. The final eradication figure in Nangarhar province was corrected to 784 hectares.

## 4 Potential opium yield and production

### 4.1 Potential opium yield and production decreased in 2012<sup>11</sup>

In 2012, estimated potential opium production in Afghanistan amounted to 3,700 tons (2,800-4,200 tons), a drop of 36% in comparison to its 2011 level (5,800 tons), whereas average opium yield amounted to 23.7 kilograms per hectare in 2012, which was some 47% less than in 2011 (44.5 kilograms per hectare).

The reduction in yield, and subsequently in production, was caused by a disease of the opium plant and adverse weather conditions. In particular, the Eastern, Western and Southern regions reported widespread disease that affected poppy plants at an early stage. Some evidence also points to a cold spell/frost that affected opium poppy in late March, in the early-growing regions at least, which also had the potential to reduce opium yield.

The yield survey undertaken by UNODC captured the effects of the disease/adverse weather conditions at least partially. In the Southern region, for example, the yield survey showed a reduction of more than 50%, but an even smaller yield cannot be excluded. The 2012 production was at the same level as 2010 production, when poppy plants were also affected by disease. In 2010, yield was estimated at 29.2 kilograms per hectare.

In 2012, a drastic reduction to only 130 poppy fields surveyed, close supervision of field work and limiting the survey to low-risk areas where the security situation allowed access and enough time to carry out all measurements ensured a very high degree of compliance with the yield survey protocol.<sup>12</sup> Around 90% of all yield data obtained in 2012 met the strict quality criteria introduced in 2011.

<sup>11</sup> "Potential production" is a hypothetical concept and not an estimate of the actual opium or morphine/heroin production. For more information, see UNODC *World Drug Report* 2011, p. 265.

<sup>12</sup> Published in UNODC "Guidelines for yield assessment of opium gum and coca leaf from brief field visits", UN New York, 2001, ST/NAR/33.



**Table 19: Opium yield by region, 2011-2012<sup>13</sup>** (Kilograms per hectare)

REGION	2011 average yield (kg/ha)	2012 average yield (kg/ha)	% Change
Central	40.7*	33.9	NA
Eastern	40.7*	38.6	NA
North-eastern	23.1	44.5	+93%
Northern	40.7*	39.4	NA
Southern	48.1	22.6	-53%
Western	30.6	23.5	-23%
<b>Weighted national average</b>	<b>44.5</b>	<b>23.7</b>	<b>-47%</b>

The yield survey methodology was revised for 2012. For further details, please refer to the Methodology section of this report.\* In 2011, the Central, Eastern and Northern regions were grouped into one yield region, because of a low number of yield measurements. A direct region-by-region comparison with yields for those regions was not possible in 2012.

In spite of the disease of the opium plant, the Southern region continued to produce the vast majority of opium in Afghanistan in 2012, representing 69% of national production. The Western region was the country's second most important opium-producing region, representing 23% of national production. The rest of the country contributed only 9% of total opium production.

In 2012, based on preliminary results for some countries and regions, potential opium production in Afghanistan represented 74% of global potential production (see Figure 14).

**Table 20: Potential opium production by region, 2011-2012** (Tons)

Region	Production 2011 (tons)	Production 2012 (tons)	Change 2011-2012 (tons)	Change 2011-2012 (%)
Central	9	4	-5	-54%
Eastern	166	216	+50	+30%
North-eastern	39	86	+46	+118%
Northern	12	7	-5	-44%
Southern	4,924	2,520	-2,404	-49%
Western	685	824	+139	+20%
<b>Rounded total</b>	<b>5,800</b>	<b>3,700</b>	<b>-2,100</b>	<b>-36%</b>

Based on information on the distribution of morphine and heroin seizures in Afghanistan and neighbouring countries from 2009-2011, it can be estimated that 50% of the potential opium production in 2012 was converted into morphine or heroin (see p. 65 for more details). The 2012 potential opium production is estimated to be distributed as follows: 1,850 tons of opium are converted into 264 tons of morphine or heroin and 1,850 tons left unprocessed, assuming a 7:1 conversion ratio from opium to morphine/heroin. If the total opium production of 3,700 tons would be converted to morphine or heroin, 529 tons morphine or heroin could potentially be produced.<sup>14</sup> The analysis of the morphine content of opium in Afghanistan's main growing region since 2010<sup>15</sup> gave rise to concerns that the 7:1 ratio may underestimate the amount of opium

<sup>13</sup> Yield estimates in this report are based on a concept of potential yield, i.e. the amount opium farmers can potentially extract from poppy capsules. Depending on local conditions and practices, this may differ from the amount actually harvested.

<sup>14</sup> Note that due to rounding, this figure is higher than the double of 264 tons.

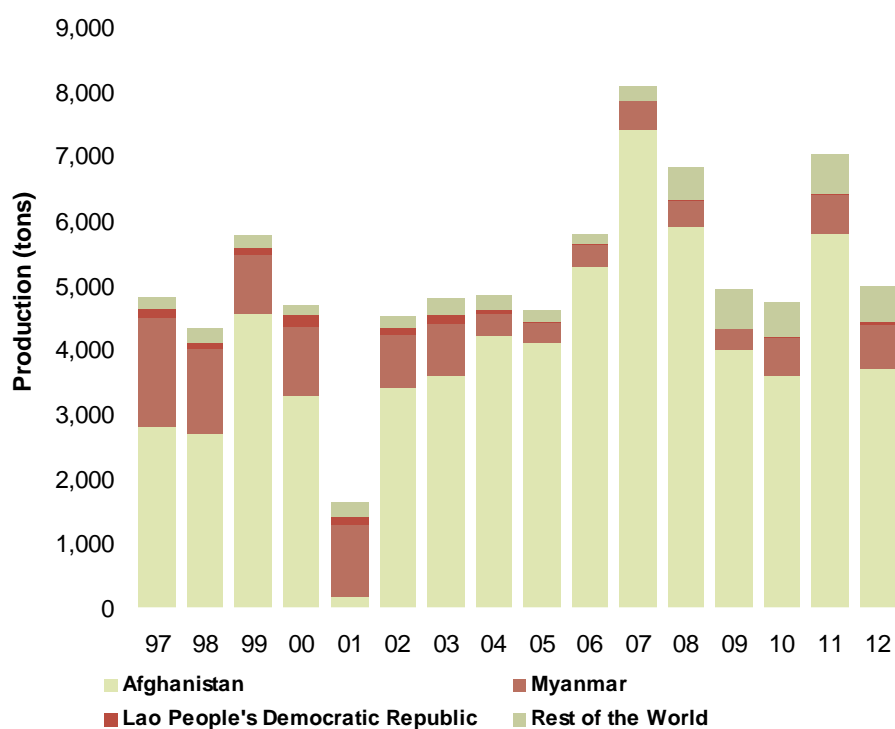
<sup>15</sup> See Ministry of Counter Narcotics/UNODC (2011), *Afghanistan Opium Survey 2011*, p. 56.

necessary to produce 1 kg of morphine or heroin. A review of this conversion ratio is currently being conducted.

**Table 21: Potential opium production by region with ranges, 2012 (Tons)**

REGION	Best estimate	Lower bound	Upper bound
Central	4	3	5
Eastern	216	177	255
North-eastern	86	76	110
Northern	7	6	8
Southern	2520	1646	3053
Western	824	672	1055
<b>National</b>	<b>3,656</b>	<b>2,768</b>	<b>4,240</b>
<b>National (rounded)</b>	<b>3,700</b>	<b>2,800</b>	<b>4,200</b>

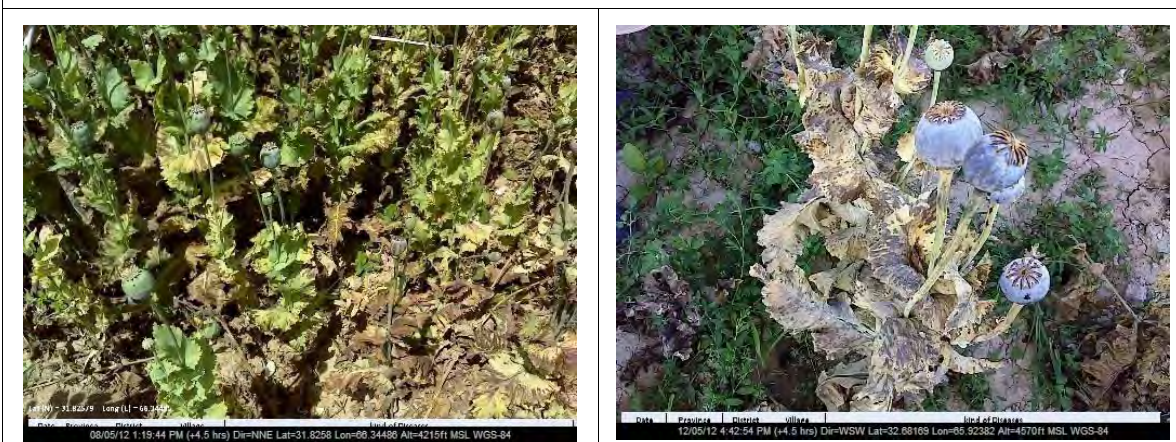
**Figure 14: Global potential opium production, 1997-2012 (Tons)**



Source: UNODC, World Drug Report 2012 and UNODC, South-East Asia Opium Survey 2012. 2012 results for Rest of the World are preliminary. Figures refer to oven-dry opium. Production figures for Afghanistan for the years 2006-2009 were revised from previous estimates.



*Disease-affected opium poppy plants in Farah (left) and Nangarhar (right), 2012*



*Disease-affected opium poppy plants in Uruzgan, 2012*



*Disease-affected opium poppy capsules in Uruzgan, 2012*

## 4.2 Revision of potential opium production in Afghanistan 2006-2009

The combination of a dramatic increase in poppy cultivation and the size of the area surveyed after 2005, as well as the deterioration of the security situation in the main poppy-growing areas in the South of Afghanistan, made both ground survey work and its supervision more and more challenging. Opium yield data are collected following a technical protocol which requires highly detailed measurements of poppy fields and capsules. Yield surveyors need to spend considerable time in the fields to conduct and record these measurements with the required accuracy. With the



deterioration of security in the field, the capacity of surveyors to guarantee the strictest rigour and standard of data quality in full compliance with the yield survey protocol in the opium yield surveys prior to 2011 was put into question.

In order to review this issue, UNODC sought external expert advice and undertook an extensive study that led to the development of statistical tests for gauging the reliability of yield survey data. The data quality test for separating high quality data from problematic data<sup>16</sup> was subsequently applied to the 2012 yield data set, which proved to be of high quality.

After successfully establishing procedures for quality control, opium yield data for the years 2006 to 2009, when the conditions for obtaining good quality data were challenging, were reviewed. The review led to a downward revision of the yield estimates and a correspondingly decrease in the opium production estimates for 2006 to 2009. The revision did not, however, change production trends in those years, nor change Afghanistan's position as the world's principal opium-producing country.

**Table 22: Revised opium yields (Kilograms per hectare) and production (Tons), 2006-2009**

Year	Area under cultivation (rounded)	Previously published yield estimate (kg/ha)	Published national production (tons)	Revised yield estimate (kg/ha)	Revised production estimate (tons)
2006	165,000	37	6,100	32.2	5,300
2007	193,000	42.5	8,200	38.5	7,700
2008	157,000	48.8	7,700	37.8	6,000
2009	123,000	56.1	6,900	32.2	4,400

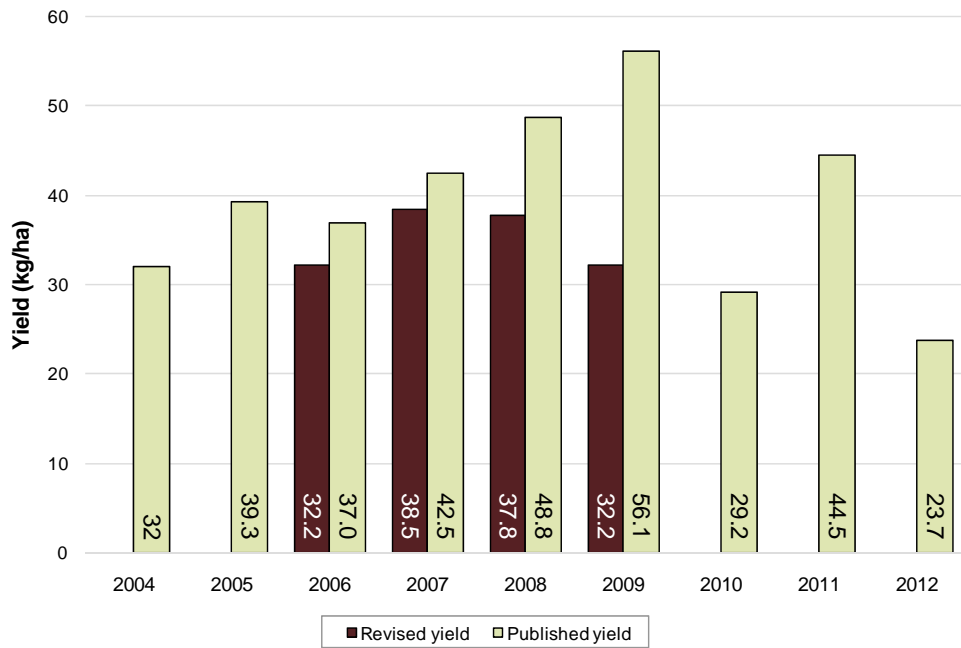
*Previously published yield estimates were national averages, weighted by area under cultivation of the respective year. The revised estimates are the national average of reliable yield data.*

Opium yield surveys prior to 2006 were much smaller in scope, were implemented under less challenging conditions and there were no indications of data quality problems to an extent that would give rise to concern. The 2010 yield was estimated with a methodology adapted to the occurrence of poppy disease in the main poppy growing areas and took into consideration quantitative and qualitative information sources. Therefore, the statistical tests for quality control could not be applied to the yield estimate of that year.<sup>17</sup> The yield survey data of 2011 had already been checked with the statistical tests used for the review of the 2006 to 2009 datasets.

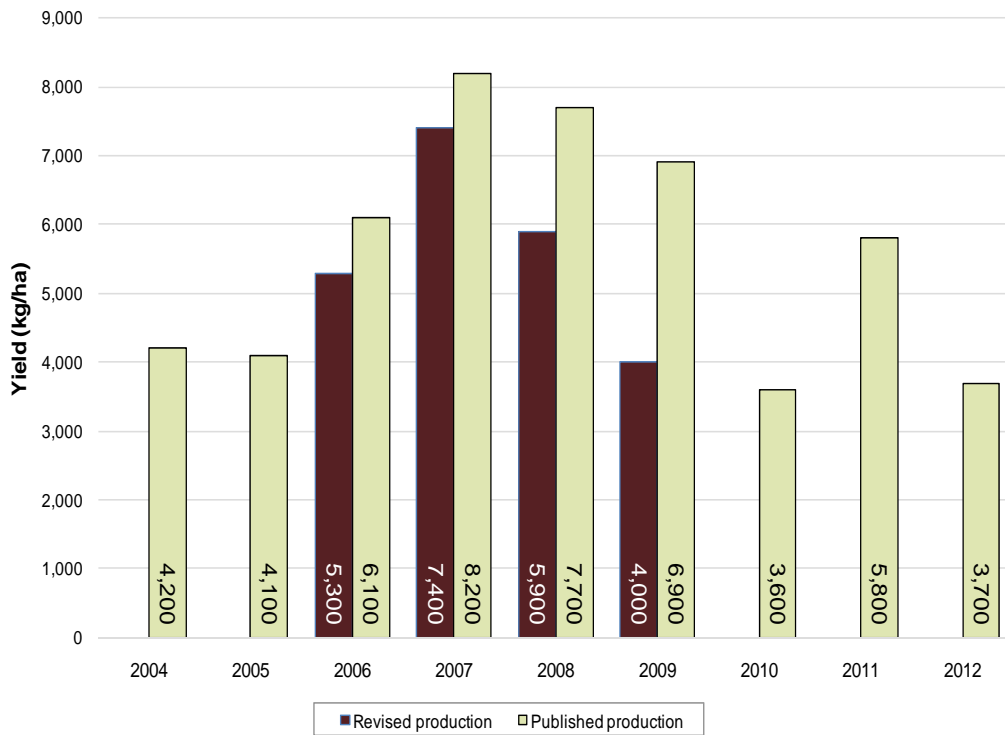
<sup>16</sup> See MCN/UNODC: Afghanistan Opium Survey 2011, December 2011, p. 95-97.

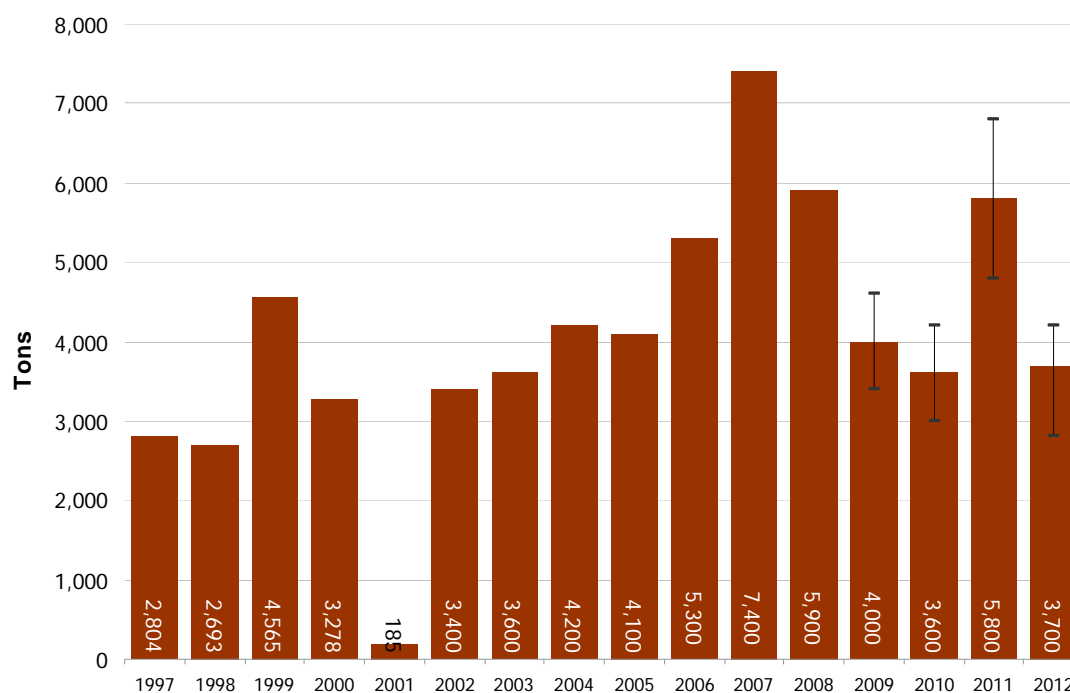
<sup>17</sup> A detailed description of the 2010 yield estimation procedure can be found in MCN/UNODC: Afghanistan Opium Survey 2010, December 2010, p. 95-98.

**Figure 15: Published average yield (Kilograms per hectare) for the years 2004 to 2012, with revised yield estimates for 2006 to 2009 (Red bars)**



**Figure 16: Published potential opium production (Tons) for the years 2004-2012, with revised production estimates for 2006-2009 (Red bars)**



**Figure 17: Potential opium production in Afghanistan, 1997-2012, revised (Tons)**

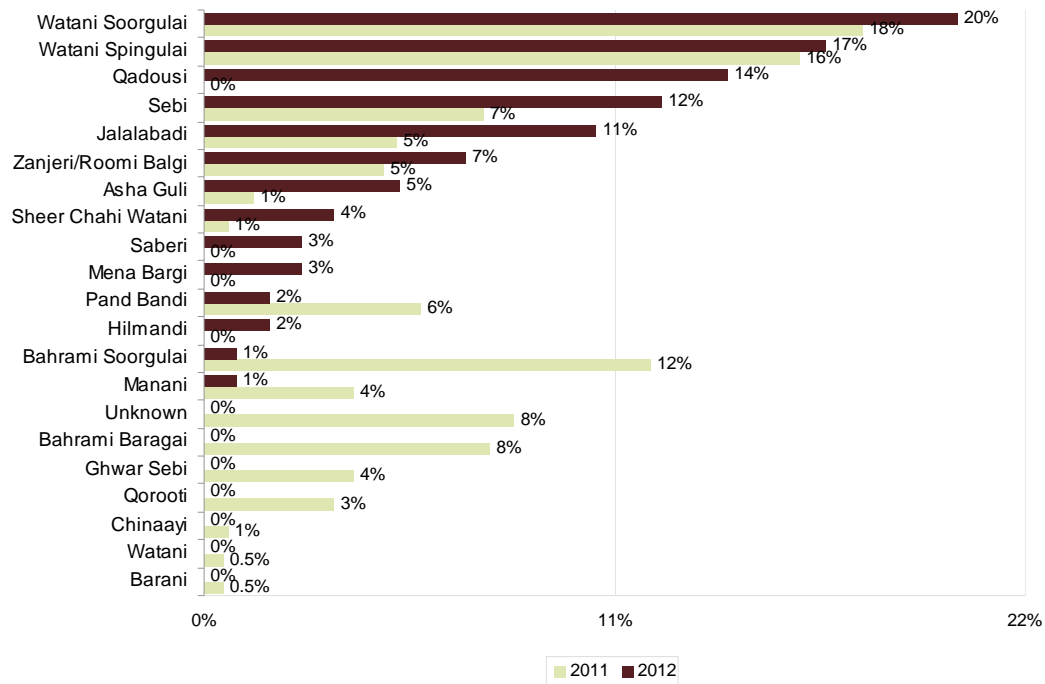
Sources: UNODC and UNODC/MCN opium surveys, 1994-2012 and revised yield figures. The high-low lines represent the upper and lower bounds of the estimate. Figures refer to oven-dry opium. Ranges for 2009 are proportional to ranges for the previous production estimates.

### 4.3 Opium poppy varieties

Farmers usually make their selection of poppy varieties in accordance with a variety's yield potential,<sup>18</sup> disease resistance, soil conditions, weather conditions that govern the plant's maturity date, and the need for inputs such as water, fertilizer and labour. As observed during the 2012 and 2011 yield surveys, *Watani Soorgulai* remained the most common variety reported by farmers (20% and 18%, respectively). The second most common variety planted in 2012 and 2011 was *Watani Spingulai* (17% and 16%, respectively). The third most common variety reported by farmers in 2012 was *Qadousi* (14%), but that variety was not reported in 2011. Other poppy varieties reported in 2012 were *Sebi* (12%), *Jalalabadi* (11%), *Zanjiri/Roomi Bargi* (7%), *Asha Guli* (5%), *Sheer Chahi Watani* (4%), *Sebari* (3%), *Mena Bargi* (3%), *Pand Bandi* (2%), *Hilmandi* (2%), *Bahrami Soorgulai* (1%) and *Manani* (1%). In 2008, *Sebi* was the most common variety reported (31.3%).

<sup>18</sup> A separate study aimed at developing 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.

**Figure 18: Reported opium poppy varieties by farmers in 2011 and 2012 (as percentage of farmers' responses)**



## 5 Results of the socio-economic survey

### 5.1 Socio-economic survey 2012

In 2012, a total of 1,580 villages were sampled (corresponding to a 4% sampling ratio), of which 1,481 (1,489 in 2011) were surveyed in 363 districts across all provinces. The remaining villages did not respond or could not be accessed by those conducting the survey.

Structured interviews were conducted with 1,481 headmen and 4,439 farmers. In each village, three types of farmer were sought for interview: one opium-growing farmer; one who had ceased opium cultivation; and one who had never grown opium. In poppy-free villages, less than three farmers were interviewed.

The following data were collected for all villages surveyed:

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

### 5.2 The link between security and opium cultivation

In 2012, 95% of total opium cultivation in Afghanistan took place in the Southern and Western regions of the country: 72% was concentrated in Day Kundi, Hilmand, Kandahar, Uruzgan, and Zabul provinces in the Southern region; 23% was concentrated in Badghis, Farah, Hirat and Nimroz provinces in the Western region. These are the most insecure provinces with a security risk classified as “high” or “extreme” by the United Nations Department of Safety and Security (UNDSS), and they are mostly inaccessible to the United Nations and NGOs. Day Kundi is the

only province in the South where security is generally good, with the exception of two districts, Gizab and Kejran.

Anti-government elements (AGE) and drug traders are very active in the Western region, where Badghis, Farah and Nimroz provinces are known to contain organized criminal networks. While AGE strongholds are located in the Southern provinces, the link between lack of security and opium cultivation was also evident in Nangarhar province in the Eastern region, where cultivation was concentrated in districts (Sherzad and Khogyani) classified as having a “high” or “extreme” security risk. In Kabul province in the Central region, cultivation was concentrated in the Uzbeen valley of Surobi district, which is also classified as having a “high” or “extreme” security risk. In Kapisa province, opium cultivation is concentrated in Tagab district, where security is also very poor.

Most security incidents during the eradication verification survey were caused by insurgency. In 2011, resistance to eradication forces resulted in 20 deaths, mostly of policemen. In 2012, the struggle against the eradication of opium poppy resulted in 102 deaths, an increase of 410% on 2011.

### 5.3 Access to markets

Farmers in Afghanistan usually have to transport their crops to agricultural markets if they want to sell them and it is not common for traders to come to villages to buy crops and then transport them. The exception is, of course, opium, which is commonly sold at the farm-gate. It is therefore important to understand how difficult it is for farmers to sell cash crops other than opium, especially when those crops are perishable and difficult to transport, such as vegetables.

In 2012, farmers in all the villages sampled were asked about the distance to their most commonly used market, the travel time to that market and their respective means of transport (2,719 out of 4,439 farmers, or 61%, responded). The survey did not attempt to verify the distances reported nor the poppy-growing status of the village, so the analysis was exclusively based on the information provided by the farmers.

A significant difference could be found between the mean distances to the markets for poppy-growing villages and poppy-free villages in the three main poppy-cultivating regions (Eastern, Southern and Western). Poppy-growing villages in the three main poppy-cultivating regions were significantly further away from markets, making it more difficult for farmers in those villages to market licit cash crops, thus increasing the attraction of opium, which can be sold easily at the farm-gate. This finding suggests that lack of market accessibility is factor that affects poppy cultivation and needs to be addressed to improve farmers’ opportunities for cultivating licit agricultural products.

**Table 23: Estimated average distance of villages to markets in the three main poppy-cultivating regions, as reported by farmers, 2012 (Kilometres)**

Region	Poppy-free villages (km)	Poppy-growing villages (km)	Total (km)
Eastern	23	31	25
Southern	16	24	22
Western	18	19	18
<b>Average*</b>	<b>19</b>	<b>23</b>	<b>21</b>

*\*Test for significance of the difference of poppy-free and poppy-growing villages revealed a statistically significant larger distance to markets for poppy-growing villages at 0.01 level.*

When asked about the means of transport used to reach the market, the vast majority of farmers reported car/bus (73%), which was followed at some distance by donkey (19%), walking (7%) and bicycle (0.4%). The travel times by means of transport differ significantly for poppy-free and poppy-growing villages. Apart from walking time, travel times to the market are significantly lower for poppy-free villages than for poppy-growing villages.



**Table 24: Means of transport and average travel time to market reported by farmers, 2012**

	Percentage of farmers	Average travel time in hours
Bicycle	0.4%	0.6
Car/Bus	73%	1.5
Donkey	19%	2.2
Walking	7%	1.5
<b>Total</b>	<b>100%</b>	<b>1.6</b>

*National average of all farmers in all regions.*

**Table 25: Average travel time, by means of transport and poppy-cultivation status for the three main poppy-cultivating regions, 2012 (Hours)**

	Poppy-growing village (h)	Poppy free villages (h)
Bicycle	0.8	NA
Car/Bus	1.7	1.2
Donkey	3.1	2.0
Walking	1.3	1.5
<b>Total</b>	<b>1.5</b>	<b>1.8</b>

*All differences are significant at 0.01 level.*

## 5.4 Opium poppy cultivation, access to basic development facilities and agricultural assistance

### 5.4.1 Access to basic facilities<sup>19</sup>

When comparing non-poppy growing villages with poppy-growing villages, several important differences can be noted. Testing for statistical significance revealed that certain facilities (such as schools) are more likely to be found in villages without poppy cultivation than in villages with poppy cultivation.

All village headmen were interviewed on the status and availability of basic development facilities in their villages. Information was gathered about access to credit, electricity, irrigation, medical facilities, off-farm employment opportunities, telephones, drinking water, roads, public transportation, a boys' school, a girls' school, vocational skills training and access to TV/radio.

According to the headmen, more than 80% of the villages had access to roads, drinking water, irrigation water and a boys' school. More than 50% had access to TV/radio, phones and a medical centre. A smaller percentage (between 20 and 50%) had access to a girls' school, to agricultural assistance, public transportation and electricity. Less than 20% had access to off-farm employment opportunities, credit or vocational skills training (see Table 26).

Village headmen were also asked if there was cannabis cultivation in their village in the preceding season (17% of all villages), whether an initiative against poppy was broadcast (46% of all villages) and whether governor authority was recognized (79% of all villages).

<sup>19</sup> Surveyors did not formally verify the information provided by headmen or farmers.

**Table 26: Village-level access to facilities and other features, 2012**

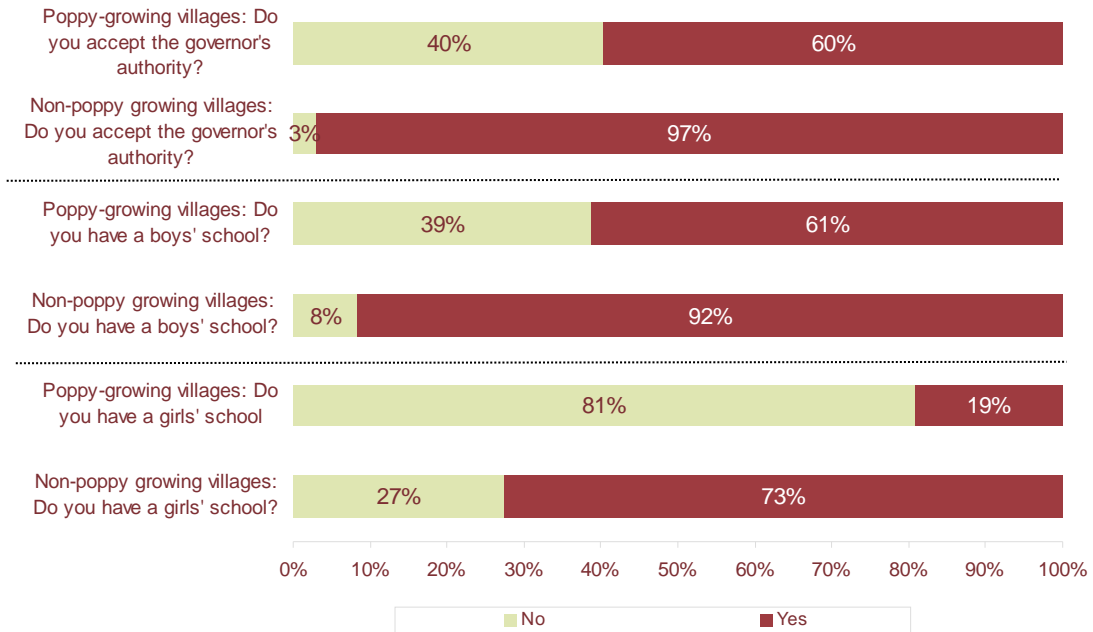
Access to/feature	Percentage of total villages
Drinking water	90%
Irrigation water	87%
Road	87%
Boys' school	83%
Governor authority accepted	79%
Access to TV/radio	74%
Phones	67%
Medical centre	50%
Girls' school	48%
Initiative against poppy	46%
Agricultural assistance	30%
Public transportation	24%
Electricity	22%
Off-farm employment	15%
Credit	7%
Vocational training	5%

In the three main poppy-growing regions (Eastern, Southern and Western), differences between poppy-growing and non-growing villages were analyzed. Poppy-free villages were more likely to have schools, to be exposed to campaigns against poppy cultivation and to recognize the authority of the governor.

In 2012, almost all the headmen of poppy-free villages reported to recognized the provincial governor's authority. As poppy-growing villages are often located in areas where government control is weak and the security situation is bad, it is no surprise that they are less likely to accept the authority of government institutions although 60% of poppy-growing villages reportedly accepted the authority of the provincial governor but still grew poppy.

For the first time, the 2012 survey investigated access to boys' and girls' schools. Overall, the vast majority of villages (83%) reported having access to a boys' school and just under half of them to a girls' school. However, there is a marked difference in access to schools between poppy-growing and non-poppy-growing villages. While over 90% of non-poppy-growing villages have a boys' school and almost three quarters a girls' school, these proportions drop to 61% (boys' school) and 19% (girls' school) in poppy-growing villages. This is an alarming situation. The negative long-term effect of having less access to education than their age-mates elsewhere, and the absence of schools for girls in over four fifths of poppy-growing villages, in particular, limits the development chances of poppy-growing areas.

**Figure 19: Access to a boys' school, a girls' school, recognition of governor in Eastern, Southern and Western regions, by poppy-growing status, 2012**

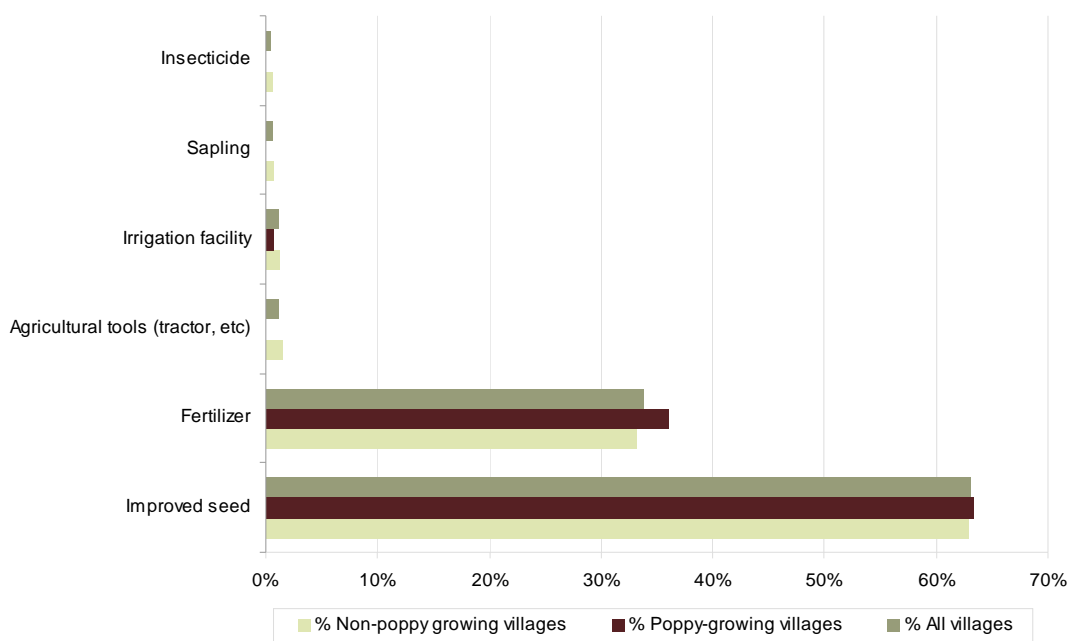


All differences were significant at 0.01 level.

**5.4.2 Agricultural assistance**

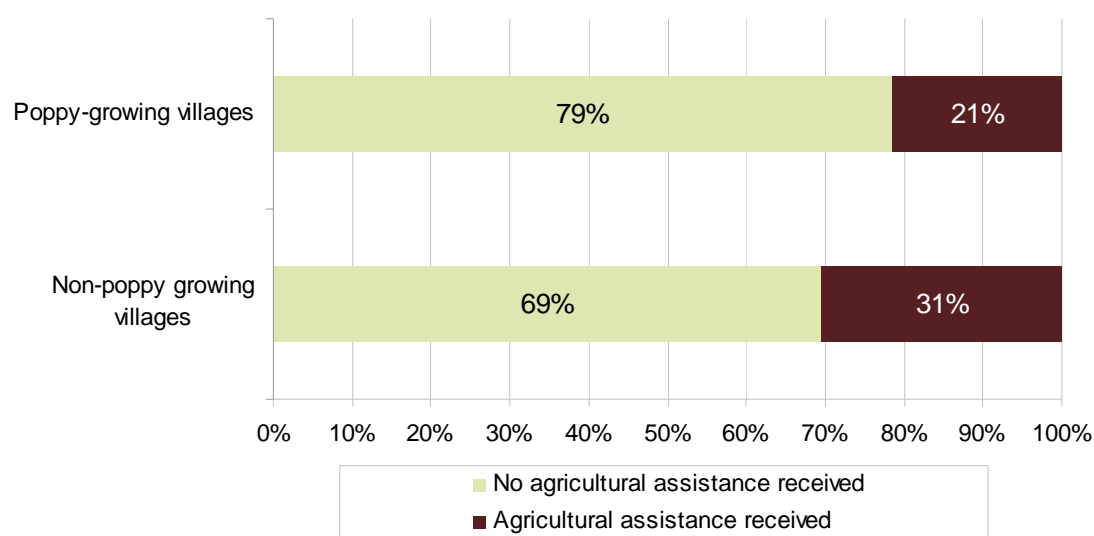
In 12 months prior to the interview, 30% of all villages in Afghanistan received some form of agricultural assistance. Village headmen reported the type of assistance, which included improved seeds (63% of receiving villages), fertilizers (34% of receiving villages), and irrigation facilities (1% of receiving villages). Only 1% received agricultural tools and another 1% received saplings. These numbers are similar to the results of the 2011 survey.

**Figure 20: Type of agricultural assistance delivered to villages in the 12 months prior to the interview, as reported by headmen, 2012**



Previous to 2012, the data showed a statistically significant nationwide association between growing poppy and not receiving agricultural assistance. The relationship was quite strong and suggested that, at the village level, the provision of agricultural assistance may influence whether poppy is grown or not. In 2012, the difference was not as pronounced as in 2011, in particular when concentrating on the main poppy-cultivating regions. This may have been due to increased efforts to build alternative livelihoods in poppy-cultivating areas. However, it is reasonable to assume that other factors also played a role.

**Figure 21: Percentage of villages in Eastern, Southern and Western regions that received agricultural assistance, by poppy-growing status, 2012**



## 5.5 Poppy and cannabis cultivation are closely related

Cannabis cultivation is another factor that is closely related to poppy cultivation. This had already been observed in previous years and in the cannabis surveys undertaken by UNODC/MCN, and holds true both at the village and the farmer level.

Some 71% of poppy-growing villages (out of 373) reported cannabis cultivation, while only 2% of poppy-free villages reported it (out of 1,108). This phenomenon and its respective shares of villages have been consistent over the past few years since it was first addressed in the 2009 survey. These findings are supported by UNODC/MCN cannabis surveys, which have shown a clear association between opium and commercial cannabis cultivation at the provincial level.

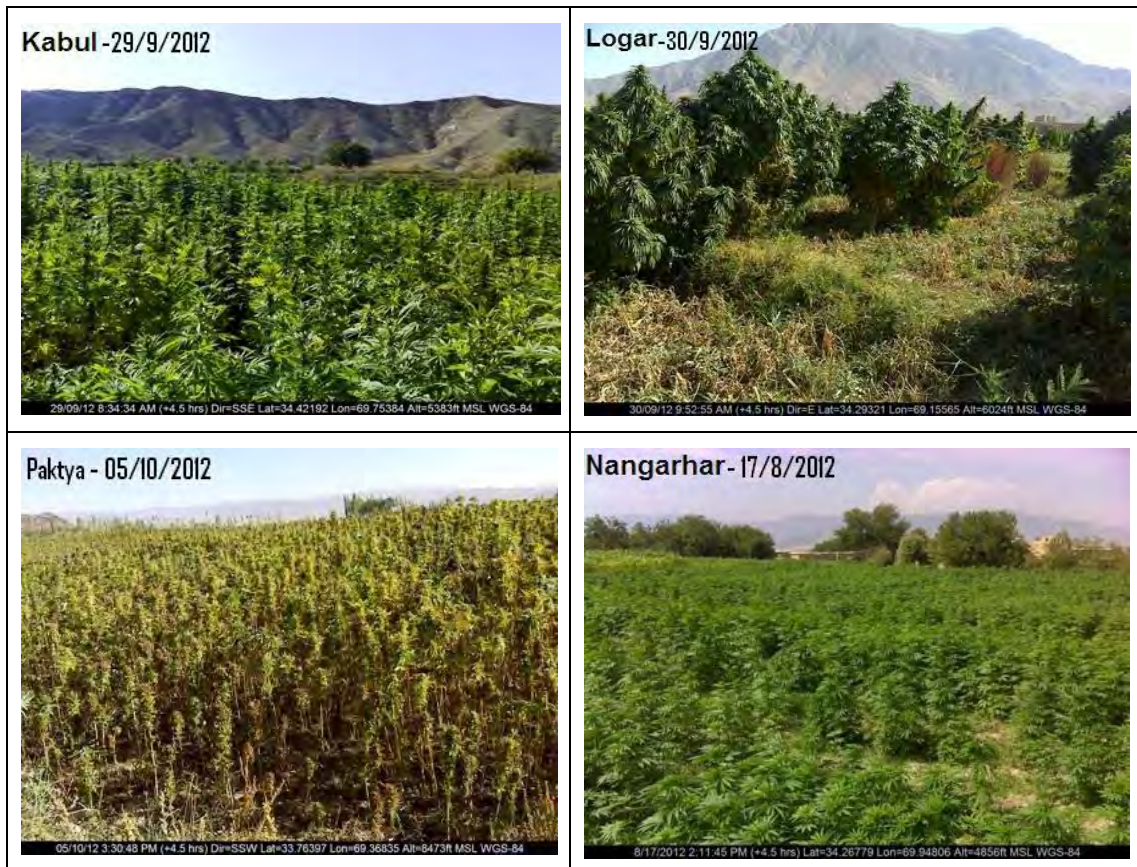
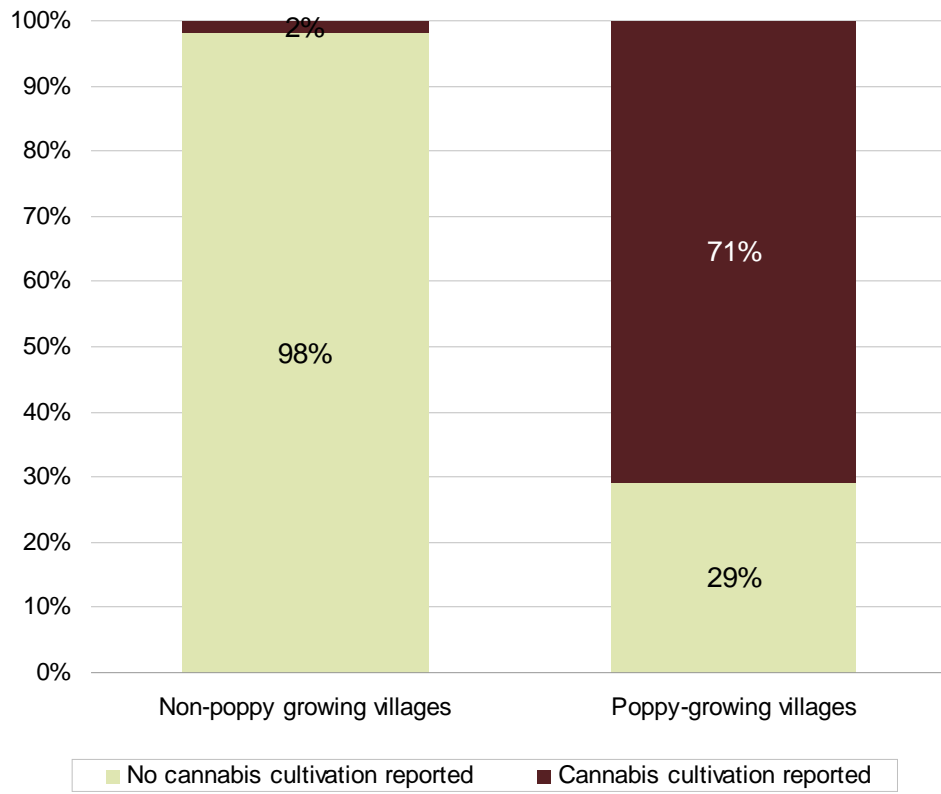
This strong relationship also holds at the farmer level. Only 3% (133) of all farmers interviewed reported having cultivated cannabis in the 2011 season. However, they were unevenly distributed among poppy and non-poppy farmers: 11% of all poppy-growing farmers reported cannabis cultivation, while only 2% of non-poppy-growing farmers reported it.

**Table 27: Cannabis cultivation in preceding season, by type of farmer, 2012**

Type of farmer	Total number of farmers	Farmers who grew cannabis in 2011	Percentage
Non-poppy-growing farmer*	4,041	89	2%
Poppy-growing farmer	397	44	11%
<b>Grand total</b>	<b>4,438</b>	<b>133</b>	<b>3%</b>

\* Includes farmers who had never grown poppy and those who had ceased poppy cultivation.

**Figure 22: Proportion of cannabis-growing in villages by poppy-growing status, 2012**



*Cannabis fields in different provinces, 2012*

## 5.6 Reasons for cultivating opium poppy

The high sale price of opium continued to be the most important reason for cultivating opium poppy cited by poppy farmers in 2012 (44%), as in 2011 (59%). High income from little land, improving living conditions, and the provision of basic food and shelter for the family were other important reasons given by farmers.

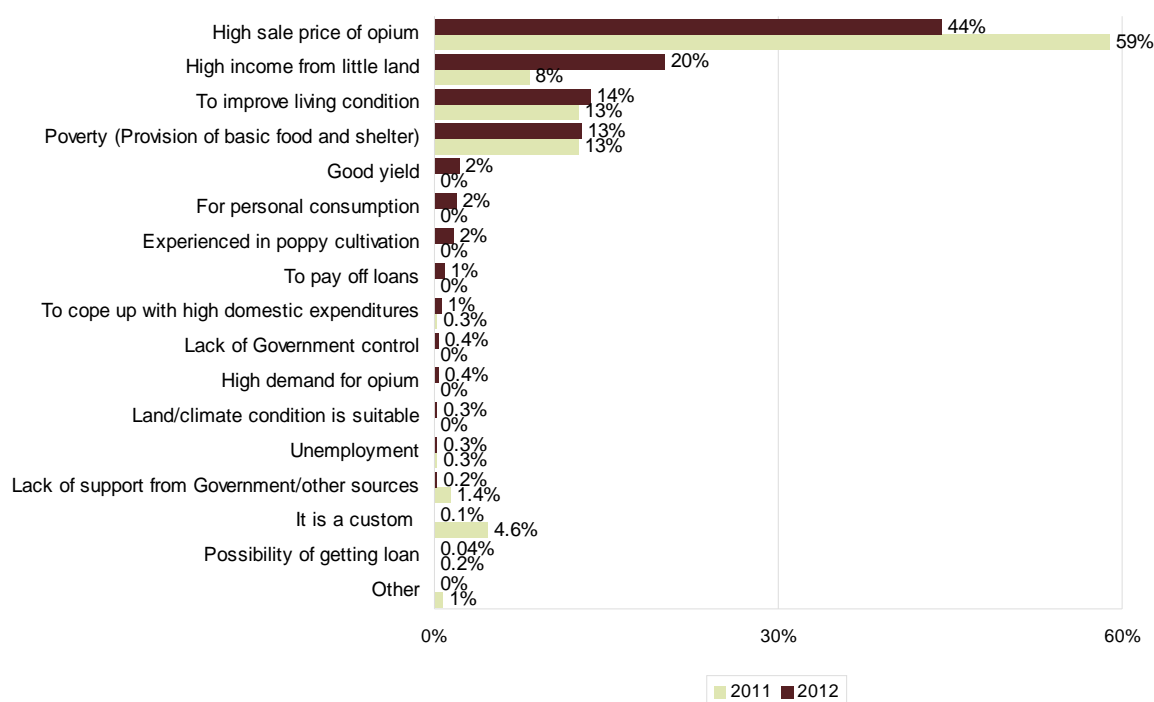
In 2012, farmers who had ceased cultivating opium in 2012 or before were asked about their major reasons for doing so. The government ban on opium cultivation was mentioned by 21% of respondents in 2012 and 23% in 2011, making it the most frequently cited reason for ceasing opium cultivation. Religious belief (opium cultivation being against Islam) was the second most cited reason (16%) in 2012, while fear of the Government was the third (15%).

A major change when compared to 2011 was ceasing opium cultivation because of the fear of plant diseases, with only 1.2% of farmers mentioning that they stopped it for that reason in 2012, compared to 14% in 2011. The relatively high proportion of farmers citing plant disease in 2011 seemed to reflect their experience, or at least knowledge, of the widespread disease that affected poppy in 2010. Apparently this effect waned after 2011 as the proportion of farmers mentioning it was relatively low in 2012.

Elders and Shura decision, fear of eradication, not enough yield, lack of water, opium's harmful effect on humans, and the small size of land holdings were the other reasons mentioned for ceasing opium cultivation.

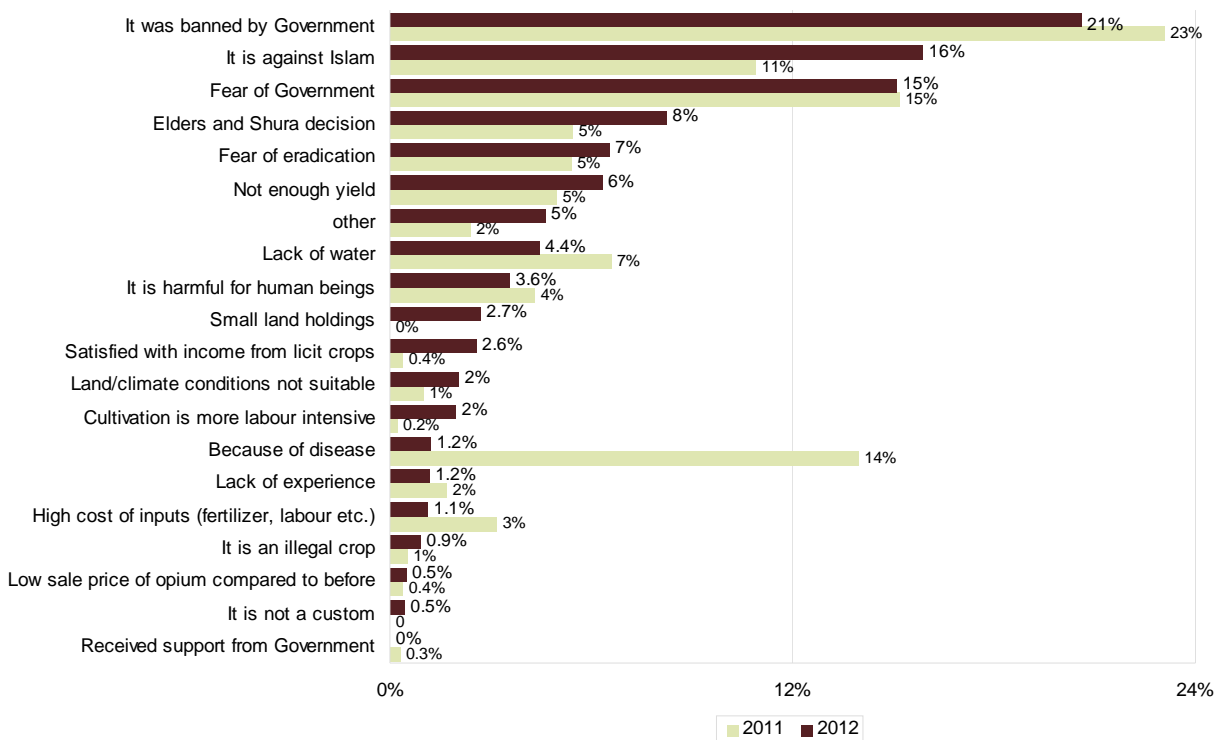
In 2011 and 2012, religious belief was the principal reason for never having cultivated opium poppy. Some 60% of farmers in 2012 and 52% in 2011 who had never grown opium reported that they did not do so because it is forbidden (haraam) by Islam. The government ban and opium's harmful effect on humans were the other main reasons for never cultivating opium poppy.

**Figure 23: Reasons for cultivating opium, 2011-2012 (n=396 farmers in 2012)**

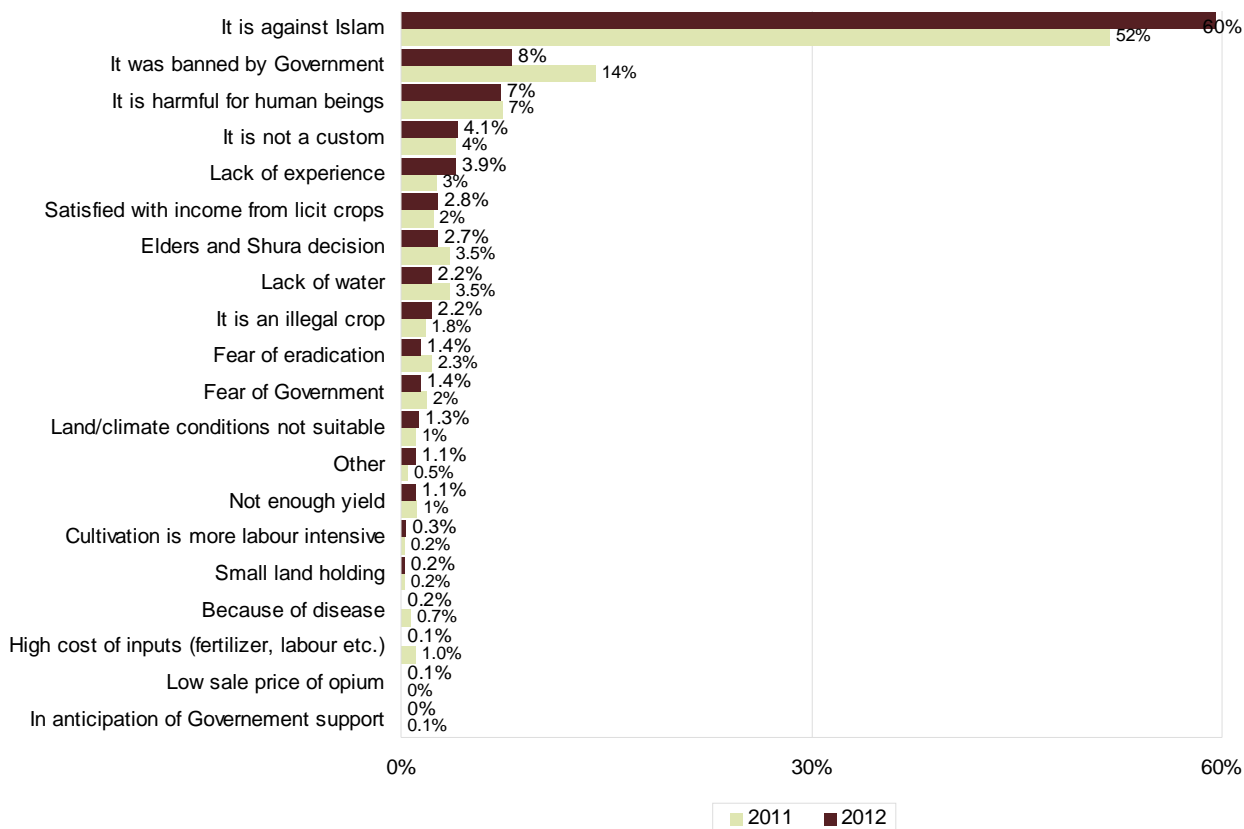




**Figure 24: Reasons for ceasing opium cultivation in or before 2011, 2011-2012 (n=1,071 farmers in 2012)**



**Figure 25: Reasons for never cultivating opium in 2011-2012 (n=2,962 farmers in 2012)**



## 5.7 Daily wages for opium lancing

Under normal conditions, three people can harvest 1 *jerib* (0.2 hectares) of opium poppy in 21 days. If all harvesting took place at the same time, a total of 2.1 million man-days would have been needed to reap the entire 2012 opium harvest in Afghanistan. Therefore, extra labour is needed for harvesting, especially in southern Afghanistan.

In 2012, there was a decrease in the daily wages of labour in the country in comparison to 2011 in US dollar terms. Average daily wages for lancing, poppy weeding and wheat harvesting went down to US\$ 11.7, US\$ 5.7 and US\$ 6.4 per day from US\$ 12.6, US\$ 6.6 and US\$ 6.6, respectively, in 2011. The daily wage for lancing/gum collection in 2012 was much higher (almost double) than other daily wages. Between 2011 and 2012, the US dollar gained in strength against the Afghani by around 10%. In local currency (Afghanis), wages for lancing remained largely unchanged, while wages for labour (roads, construction) and wheat harvesting increased. However, local wages were reported in a number of different currencies, including Afghanis, Pakistani Rupees and Iranian rials, which complicates a year-on-year comparison.

**Table 28: Daily wage rates for different activities in Afghanistan, 2009-2012**

Activity	Daily wage rate (US\$)				Change 2011-2012
	2009	2010	2011	2012	
Labour (roads, construction, etc.)	3.6	4.7	5.6	5.7	3%
Lancing /gum collection	8.7	9.3	12.6	11.7	-7%
Poppy weeding	3.6	5.4	6.6	5.7	-13%
Wheat harvesting	4.3	5.4	6.6	6.4	-3%

## 5.8 Outstanding loans

It is important to understand the financial status of farmers in order to appreciate their reasons for cultivating opium and the dynamics of opium cultivation in Afghanistan. To that end, as part of the annual village survey, farmers were asked if they had any outstanding loans.

In 2012, 37% of farmers reported having outstanding loans, while 41% of farmers reported having outstanding loans in 2011, but the average<sup>20</sup> size of outstanding loans per farmer increased by 2% from US\$ 1,085 to US\$ 1,106. This increase was most pronounced among non-opium-growing households (never-grown households), which reported average loan amounts 4% higher than in 2011. However, in 2012 there was a 15% decrease in the average amount of loans (from US\$ 1,097 in 2011 to US\$ 935) of households that had ceased growing opium. Another observation in the 2012 data was that opium-growing households reported a higher average loan amount (US\$ 1,298) in comparison to non-opium-growing households, which had never been the case in previous years.

**Table 29: Average outstanding loans in US\$ per household (Loan) and percentage of farmers with loan (%), 2009-2012**

	2009		2010		2011		2012	
	Loan	%	Loan	%	Loan	%	Loan	%
Opium farmers	599	30%	1,029	31%	976	41%	1,298	18%
Ceased	911	45%	1,053	43%	1,097	43%	935	37%
Never grown	965	45%	1,043	41%	1,097	41%	1,145	40%
All farmers	910	43%	1,046	41%	1,085	41%	1,106	37%

<sup>20</sup> Average size of loan calculated for farmers with current loan.



## 5.9 Income of farming households

Opium is a cash crop in Afghanistan. While it is interesting to understand the economic importance of opium at the household level, it is also important to understand which other sources of cash income rural households generate in addition, or as an alternative, to opium cultivation. The opium village survey investigates those two issues by looking at differences in the income patterns of rural households and the relative importance of different income sources. The survey is designed to investigate general differences between opium-growing and non-opium-growing households, but it cannot explain how successful or unsuccessful specific income strategies are.<sup>21</sup>

On average, poppy-growing households in Afghanistan have a higher cash income than households that do not grow poppy. Data from the 2012 annual village survey on household income earned in 2011 show that the average annual cash income of opium-growing households in 2011 was 29% higher than households that had ceased opium cultivation and 52% higher than households that had never grown opium.

Differences between non-opium-growing households were highly pronounced in 2012. The average annual cash income of households who had ceased opium cultivation was 32% higher than those who had never grown opium poppy. By comparing 2010 and 2011 household incomes, it can be noted that the income gap between poppy-growing and non-poppy-growing households widened in 2011.

Another interesting finding is that the table below clearly shows the differences in cash income between the Afghan regions in 2011. In the Eastern region, the income of poppy-growing households decreased, while it increased in the Southern and Western regions, and the increase in the Southern region from the 2010 level was huge (108%). It appears that the increase in household incomes was due to the increase in opium prices in 2011.

**Table 30: Reported average 2010 and 2011 annual household income, by region and opium-growing and non-opium-growing status** (Data collected in 2012)

	Opium farmers (US\$)	Opium farmers (US\$)	Farmers ceased growing opium (US\$)	Farmers ceased growing opium (US\$)	Farmers never grown opium (US\$)	Farmers never grown opium (US\$)
REGION/ YEAR	2010	2011	2010	2011	2010	2011
Eastern	3,603	3,282	2,880	3,144	2,598	2,985
Northern	3,361	NA	3,267	NA	2,229	NA
Southern	3,060	6,373	2,464	4,912	2,249	2,912
Western	3,543	3,685	3,164	2,317	3,195	2,153
<b>National</b>	<b>3,233</b>	<b>5,478</b>	<b>2,807</b>	<b>3,865</b>	<b>2,625</b>	<b>2,631</b>

*Central, Northern and North-eastern regions were not analysed because of a low number of opium-growing villages in the sample.*

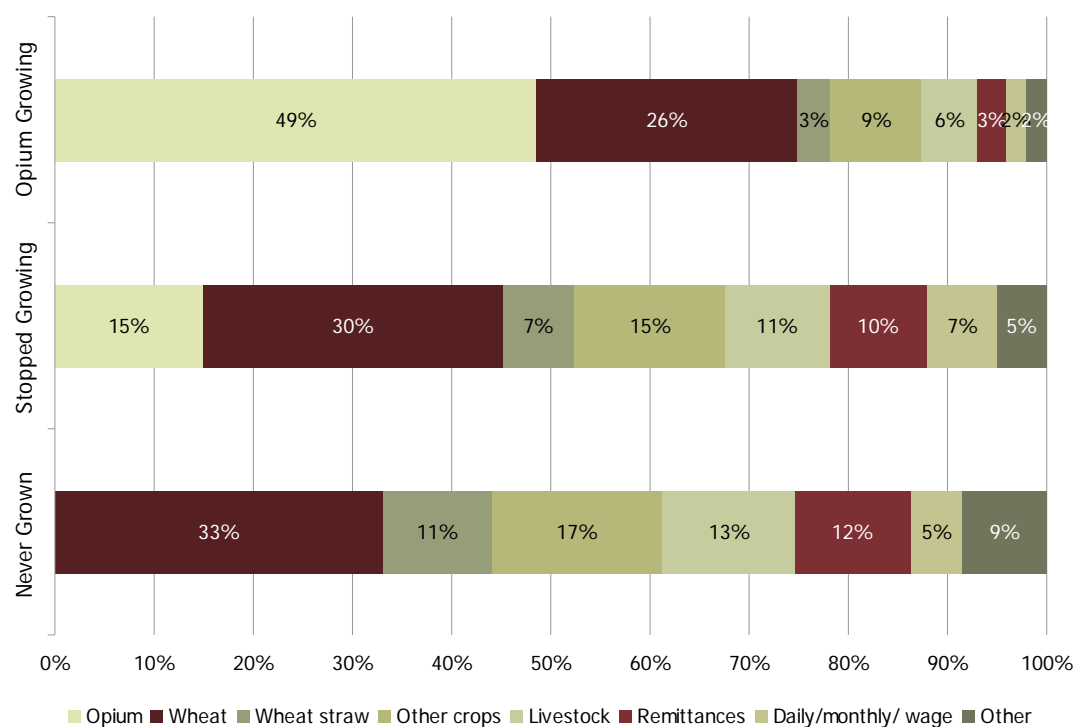
Overall, farmers reported that about a third of their household income came from wheat. This proportion has been relatively stable over the years, which indicates the continuing importance of wheat as the main staple crop for rural households. The overall higher household income of opium-growing households, however, led to a relatively smaller proportion of income from wheat (26% in 2011) — as it did in 2010 — for such households, while wheat accounted for a higher proportion of income for those other than opium-growing farmers, i.e. farmers who had ceased opium cultivation (30%) and farmers who had never grown opium (33%).

The main difference between opium-growing and non-growing households is the composition of the cash component. While opium-growing households have little cash income from sources other

<sup>21</sup> The survey relies on reported income, which is difficult to measure. While the absolute income figures reported may not always be reliable or complete, the proportions of different income sources are thought to be reliable enough to understand their relative importance and general differences between opium-growing and non-growing households at an aggregated level. Income in this context refers to the value of all products produced or cash income received in the previous 12 months, including products used for own consumption such as wheat.

than opium, non-opium-growing households rely heavily on wage labour and remittances. A possible explanation for the low importance of wage labour for opium-growing households could be a trade-off between wage labour and opium: labour-intense opium cultivation may already absorb considerable man-power, which is then no longer available for wage labour.

**Figure 26: Distribution of different source to the 2011 income by type of farmer (data collected in 2012)**



The relatively high importance of remittances for households that had ceased opium cultivation (10%) and an even higher one for those who had never grown it (12%) is striking. It could indicate that suitable alternative cash income sources are still not sufficiently available within the country as a whole, let alone close to home. A possible explanation could be that farmers look for wage labour as an alternative cash income source but cannot get enough income from it. Thus, they still have to rely heavily on remittances from family members abroad.

**Table 31: Sources of 2011 income for all farmers, by region (Reported in 2012)**

REGION	Daily/ monthly/ wage	Livestock	Other	Other crops	Opium	Remittances	Renting	Wheat	Wheat straw
Central	6%	13%	12%	14%	0%	14%	2%	25%	13%
Eastern	22%	14%	9%	10%	5%	11%	0%	22%	7%
North-eastern	3%	11%	3%	11%	1%	10%	1%	40%	18%
Northern	6%	19%	4%	16%	2%	13%	1%	25%	13%
Southern	2%	8%	3%	17%	25%	5%	1%	35%	4%
Western	3%	8%	1%	19%	12%	12%	1%	39%	5%
<b>National</b>	<b>5%</b>	<b>11%</b>	<b>6%</b>	<b>16%</b>	<b>11%</b>	<b>10%</b>	<b>1%</b>	<b>31%</b>	<b>9%</b>

## 6 The opiate economy

### 6.1 Opium prices

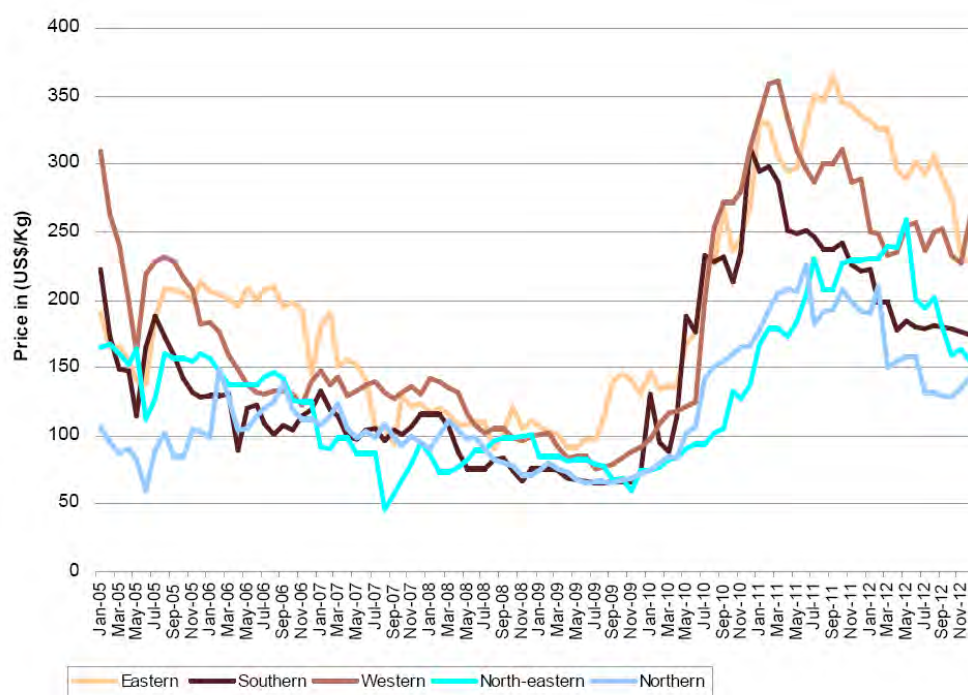
In 2012, opium prices remained very high but decreased slightly in all regions of Afghanistan. MCN/UNODC has monitored opium prices in selected provinces of Afghanistan on a monthly basis since 1994 (18 provinces as of September 2011). In 2008/2009, opium prices were at a low level but increased after that, most noticeably in the Eastern, Southern and Western regions, before reaching a maximum in 2011 after the unusually poor harvest caused by a disease of the opium poppy.

In 2011, opium prices started to decrease around harvest time in some regions but remained volatile and at a higher level than in any year since 2005. This decrease can be explained by the relatively good 2011 harvest. Opium prices in 2012 may have decreased slightly but in the Eastern, Western and Southern regions in particular, showed signs of stabilization at a high level. Future trends will reveal whether this is a sign of stabilization in the opium market or merely a temporary phenomenon caused by the relatively poor 2012 harvest.

**Table 32: Regional farm-gate prices of dry opium at harvest time collected from farmers through the price monitoring system, 2010-2011 (US dollars per kilogram)**

REGION	Average dry opium price (US\$/kg) 2011	Average dry opium price (US\$/kg) 2012	Change 2011-2012 (%)
Central	255	196	-23%
Eastern	290	291	+1%
North-eastern	218	182	-16%
Northern	238	151	-37%
Southern	232	173	-26%
Western	296	245	-17%
<b>National average weighted by production*</b>	<b>241</b>	<b>195</b>	<b>-19%</b>

*Prices for the Central region were taken from the village survey as there is no monthly opium price monitoring in that region.*

**Figure 27: Regional average price of dry opium collected from traders, January 2005-December 2012 (US dollars per kilogram)**

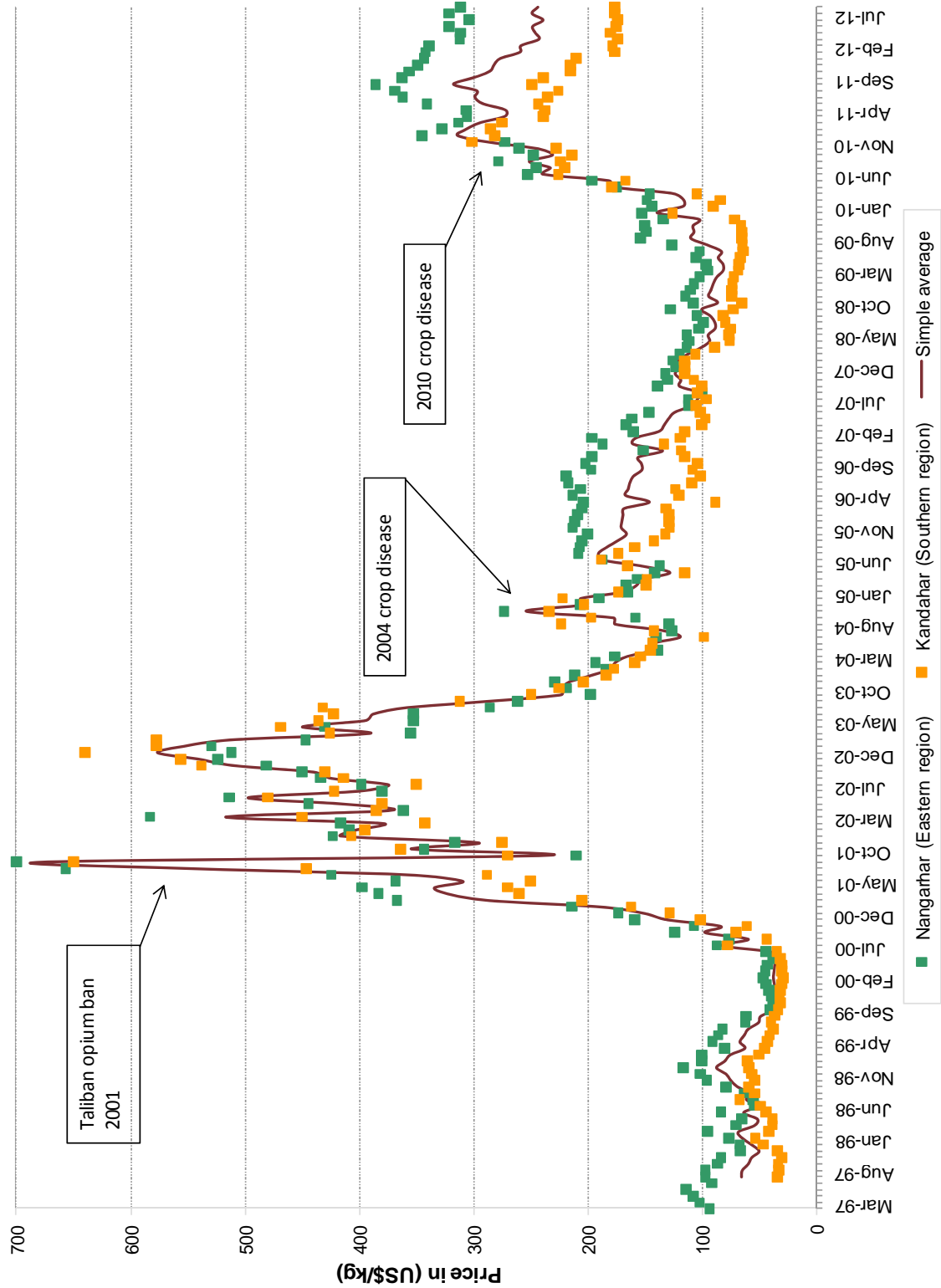
Source: MCN/UNODC Monthly Price Monitoring System

Dry opium prices reported by traders showed the same decreasing trend in all regions, with an overall decrease of 21% between September 2011 and September 2012.

**Table 33: Prices of dry opium as reported by traders by region, September 2010-September 2011 (US dollars per kilogram)**

REGION	Regional average price (US\$/kg) September 2011	Regional average price (US\$/kg) September 2012	Change on 2011
	Trader	Trader	
Eastern region (Kunar, Laghman, Nangarhar)	365	290	-21%
Southern region (Hilmand, Kandahar)	237	180	-24%
Western region (Badghis, Farah, Ghor, Hirat, Nimroz)	300	252	-16%
North-eastern region (Badakhshan, Takhar)	208	180	-13%
Northern region (Balkh, Faryab, Kunduz)	192	130	-32%
<b>Average</b>	<b>271</b>	<b>213</b>	<b>-21%</b>

**Figure 28: Monthly prices of dry opium in Kandahar and Nangarhar province as collected from, March 1997-September 2012 (US dollars per kilogram)**  
 Source: MCN/UNODC Monthly Price Monitoring System



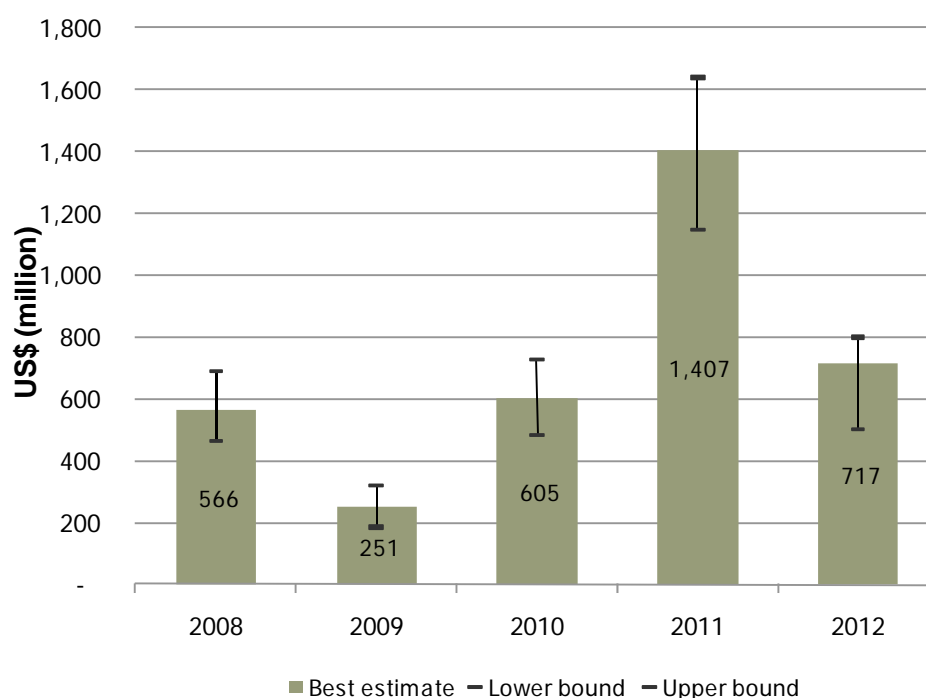
## 6.2 Farm-gate value of opium production and income from opium

### 6.2.1 Farm-gate value of opium production fell by 49% in 2012

Amounting to US\$ 717 million, the farm-gate value of opium production in 2012 fell by 49% in comparison to its 2011 level. Equivalent to roughly 4% of estimated GDP, 2012 farm-gate value was at the same level as 2010 when opium production decreased due to a disease of the opium poppy. The farm-gate value in 2011, due to higher prices, exceeded levels reached in years with similar, and even far greater, volumes of opium production.

Farmers in Hilmand, the largest opium-producing province, earned some US\$ 325 million, which was equivalent to 45% of the total farm-gate value of opium production in Afghanistan in 2012; a decrease of 56% on 2011 (US\$ 734 million). The total estimated licit 2012 GDP of Afghanistan amounted to 18.95 billion.<sup>22</sup>

**Figure 29: Farm-gate value of opium production in Afghanistan, 2008-2012 (US dollars per kilogram)**



Figures for 2008 and 2009 were recalculated from the revised opium production estimates. Ranges were calculated proportionally to the previously published estimate.

### 6.2.2 Per-hectare income from opium

Similarly to farm-gate value, the average per-hectare gross income from opium cultivation decreased by 57% from 2011 (US\$ 10,700) to 2012 (US\$ 4,600) to almost the same level as in 2010 (US\$ 4,700).

Net income is derived by subtracting production costs from gross income. Production costs reported by farmers amounted to US\$ 1,299 in 2012, a decrease from 2011 (US\$ 1,390). A corresponding decrease could also be observed for daily opium lancing wages, the main cost factor in opium production.

In 2012, farmers reported average expenditure corresponding to 28% of gross income (in 2011, reported expenditure was 13% of gross income; a much smaller proportion than in previous years, which was the result of the very high gross income caused by high opium prices in 2011), leading to a net income of US\$ 3,300. These calculations represent an average value per hectare under

<sup>22</sup> Nominal GDP. Source: Government of Afghanistan, Central Statistical Office.

poppy cultivation. Farmers whose fields were affected by the diseases or adverse weather conditions may have made very little income, perhaps not even recovering costs, while others whose fields were unaffected would have made a good profit.

**Table 34: Gross and net income per hectare, 2011 and 2012 (US dollars per kilogram)**

	Income (US\$/ha) 2011	Income (US\$/ha) 2012
Gross income per hectare of opium	10,700	4,600
Net income per hectare	9,300	3,300
Expenditure as share of gross income	13%	28%

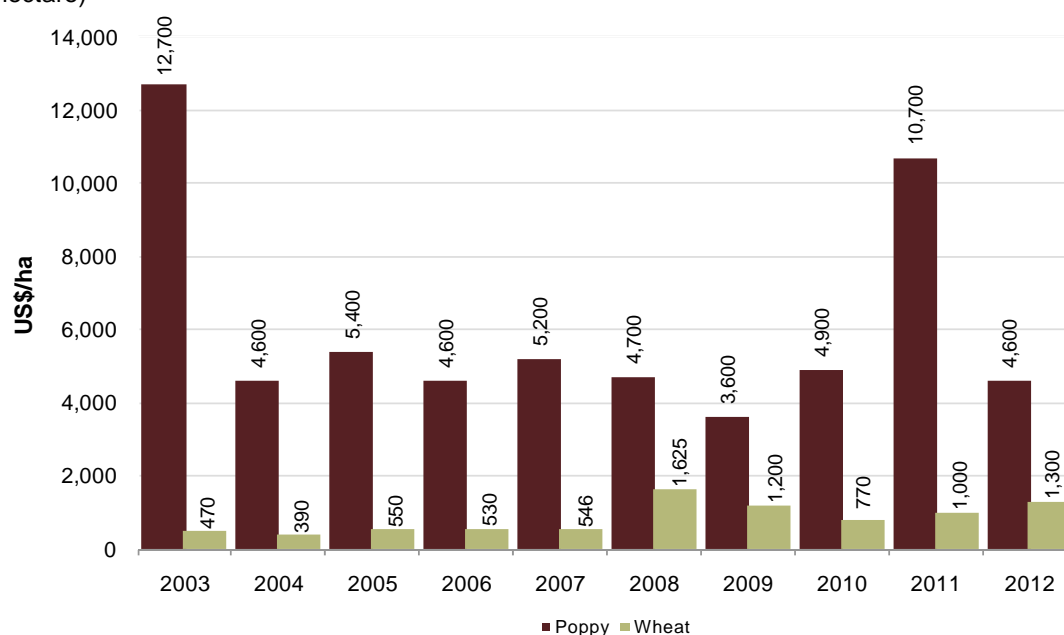
Some caveats should be added, however. Average production costs for opium do not necessarily apply to small-scale farmers who typically cultivate 1 *jerib* (= 0.2 hectares) or less in Afghanistan. They can make use of the de facto "free" labour of their household members for ploughing and weeding the fields as well as for lancing and collecting opium. In some provinces, notably those with a strong insurgent presence, some or all farmers reported paying an opium tax, which further reduces their net income. This was not considered in this calculation of net income as it does not apply to all poppy farmers. The expenditure for opium cultivation may also be higher if farmers rely exclusively on pump irrigation.

### 6.2.3 Comparison of income from opium and from wheat

Comparing the per-hectare income of wheat and opium poppy can be an indicator of the attraction of cultivating poppy, as opium poppy and wheat are planted during the same season in Afghanistan. As most poppy is grown on irrigated land, wheat yield on irrigated land is used to make the comparison.

In 2012, the ratio between gross income from opium and wheat was 1:4, whereas it was 1:11 in 2011, the highest ratio calculated since 2008. The price of wheat increased slightly after 2008 while the price of opium increased significantly, but the ratio was still much lower than prior to 2008. In 2003, for example, farmers earned 27 times more gross income per hectare of opium than per hectare of wheat.

**Figure 30: Gross income per hectare from opium and wheat, 2003-2012 (US dollars per hectare)**



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

The estimated per-hectare income from wheat was based on information provided by village headman about wheat yield and price. The wheat price reported reflects the price level and expectations at the time of the survey (April/May 2012). The average reported wheat yield was 3,300 kilograms per hectare on irrigated land and farmers made an estimated average gross income of US\$ 1,300 per hectare from wheat.

The difference between the net income from opium and wheat is smaller as poppy cultivation is more cost intensive. Based on information from UNODC survey coordinators, average costs for wheat production per hectare were estimated to be US\$ 260 in 2012. The ratio of net income from opium (US\$ 3,300) to that of wheat (US\$ 1,100) was 3:1, due to wheat's lower production costs.

The income comparison presented here does not take into account income from the by-products of opium and wheat cultivation, such as poppy seed and wheat straw. According to field observations, wheat straw can provide considerable additional income to farmers and thus reduce the difference between opium and wheat income per hectare.

### 6.3 Potential value of the opiate economy

The production and export of opium and heroin/morphine is the equivalent of a sizeable share of Afghan GDP. By far the largest share of income is generated by opiate exports to neighbouring countries, but there is also a domestic market for opium and heroin/morphine.

This section provides estimates of the potential income generated by the opium and its derivatives produced in Afghanistan in 2012. Unlike farm-gate value, potential value also includes all income generated after opium leaves the farm. Income is generated whenever opium is traded or modified in some way and includes income generated by opiates (opium, morphine and heroin) consumed domestically, as well as income generated by trading opiates that cross Afghanistan's borders and leave the country.

The value of exported opiates only includes the value of opiates traded across Afghanistan's borders. No further income from onward trafficking beyond the country's borders, for example, to Europe and other regions, is included. Indeed, Afghan traffickers seem to be heavily involved in shipping opiates over the border, notably to Iran and Pakistan, but much less so in subsequent trafficking. Thus, the far greater income generated on international trafficking routes does not find its way into the pockets of Afghan traffickers and into the Afghan economy.

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

#### 6.3.1 Estimation of potential heroin/morphine production

Potentially, all opium produced in Afghanistan could be converted into morphine and heroin. In reality, however, a sizable proportion of opium is trafficked and consumed in the region in its raw form.

Calculating the potential production of heroin requires knowledge of how much opium is converted into morphine and heroin and how much remains unprocessed. This information can only be estimated on the basis of secondary information such as seizure data, thus any data about potential morphine and heroin production should be taken as a rough estimate: too little is known about how much opium is processed and when and where the conversion of opium to morphine and of morphine to heroin takes place.

Based on information on heroin/morphine and opium seizures in Afghanistan and neighbouring countries from 2009 to 2011, and assuming a 7:1 conversion ratio from opium to morphine/heroin,<sup>23</sup> an estimated 50% of potential opium production was converted into morphine

<sup>23</sup> The analysis of the morphine content of opium in Afghanistan's main growing region since 2010 gave rise to concerns that the ratio possibly used underestimates the amount of opium necessary to produce 1 kg of morphine or heroin (see Ministry of Counter Narcotics/UNODC (2011), *Afghanistan Opium Survey 2011*, p. 56), particularly if the reference is morphine or heroin of 100% purity. For more information on the conversion ratio, see also Ministry of Counter Narcotics/UNODC (2005): *Afghanistan Opium Survey 2005*, November 2005, p. 120 (<http://www.unodc.org/unodc/en/crop-monitoring/index.html>).



or heroin in 2012. This ratio was higher than in previous years and can be attributed to a strong increase in morphine seizures in Afghanistan in 2011.

The following table shows potential heroin/morphine production if 50% of opium is converted to morphine/heroin and if all potential opium production is to be converted to heroin. Due to the uncertainties around the 7:1 conversion factor from opium to morphine/heroin, the factor refers to morphine/heroin of unknown purity.

**Table 35: Potential morphine/heroin production (of unknown purity) from Afghanistan opium, 2012**

	<b>If 50% potential opium production converted (tons)</b>	<b>If total potential opium production converted (tons)</b>
Morphine/heroin (of unknown purity)	264 (200-300)	529 (400-600)
Unprocessed opium	1,850 (1,400-2,100)	-

*A 7:1 conversion ratio from opium to morphine/heroin is assumed. Ranges only refer to ranges of production, not to uncertainties in the conversion ratio.*

### 6.3.2 Opium and heroin/morphine production available for export

Every year all the opium produced in Afghanistan is either exported as raw opium or heroin/morphine, consumed domestically in various forms, seized, stored for later use or lost (for example, due to mould, disposal to avoid seizures, etc.). Hence, the critical amounts needed for calculating the total value of opium products are the shares of opium produced that are destined for export, for the domestic market, the shares of opium that are seized and lost, and the remainder (if any), which does not enter the market in the year of interest.

There is a clear understanding about the approximate amount of opium produced. The shares converted to morphine and heroin are much less certain as only secondary seizure data can be used as a proxy. In the case of seizures, for example, the purity of the heroin is not known. Likewise, the purity of heroin domestically consumed may differ. Furthermore, little is known about when and where the conversion of morphine to heroin takes place.

The share of opium destined for the domestic market is estimated based on the 2009 drug use survey.<sup>24</sup> The Methodology section of this report provides a detailed description of the estimation process. Remaining opium production is therefore either exported, lost, or kept as inventory (if any is left). As there is not enough information available for providing direct estimates of losses or export amounts, the following breakdown is the most detailed that can be provided.

<sup>24</sup> Ministry of Counter Narcotics/Ministry of Health/UNODC: *Drug Use in Afghanistan: 2009 Survey*. (<http://www.unodc.org/documents/data-and-analysis/Studies/Afghan-Drug-Survey-2009-Executive-Summary-web.pdf>)

**Table 36: Opiates in Afghanistan, by destination, 2012**

	Opium (tons)	Heroin and morphine (tons, in opium equivalent)	% of total opium production <sup>25</sup>
Potential opium production in 2012	3,700 (2,800-4,200)		100%
Potential share of unprocessed opium and morphine/heroin	1,850 (1,400-2,100)	1,850 (1,400-2,100)	50%/50%
Consumption in Afghanistan	175 (162-200)	83 (76-97)	7%
Seizures in Afghanistan in 2011	80	427	14%
Remainder – for exports <sup>26</sup>	1,595 (1,120-1,858)	1,340 (876-1,597)	79%

*Note: Heroin is transformed into opium equivalents by the ratio 1:7; i.e. to produce 1 kg heroin, 7 kg of opium are needed. Seizures in 2011 reported by the Government of Afghanistan to UNODC are taken as a proxy for 2012 since the total amount of drugs seized in the current year is not yet known. In the absence of a comprehensive seizure recording system the actual amount may be different. Consumption estimates are based on drug use data of 2009.*

In 2012, Afghanistan produced an estimated 3,700 tons of opium. Local consumption made up about 7% of it (258 tons), while approximately 14% of all opium was seized as opium or heroin/morphine (equivalent to 507 tons of opium equivalent). After its deduction from total production that leaves a remainder of some 79% of all opium being potentially available for export in the form of opium, morphine or heroin; however, that includes all opium lost due to reasons other than seizures (for example destruction of inventory, mould, or shipments discarded to avoid seizures), as well as possible surpluses of production or opium produced in previous years that enters the market in the current year.

### 6.3.3 Potential gross and net value of 2012 opium production

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

Seizures are not represented in these calculations, as the income that would be generated by seized products is lost. The value of the domestic market at end-consumer level is calculated by the amounts consumed multiplied by the street-level price for heroin/morphine and opium, respectively. The cross-border price was used to calculate the value of the remainder of the opium production. Seizure data has been used to estimate the proportions exported as opium or heroin/morphine.

The estimate is based on simplifications and might not be the actual income generated. However, it provides an estimate of the magnitude of the total potential income gained from opiate production and trade.

The gross export value of opium plus heroin/morphine exports in 2012 was US\$ 2.00 billion (US\$ 2.6 billion in 2011). The gross value of the domestic market for heroin and opium is, however, much smaller. Indeed, in 2012, the estimated worth of opiates consumed in Afghanistan was US\$ 0.16 billion (US\$ 0.17 billion in 2011).

The calculation of a possible range in the potential value of the Afghan opiate economy is based on different assumptions about the portion of opium converted to heroin or morphine for export. In the case of the upper bound it is assumed that all opium available for export is converted to morphine or heroin in Afghanistan (corresponding to 419 tons of morphine/heroin), since the value of 1 kilogram of morphine/heroin is greater than the value of 7 kilograms of unprocessed

<sup>25</sup> Percentage refers to best estimate for opium production.

<sup>26</sup> Upper and lower bound are calculated with upper and lower estimates for production and use and do not take into account uncertainties regarding the conversion factor and the ratio of opium converted to morphine/heroin.

opium. For the lower bound it is assumed that all opium available for export is exported unprocessed and that no conversion to morphine/heroin takes place in Afghanistan (corresponding to 2,935 tons of exported opium).

The resulting ranges do not intend to provide a confidence interval or any other statistical measure, but rather they constitute a what-if analysis that offers results on the basis of different assumptions about the further processing of opium in Afghanistan.

**Table 37: Estimated gross and net values, 2012 (US dollars)**

	<b>Gross value US\$ (rounded)</b>	<b>Net value US\$ (rounded)</b>	<b>Net value in relation to GPD</b>
Export value opiates	2.00 billion (1.28-2.85 billion)	1.94 billion (1.28-2.71 billion)	10%
Farm-gate value of opium	0.73 billion	0.73 billion	4%
Value of domestic market	0.16 billion	0.15 billion	1%
Export value of 1 kg of opium	425	425	
Export value of 1 kg of morphine/heroin	5,600	5,200	

*Ranges are calculated based on different assumptions on the conversion of opium to morphine/heroin within Afghanistan.*

The gross value of 1 kilogram of opium exported at wholesale level was approximately US\$ 425 in 2012, while the value of 1 kilogram of heroin was US\$ 5,600. In the case of exported opium, no significant import costs were considered, thus, in these estimations, gross value equals net value.

After subtracting the import costs of main precursors from the gross value (which in 2012 were some US\$ 340 per kilogram of heroin) the net value of 1 kilogram of heroin/morphine is reduced to US\$ 5,200. When multiplying these prices by the respective amounts exported, the net export value of opiates in 2012 was US\$ 1.94 billion, as opposed to a gross export value of US\$ 2.00 billion.

The gross value of 1 kilogram of heroin in the domestic market of Afghanistan in 2012 was about US\$ 6,300. That amount refers to retail prices and was therefore larger than the wholesale export value. Subtracting precursor costs leaves a net value of around US\$ 6,000 for 1 kilogram of heroin/morphine, and a net value of the domestic opiates market of US\$ 0.15 billion.

It should be noted that the wholesale and retail prices of opiates are approximates and not purity adjusted. There are large disparities in reported prices, which may stem from differences in the quality of opiates purchased. Indeed, calculating the value of exported morphine/heroin is limited by the fact that the product leaving laboratories in Afghanistan may undergo further processing (for example, adulteration), before reaching assumed points of sale in neighbouring countries. There are indications that heroin is already mixed with cutting agents in Afghanistan, which is done to increase profitability but perhaps also for other reasons, such as tailoring the product for specific types of usage. These factors cannot be estimated at present, but it is reasonable to assume that the use of cutting agents increases the profitability of exporting heroin/morphine, and not taking such factors into account could lead to an underestimation of the export value of the opium economy in Afghanistan.

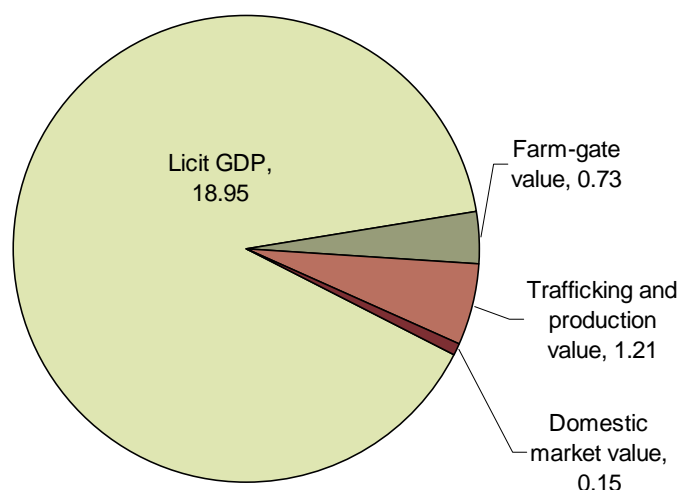
#### **6.3.4 Value of 2012 opium production and licit GDP**

When comparing the above-mentioned gross and net values with the licit 2012 GDP of Afghanistan, which was US\$ 18.95 billion,<sup>27</sup> the magnitude of the Afghan opium economy becomes apparent. In 2012, net opium exports were worth about 10% of licit GDP and the farm-gate value of the opium needed to produce those exports alone was equivalent to 4% of licit GDP. The net value of the domestic market for opiates is small by comparison, but still worth approximately 1% of licit GDP.

<sup>27</sup> Nominal GDP. Source: Government of Afghanistan, Central Statistical Office.

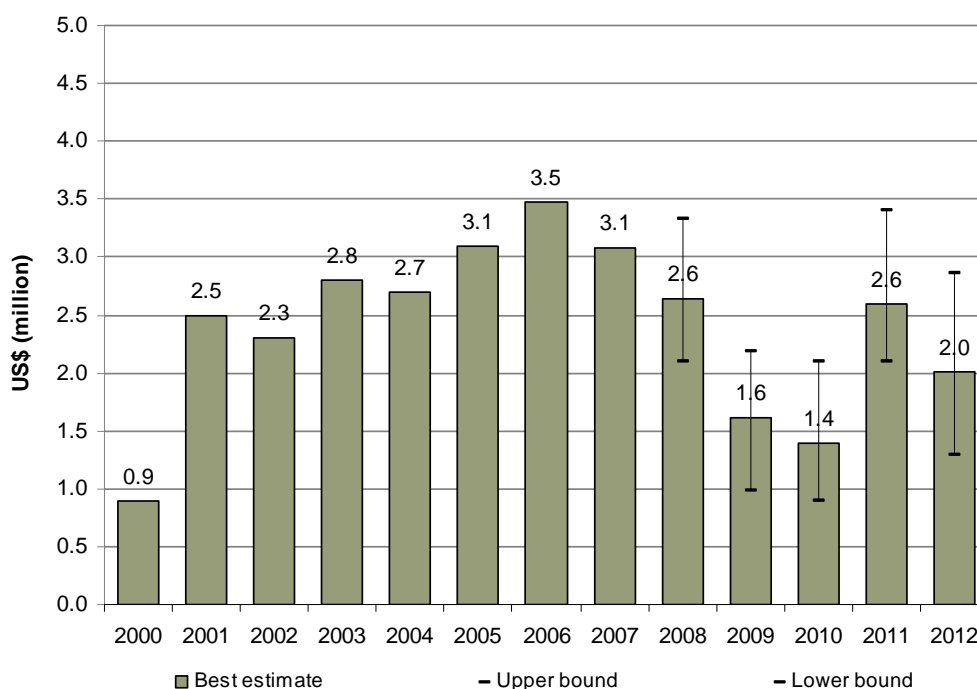
The net export value of Afghan opiates (US\$ 1.94 billion) consists of the farm-gate value (0.73 billion) and the value added by traffickers through the processing of opium into morphine/heroin and exporting processed and unprocessed opiates. This was estimated at US\$1.21 billion in 2012.

**Figure 31: GDP and net value of the opiate industry in Afghanistan, 2012 (US dollars billion)**



Note: “Farm-gate value” refers to the farm-gate value of the opium needed for producing exports. “Trafficking and production value” represents the value generated by opium between farm-gate and borders minus costs for imported precursors. “Domestic market” is the net value of the domestic opiates market. Sources: Afghanistan Central Statistical Office and MCN/UNODC 2012.

**Figure 32: Potential gross export value of opiate production, 2000-2012 (US dollars)**



Sources: UNODC (2003): *The Opium Economy in Afghanistan*; MCN/UNODC: *Afghanistan opium surveys 2003-2011*. Note: The bars indicate the upper and lower margins of the range of the estimated value.

### 6.3.5 Costs and revenues of heroin and morphine production

Net export value (and the net value of the domestic market) accounts for import costs associated with the production of morphine and heroin. It therefore provides a proxy for the net amount of revenue entering Afghanistan generated by opiate exports.

Import costs, as far as they are known, are deducted from the gross export value of Afghan opiates. However, since many import cost factors are not well understood or known, net value only considers the costs of imported precursors, for which approximate prices and volumes necessary for the production of morphine or heroin are known and constitute an important cost element of morphine and heroin production.

The main (imported) precursor in terms of cost is acetic anhydride, which converts the morphine base into brown heroin base. Acetic anhydride is a controlled substance for which there is no known licit use in Afghanistan, nor known licit production.

The net export value is calculated by:

- multiplying the cost of acetic anhydride per kilogram of heroin by the total amount of exported heroin potentially exported;
- subtracting the total cost of acetic anhydride from gross export value. Other import costs were not considered.

**Table 38: Prices (rounded) and approximate amounts of acetic anhydride needed for the production of a kilogram of heroin, 2012**

Precursors	Price (US\$/unit)	Amount needed/kg heroin	Costs per kg of heroin (US\$)
Acetic anhydride (litre)	230	1.5 l <sup>28</sup> (0.77-4.0)	340 (180 - 920)
<b>Total</b>			<b>340</b>

A sharp increase in the average cross-border price of opium, from US\$ 280 in 2009 to US\$ 425 in 2012, has been noted in recent years, though it has not been as dramatic as the rise of farm-gate prices of dry opium, which rose even without the 2011 price hike caused by the opium poppy disease in 2010. As already noted, prices may not be exactly comparable, but it seems that strong fluctuations in farm-gate prices are compensated along trafficking chains to the borders.

In the case of heroin, the situation is slightly different as there are more production costs to be considered. Average cross-border prices for 1 kilogram of heroin/morphine show a different development to opium prices. In 2009 and 2010, they were around US\$ 3,200 (slightly higher in 2010) and in 2011 they reached US\$ 4,500, an increase of approximately 30%. In 2012, a further increase to US\$ 6,800 was noted, which again seemed to be related to the price hike in 2010/2011, though with less fluctuations and a certain delay between the farm-gate and eventual cross-border trafficking.

<sup>28</sup> Please note, that these values were adapted since the Opium Survey 2010; in 2010 2.4 litres per kilogramme were used for the calculations.

**Table 39: Overview over different values/gains for 1 kilogram of opium/heroin (rounded), 2009-2012**

	2009	2010	2011	2012
Export price per kilogram of heroin in US\$	3,200	3,300	4,500	6,800
Export price per kilogram of opium in US\$	280	360	400	440
Farm-gate price per kilogram of opium in US\$	60	170	240	200
Cost per kilogram of heroin in US\$ (precursor and dry opium)	1,100	1,600	2,400	1,700
Revenue for exporting one kilogram of opium in US\$	220	190	160	240
Revenue for exporting one kilogram of heroin/morphine in US\$	2,100	1,600	2,100	5,100
Revenue for 7 kilograms of opium in US\$ (rounded)	1,500	1,300	1,100	1,700
Financial benefit of exporting heroin instead of opium	600	300	1,000	3,400

*Note: Costs other than the farm-gate price or precursor costs are not considered. 2012 costs do not include costs for ammonium chloride.*

The first two lines of the above table present export prices of opium and heroin at the Afghan border. The third line presents the rounded average price per kilogram of opium at farm-gate. The fourth line presents precursor and opium costs for producing a kilogram of heroin by using the amounts presented above. The last line then gives the extended net gain per unit exported.

Heroin revenue is not the revenue of traffickers, but rather the value generated per kilogram of heroin along production and trafficking chains beginning at the farm-gate. From the difference, all production costs (including laboratories, labour, trader mark-ups, etc.) other than for precursor substances need to be financed.

The mechanisms driving these prices are not well understood. Many questions remain regarding the number of intermediate traders, production costs for heroin/morphine other than from imported precursor substances, and, most importantly, the quality of the heroin exported. As these estimates are based on pure heroin, one explanation for the attraction of exporting heroin is that the heroin exported is of low quality.

## 7 Methodology

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

### 7.1 Estimation of area under opium cultivation

Remote sensing methodologies have been used by UNODC since 2002 to monitor the extent of opium cultivation in Afghanistan. Changes in the location of opium poppy cultivation and the increased security difficulties involved in accessing the area under scrutiny requires continuous improvements of the sampling designs applied.<sup>29</sup>

A sampling approach is used to cover those provinces where most of the poppy is found, whereas a targeted approach is used in provinces with a low level of opium cultivation. “Targeted approach” means that a certain area of a province is fully covered by satellite imagery.

In 2012, out of 34 provinces in Afghanistan, 11 were sampled and 7 were targeted. The remaining 16 provinces were considered to be poppy-free<sup>30</sup> based on the Winter Assessment and additional information from the field. These provinces were not covered by the remote sensing survey, but they were covered by the village survey.

**Table 40: Area estimation method by province, 2012**

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

#### 7.1.1 Area estimation based on sampling methods and targeted approaches

##### 7.1.1.1 Sampling frame

The area available for agriculture was updated based on Landsat 7 ETM images and DMC images. The total estimated agricultural area in Afghanistan in 2012 amounted to 74,477.6 km<sup>2</sup>. The sampling frame was established by extracting the area of land potentially available for opium cultivation in 10 provinces (a different approach was used for Hirat; see details below). This area was divided into regular 10 km by 10 km grids, which constitute the sampling frame. The final sampling frame, from which the satellite images were randomly selected, consisted of 1,353 cells in 10 provinces. In the case of images that cut across provincial boundaries, only the part falling into a particular province was considered to be in that province.

The area available for agriculture in the sampling frame covers irrigated and rain-fed land. The total area in the 10 provinces was 21,146 km<sup>2</sup>, which is equivalent to 28.4% of all potential agricultural land in Afghanistan. Potential land refers to all land available for cultivation and also includes land that is currently fallow.

<sup>29</sup> In 2009 a revision of methodologies for the remote sensing and village survey was based on recommendations made by Graham Kalton in December 2008. In 2012, the methodology for Badakhshan, Hilmand, Kandahar and Kunar was adapted.

<sup>30</sup> Note that more than the remainder of 17 provinces turned out to be poppy-free as three provinces covered by the survey had less than 100 hectares of opium cultivation.



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

**Table 41: Sample size, agricultural land and sampling ratio, by province, 2012**

Province	Total arable land (km <sup>2</sup> )	Total	Selected	Percentage of selected cells over total cells	Arable land in selected cells	Percentage of arable land in selected cells
		# cells	# cells		(km <sup>2</sup> )	
Badakhshan*	3,983	130	16	12%	587	15%
Badghis	6,505	180	15	8%	808	12%
Day Kundi	585	140	8	6%	55	9%
Farah	1,754	174	17	10%	325	19%
Hilmand*	3,511	185	40	22%	865	25%
Kandahar*	2,556	214	22	10%	338	13%
Kunar*	240	57	9	16%	51	21%
Nimroz	463	44	8	18%	106	23%
Uruzgan	741	84	12	14%	159	21%
Zabul	808	145	8	6%	93	12%
<b>Total</b>	<b>21,146</b>	<b>1,353</b>	<b>155</b>	<b>11%</b>	<b>3,387</b>	<b>16%</b>

\* The sampling locations were changed or newly introduced in these provinces. The same sample and estimation methods as in 2011 were used in all other provinces. As a different estimation methodology was used there, Hirat is not listed.

#### 7.1.1.2 Sample selection

The sample size (meaning the number of images acquired in each province) was approximately proportional to the square root of the area of potential agricultural land. This allocation methodology is one form of compromise between the appropriate allocations for producing national estimates and for producing provincial estimates (Bankier, 1988). A minimum number of eight sample cells was set. The total number of images was constrained by cost considerations and the maximum number of images that the satellite provider could handle given the limited time window for each image.

The same image locations were used in 2012 as in 2011 for 6 out of the 11 sampled provinces. To account for the dynamics of poppy cultivation, the provinces Hilmand and Kandahar were re-sampled. The sampling approach was newly introduced in Badakhshan and Kunar provinces (targeted in 2011), since more widespread cultivation was found after collection of GPS points of poppy fields in advance. In Hirat, a different data source had to be used.

In **Hilmand** province, a stratified systematic random sampling approach was used. This approach allowed the provision of two separate poppy estimates: one for the total area under cultivation in the province and one for the area under cultivation within the so-called “Food Zone” of 2012. Twenty images were allocated to each stratum, which allowed for estimates of equal precision. The images were selected in a systematic way that ensured equal inclusion probability for each image and good geographical coverage of the samples.

In **Kandahar**, a probability-proportional-to-size (PPS) approach was chosen. Here, the selection probability for each element was set to be proportional to a measure of size, which was based on a poppy density map. The poppy density map was the result of a successful test of an area frame sampling methodology using 2011 data, which, through a combination of satellite images of very high resolution with lower resolution imagery, allowed the analysts to determine the probability of poppy being present for each location in the province, or poppy density, in that year. As presence of poppy in one year is positively correlated to poppy being present in the following year, the poppy density measure ensured that the selected images contain a large quantity of desired information, namely on poppy cultivation.



In both **Badakhshan and Kunar** provinces, a one-stage systematic random sampling approach was employed. Here, similarly to Hilmand province, a sampling rule was applied that ensured good geographic coverage. Starting from a randomly chosen cell, every  $k$ th element from then onwards was chosen, where  $k$  is determined by the number of cells in the frame and the desired sample size (the actual sample size might differ slightly). To avoid adjacent cells, every other line was skipped.

In **Hirat** province, the UNODC provider of satellite imagery was not able to acquire images over the targeted area within the required time frame. As an alternative source of information, 2012 poppy interpretation files from the United States Government were used, which were also based on Very High Resolution (VHR) satellite images. Since the US selection of the sample blocks was done for a specific estimation method, UNODC applied the same method to estimate the area for Hirat, though only for the UNODC research area (Shindand district). The estimation method is an area frame sampling approach that uses medium resolution imagery for stratification. MCN/UNODC used Landsat images taken in 2012 to stratify the research area and the poppy interpretation files mentioned above to estimate the poppy area. This statistical process was conducted in Erdas software (Geotools).

In 2012, high-resolution satellite images were acquired for 155 sampled locations 10 km by 10 km in size covering a total of 10 provinces and 62 locations for the 8 target provinces in Afghanistan.

### 7.1.2 Area estimation in sampled provinces

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

The Hansen-Hurwitz estimator is one method of estimating the extent of opium poppy cultivation when the probability of selecting sampling units is not equal.

An unbiased estimate of the area of opium poppy cultivation,  $A_k$ , within province  $k$ :

$$A_k = \frac{R_k}{n_k} \sum_{i=1}^{n_k} P_i / R_i$$

where  $n_k$  is the number of satellite image locations within the province.

$P_i$  is the area of poppy cultivation in image  $i$ .

$R_i$  is the area of land potentially available for poppy cultivation (risk area) in image  $i$ .

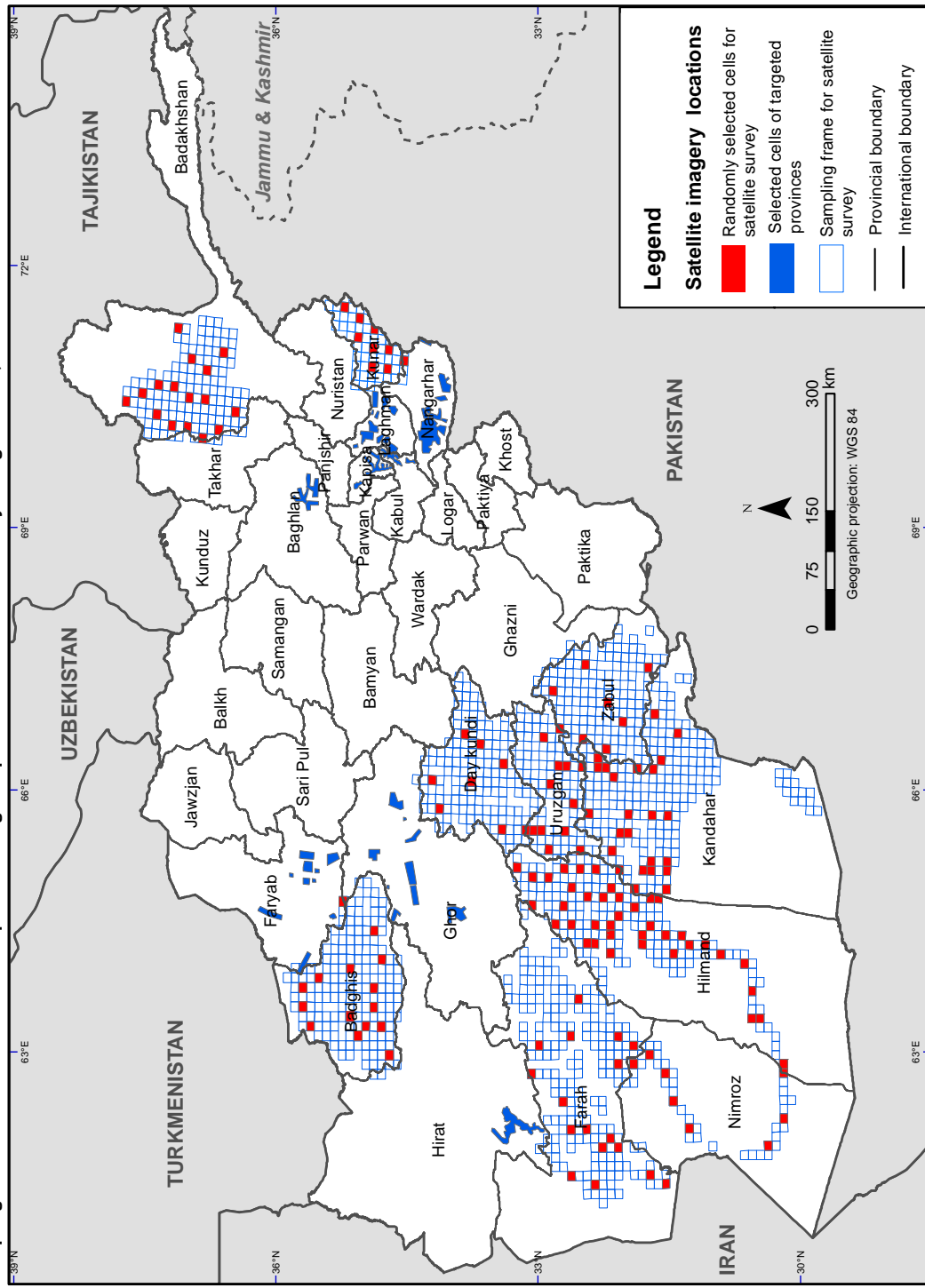
$R_s$  is the total potential land available for poppy cultivation (risk area) from the sampling frame in province  $k$ .

In the newly sampled provinces with equal inclusion probability, a slightly different ratio estimate that uses agricultural area as regressor was used. An unbiased estimate of the area of opium poppy cultivation,  $A_k$ , within province  $k$

$$A_k = \sum_{i=1}^{n_k} P_i \frac{R_s}{\sum_{i=1}^{n_k} R_i}$$

with the same notation, as above.

Sampling frame & selected cells of sampled and targeted provinces for satellite survey in Afghanistan, 2012



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.

### 7.1.2.1 Uncertainty

Confidence intervals were calculated using the bootstrap method with 100,000 iterations. Bootstrapping consists of re-sampling with replacement from the original sample. After each iteration the area under cultivation is estimated. After 100,000 iterations a distribution of cultivation areas can be observed and the 95% confidence interval is derived by using the 2.5 and 97.5 percentiles.

**Table 42: Area estimates of sample provinces with 95% confidence interval, 2012 (Hectares)**

	<b>Point estimate (hectares)</b>	<b>Lower bound (hectares)</b>	<b>Upper bound (hectares)</b>
Badakhshan	1,927	456	3,955
Badghis	2,363	461	4,608
Day Kundi	1,058	108	2,315
Farah	27,733	13,197	43,035
Hilmand	75,176	52,819	101,967
Hirat	1,080	429	2,105
Kandahar	24,341	13,352	38,042
Nimroz	3,808	529	2,624
Kunar	1,279	1,335	6,644
Uruzgan	10,508	5,326	15,884
Zabul	424	62	1,067
Target provinces	4,740	NA	NA
National	154,436	124,895	188,941
<b>National (rounded)</b>	<b>154,000</b>	<b>125,000</b>	<b>189,000</b>

To express the uncertainty associated with the national area estimation that includes the provinces covered by the targeted approach and the sample provinces, but excludes provinces with an estimate of less than 100 hectares (which are considered “poppy-free” and not counted), a range was calculated by adding the poppy area figures of the target provinces to the upper and lower limits of the 95% confidence interval at the national level. The resulting range is not a confidence interval in the strict sense as it contains values from sampling and non-sampling approaches. However, considering that the contribution of the target provinces to the total poppy area was only 2%, this approach was regarded as expressing the uncertainty sufficiently well.

### 7.1.3 Area estimation in target provinces

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

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

### 7.1.4 District level estimation

District level results are indicative only. A combination of different methods is used. If districts are covered by sampled cells, the average value of these cells is used. In the case of districts where

sampled cells were not available, two methods were used to calculate district estimates. If the agricultural area of a district with a sample grid extended into a neighbouring district(s) without interruption, the poppy proportion of the sample grid was also used for the neighbouring district(s). For districts with isolated, non-contiguous agricultural areas, the average poppy proportion of the province was applied. The methodology and sample was not designed to produce results at the district level.

### **7.1.5 Accuracy assessment**

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

### **7.1.6 Estimation of the net cultivation area**

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

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

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

## **7.2 Satellite image interpretation**

### **7.2.1 Acquisition of satellite images**

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

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

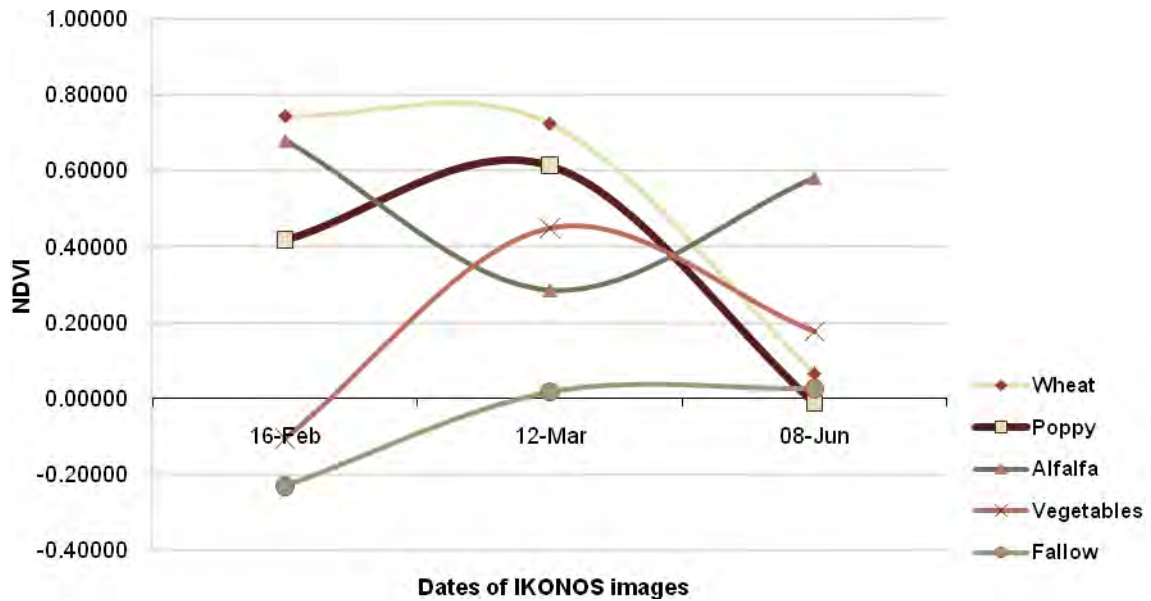
The figure below illustrates the spectral characteristics (Normalized Difference Vegetation Index (NDVI)) of opium poppy and other crops between February and June. Wheat and opium poppy have the same growth cycle between March and June, as illustrated. The spectral differences between those two crops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

Figure 33: 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

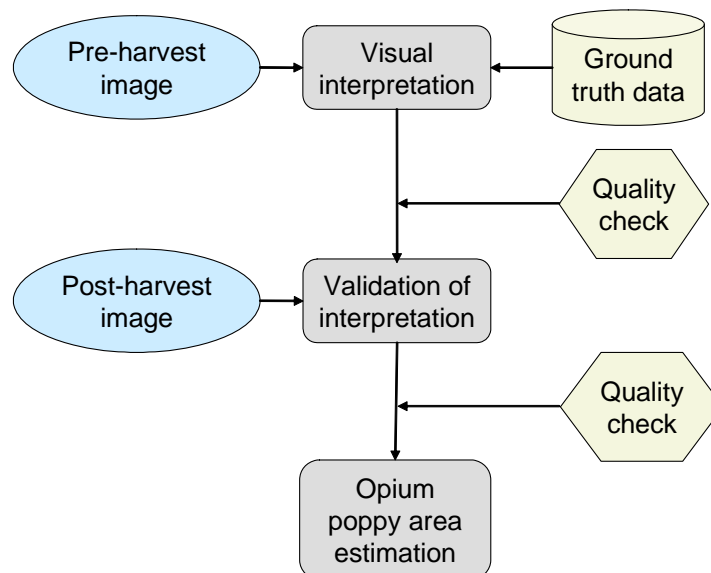


**Figure 34: Spectral reflectance of opium poppy and other crops**



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

**Figure 35: Image classification methodology for estimating opium cultivation area**



### 7.2.2 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 harvest. For example, wheat appears mostly in bright red on the first date image in false colour composite (full coverage with vegetation appears in red; bare soil in grey/green), while opium poppy fields are shown in tones of pink. Although there can be some confusion

between opium poppy and wheat in the first-dated images, the acquisition of second-dated images makes it possible to distinguish opium poppy from other crops, because the opium poppy crop has been harvested and the fields appear in grey/green.

Visual interpretation has been used to delineate opium poppy fields by interpreting IKONOS images covering a 10 km by 10 km area. Ortho-rectified IKONOS, QUICKBIRD, WORLDVIEW2 and GEO-EYE images of 1 m resolution and 0.5 m resolution (PAN-sharpened) were used for this purpose. Opium poppy was initially identified using first-dated high resolution images. Ground truth information collected in the form of segment maps and GPS points was also useful in identifying opium poppy fields. The interpretation based on first-dated images was improved using patterns of observation in second-dated images. Aerial photographs of the poppy fields were acquired using helicopters in the provinces of Kandahar and Hilmand during the eradication season, as well as in Kabul, Kapisa, Kunar, Laghman and Nangarhar provinces during the flowering and capsule stages. These photographs were tagged by latitude and longitude and facilitated to locate the poppy areas on satellite images and were very helpful in confirming the poppy areas in the satellite images. Poppy field boundaries in 2012 were delineated by an on-screen digitization method.

#### **7.2.2.1 Band combination for opium poppy identification**

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

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

#### **7.2.2.2 Ground reference information**

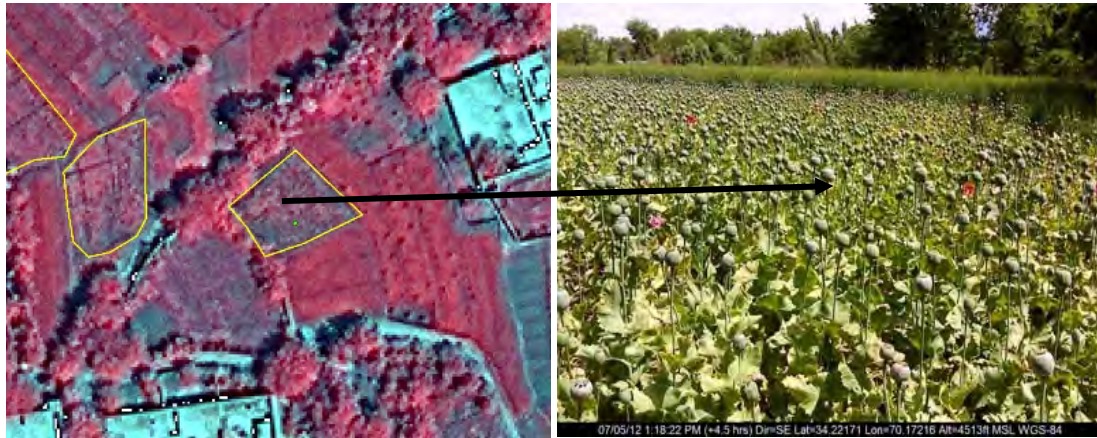
Ground reference data were collected in the form of GPS points, field photographs and aerial photographs. Some 1,015 GPS points of poppy fields, supported with pictures, were collected from the provinces of Baghlan, Faryab, Kapisa, Nangarhar and Laghman.

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

**Figure 36: Use of geo-referenced ground photos for image interpretation**





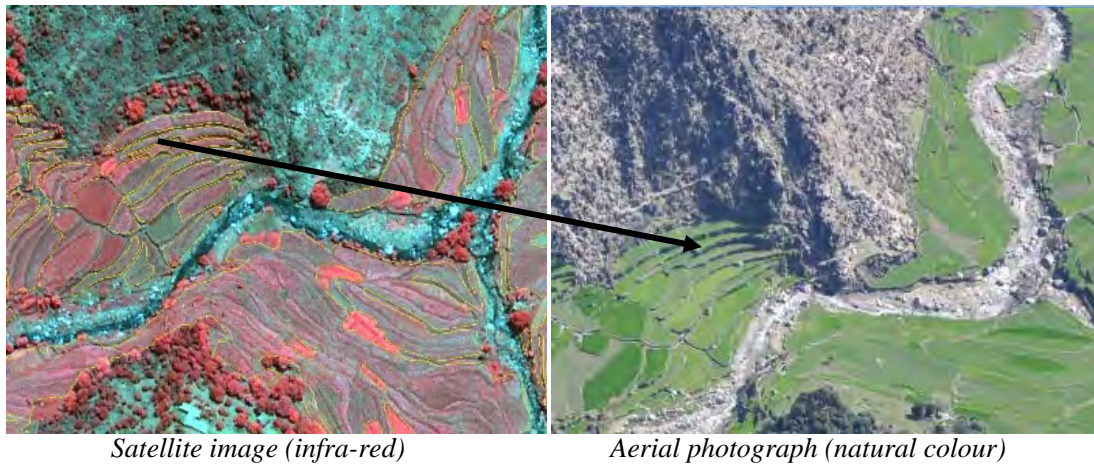


*Satellite image (infra-red)*

*Field photograph (natural colour)*

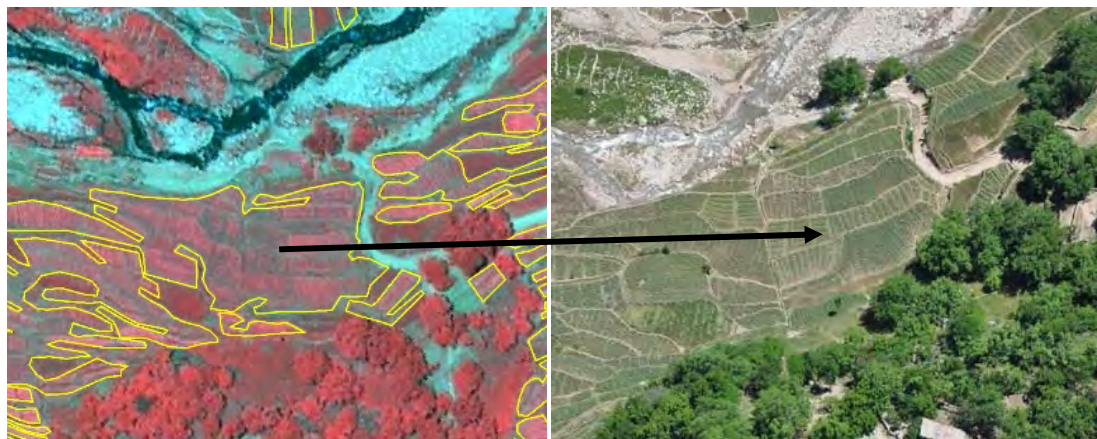
Natural colour aerial photographs acquired from helicopters were co-related with the satellite images to identify poppy from other crops, as shown below.

**Figure 37: Use of aerial photos for image interpretation**



*Satellite image (infra-red)*

*Aerial photograph (natural colour)*



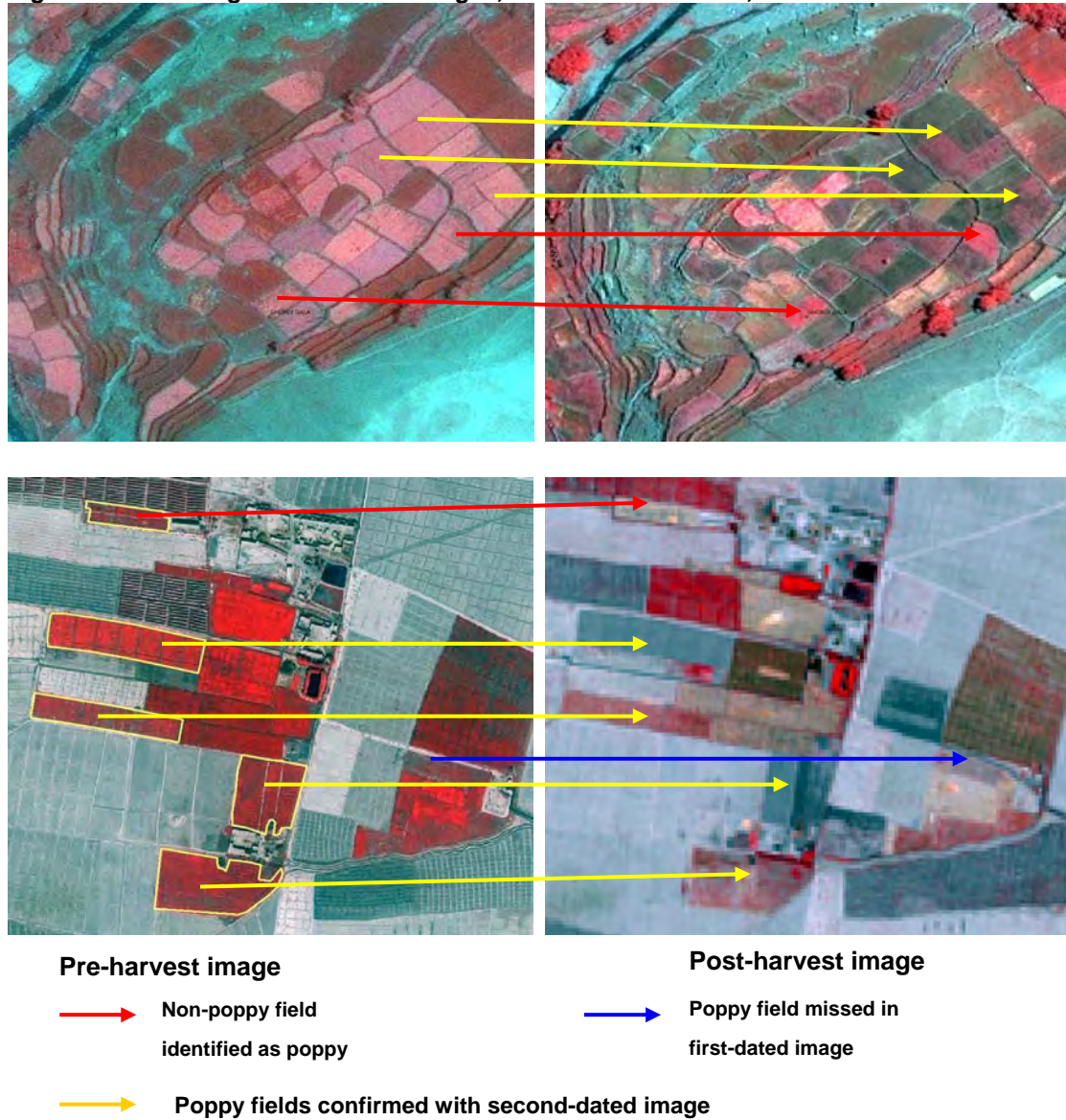
### 7.2.2.3 Advantage of two-dated images

Visual interpretation of single-dated very high-resolution images was a relatively easy task in Hilmand, Kandahar, Uruzgan, Farah and Nimroz provinces. This was due to larger field sizes and timely acquisition of the images. Interpretation in target provinces, namely Nangarhar, Laghman, Kunar, Kabul, Kapisa, Hirat, Ghor, Baghlan, Faryab and Badakhshan, was easy with the help of GPS points and aerial photographs. Interpretation of images in Badghis and Zabul was more difficult since the spectral signatures of opium poppy were not as clear as in Hilmand, Kandahar, Uruzgan and Nangarhar. The second-dated images were useful to distinguish poppy from barley,



wheat and grapes in certain provinces, namely Kabul, Kandahar and Nangarhar, particularly where the first-dated images were acquired late during the senescence stage. The second-dated (post-harvest) images were therefore useful in confirming whether the opium poppy on the first-dated images had been correctly identified. Image acquisition at two different times (pre- and post-harvest) is thus proven to be essential in such cases.

**Figure 38: Advantage of two-dated images, Kabul and Kandahar, 2009**



#### 7.2.2.4 Quality control

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

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

## 7.3 Opium yield and production

### 7.3.1 Estimating opium yield

The relationship between poppy capsule volume per square metre and dry opium yield is used to estimate opium production.<sup>31</sup> It takes the form of a non-rectangular hyperbola.

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

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

where

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

VC = Mature capsule volume (cm<sup>3</sup>/m<sup>2</sup>).

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

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

**Table 43: Regional opium yield values with 95% confidence intervals, 2012** (Kilograms per hectare)

REGION	Best estimate	Lower bound	Upper bound
Central	33.9	28.8	39.0
Eastern	38.6	31.7	45.5
North-eastern	44.5	39.5	49.5
Northern	39.4	31.3	47.5
Southern	22.6	14.8	30.4
Western	23.5	19.1	27.8
<b>National weighted by opium cultivation</b>	<b>23.7</b>	<b>17.9</b>	<b>27.5</b>

### 7.3.2 Changes to the yield survey and data quality

In 2012, the yield survey was significantly reduced. Because of the increasingly difficult security situation only fields where it was possible to complete the survey without time pressure were visited. Furthermore, training was improved and surveyors worked in pairs instead of alone. The survey is therefore no longer statistically representative, in spite of the fact that it was possible to collect data from all regions.

In 2012, data quality checks developed with external experts were also applied. The statistical tests developed in 2011<sup>32</sup> were applied to the capsule measurements, i.e. to the values reported regarding height, diameter, and thus the resulting capsule volumes. Regarding the number of capsules contributing to yield per plot, no systematic tests could be applied.

The results showed a strong increase in data quality as less than 10% of data was considered suspicious and thus excluded. In 2011, data from only 50 out of 232 fields (less than 25%) were considered reliable.

<sup>31</sup> UNODC Guidelines for yield assessment of opium gum and coca leaf from brief field visits, UN New York, 2001, ST/NAR/33. See also UNODC (2003): Limited opium yield assessment surveys. Technical report: Observations and findings. Guidance for future activities. In: Scientific and Technical Notes, SCITEC/19, December 2003.

<sup>32</sup> See MCN/UNODC *Afghanistan Opium Survey 201, December 2011*, page 95.

MCN and UNODC continue to work on improving the yield surveys.

**Table 44: Yield survey villages and fields surveyed, 2012**

	2009	2010	2011	2012
No. of villages	248	240	232	41
No. of fields (max. 3 per village)	699	685	685	114
No. of plots (3 per field)	2,415	2,040	2,055	342
No. of capsules measured	26,901	20,474	20,769	3,211

### 7.3.3 Yield revision methodology 2006-2009

Yield data consist of two critical measures: the average volume of capsules and the average number of capsules expected to contribute to yield, which surveyors collect from three fields per village. Statistical tests can therefore be performed both at the surveyor level (meaning that all data collected by a team of surveyors is considered) and at the village level (meaning that the data collected in one given village is considered).

A set of three statistical tests for identifying data of poor quality was used for analysing the yield data for 2006 to 2009, which were applied at different levels. The first test is aimed at identifying teams of surveyors that do not follow the yield protocol correctly. This protocol requires surveyors to start by measuring all the mature capsules of a “typical” poppy plant in a plot. If such a plant has less than 10 capsules, all the mature capsules of a second plant are also measured. This process is continued until at least 10 mature capsules have been measured, a procedure that ensures capturing the variability in capsule volumes.

The measurements of numerous surveyors in the years under revision showed little variation in their capsule volumes, which indicates that it is unlikely that those surveyors followed the yield protocol and chose instead to measure capsules using a different, non-standard method. As a result, all surveyor data for 2006 to 2009 in which capsule volumes were uncannily similar (measured by the coefficient of variation) were excluded from the data set.

The second test is aimed at identifying data recording and data entry problems. Poppy capsules are usually larger than 10 mm in both height (h) and width (w), and are measured with digital calipers showing two digits after the decimal point. Comprising of a total of eight digits (hh.hh and ww.ww), it is unlikely that the height and width measurements of two capsule measurements result in identical values, so an unusually large proportion of duplicate values in a dataset indicates data quality problems. Consequently, if the proportion of duplicated capsule measurements per village in 2006 to 2009 exceeded a certain threshold, all the data from that particular village were excluded.

The third test is aimed at measuring the thoroughness of surveyors. Doubts had arisen about how rigorous surveyors were when measuring and noting data, so a test was developed that identified villages in which the surveyors may have worked without the necessary rigour. Data from villages that failed the test were excluded.

Only data that passed all three tests were considered reliable and used for the revised yield calculations for 2006 to 2009. After applying the tests, several plots remained with more than 50 yielding capsules (expected to contribute to yield). Empirical evidence provided by the external experts consulted during the review indicated that if surveyors frequently found more than 50 capsules per plot, they may have misjudged the number of capsules contributing to yield. However, no statistical test was available that would help to determine the quality of capsule counts, as the decision on whether or not a flower bud, flower or immature capsule potentially contributes to yield depends to a large extent on the personal judgment and experience of surveyors. To avoid an overestimation of yield, the number of yielding capsules of such plots was set to a maximum of 50.

**Table 45: Results of the quality tests applied to yield data, 2006-2009**

Year	Yield kg/m <sup>2</sup>	Average capsule volume (cm <sup>3</sup> )	Number of yielding capsules per m <sup>2</sup>	% of surveyed villages that passed all tests	Number of fields that passed all tests
2006	32.2	27.74	24	21%	153
2007	38.5	31.26	29	16%	76
2008	37.8	32.56	29	13%	71
2009	32.2	29.37	22	2%	16

A limitation caused by excluding a large proportion of data because of quality concerns was that with the remaining data only national yield figures could be calculated as the reduced dataset did not allow the calculation of breakdowns by region. The national yield estimates are the simple average of all remaining data after applying quality checks. However, by only using good quality yield data we believe that the revised yield and production estimates are a better reflection of reality.

### 7.3.4 Estimating opium production

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

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

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

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

expresses the error in production,  $\Delta p$ , resulting from uncertainty in the estimates for cultivation area and yield.

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





*Yield survey training in Kabul, 2012*

## 7.4 Eradication verification methodology

### 7.4.1 Verification of Governor-led eradication (GLE)

UNODC/MCN has improved field-based verification activities since 2010 by enhancing the control mechanism. The areas verified by eradication verifiers were randomly checked by the team leader and UNODC/MCN survey coordinators for validation of the reported figures. A total of 112 eradication verifiers were trained in eradication verification techniques and deployed in a phased manner to provinces where eradication activities were envisaged. The eradication verifiers were part of the eradication teams led by the respective provincial governor. Verifiers reported to the office of Provincial Governors at the beginning of March 2012.

Verification methodology for GLE:

- Eradication verifiers were part of the Governor-led eradication teams.

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

## 7.5 Village survey methodology

Village survey activities (such as training, deployment and data collection) were carried out from March to July 2012 by 115 local field surveyors across all provinces. These activities were supervised jointly by MCN and UNODC. The surveyors were selected on the basis of their experience in opium poppy surveys, knowledge of local customs and their acceptance by local communities. Security was generally problematic for the surveyors, but the selection of surveyors actually from the regions surveyed helped to reduce security risks.

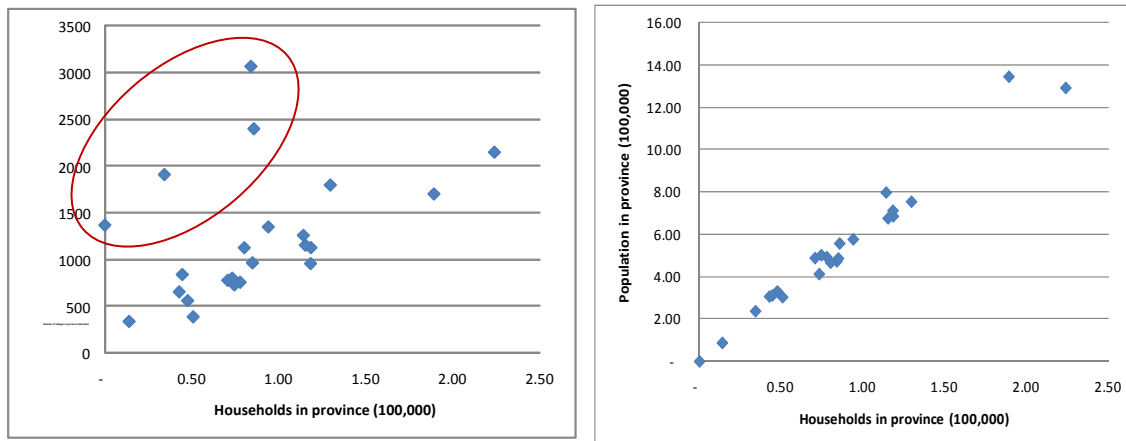
### 7.5.1 Sampling framework and village frame

The sampling frame for the village survey data is comprised of a list of 41,419 villages in Afghanistan, which is based on information from the Central Statistical Office and UN databases. It contains the village name, district, province and location and, for most provinces, also the number of households and average household size of the villages listed. The village frame has not been updated since 2010. In addition to the sampled villages, the surveyors, using their knowledge of the local situation, visited other areas in their provinces to complement their assessment of opium cultivation trends and the security situation throughout the province.

Surveyors sought to interview three farmers in each village: one opium-growing farmer; one who had stopped opium cultivation; and one who had never grown opium. In poppy-free villages, less than three farmers were interviewed. Interview partners were recruited by opportunity sampling.

The following two figures show scatter plots of the numbers of households (x-axes) together with the numbers of villages (left) and with the population size (right).

**Figure 39: Scatter plots of household data, village data and population data of the village frame**



As one can see, the total population is highly correlated with total numbers of households (all dots align along one line), whereas the number of villages compared to the numbers of households in the province has four remarkable outliers in the Day Kundi, Kandahar, Nangarhar and Zabul provinces (all within the red circle). When compared to household numbers a relatively larger number of villages can come from a significantly smaller size of village. However, double counting of villages or other problems with the database cannot be excluded. Deeper analyses of these issues are out of the scope of this survey, but the discrepancies between the number of villages and the number of households in some provinces should be kept in mind when interpreting the results. Too large a number (relatively) of villages can lead to an overestimation of indicators of interest.

### 7.5.2 Surveyor training

Until 2007, all surveyors were provided with village survey training in Kabul. In order to prepare for the 2009 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 115 surveyors and 11 MCN/UNODC survey coordinators were trained in the use of the survey form and techniques. Surveyor training began in March 2008 and was conducted by MCN under the supervision of UNODC national staff. The training included practical (use of GPS, area calculation, etc.) and theoretical aspects (interviewing and dialogue with village headmen and farmers).

#### 7.5.2.1 Data collection

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

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

### 7.5.2.2 Debriefing

After the survey, surveyors were debriefed by survey coordinators. The debriefing helps to understand the difficulties surveyors may have encountered, e.g. because of the difficult security situation, but also if questions were well understood by respondents.

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

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

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

## 7.7 Estimating the value of the Afghan opiate economy

### 7.7.1 Key components and underlying assumptions

- **Conversion factors** A factor of 7:1 is used for the conversion of opium into morphine, while a factor of 1:1 is used for the conversion of morphine into heroin. Both of these factors are under investigation; for example, by the on-going yield experiments that include investigations into the morphine content of Afghan opium. The heroin figures calculated here refer to “brown” heroin base. More than 7 kilograms of opium is needed for the production of 1 kilogram of high quality white heroin (heroin hydrochloride). However, the export of such high-quality white heroin from Afghanistan appears to be very limited in comparison to that of brown heroin, thus the production and export of white heroin were not considered in this estimation. None of the factors in the opium-to-heroin estimation chain is well researched, but opium samples are collected and investigated for their morphine content so as to gather more information on these issues
- **Precursor substances.** For the production of 1 kilogram of heroin, 1.5 litres of the costly precursor substance Acetic Anhydride is needed (updated in 2011 from 2.5 litres).
- **Purity.** The calculation of the value of the opium economy is limited by the fact that the drug products leaving laboratories in Afghanistan may undergo further processing, such as adulterations, before reaching assumed points of sale in neighbouring countries. Indeed, there is evidence that heroin is mixed with cutting agents already in Afghanistan. This is done to increase profitability but can also be done for other reasons, such as tailoring the drug product for specific usages,<sup>33</sup> which not only alters the volume of the drug exported but also influences costs. These factors cannot be estimated at the moment, but it is reasonable to assume that the use of cutting agents would increase the profitability of exporting opiates. Not taking them into account could thus lead to an under-estimation of the export value of the opium economy.
- **Amounts of opium converted to morphine/heroin.** When estimating the amount of opium converted to heroin, seizures in Afghanistan and in neighbouring countries, such as the Islamic Republic of Iran, Pakistan and Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan), are considered in the model. There are indications of direct drug exports to China and India as well as to other countries by air or land, but the amounts trafficked through those routes are thought to be comparatively small and are not considered in the model. All seizure data from Afghanistan and neighbouring countries is used for the estimation, which implicitly assumes that the shares converted in and exported from Afghanistan are proportional to all seizures made in those countries.

<sup>33</sup> See UNODC (2009): World Drug Report 2009, p. 61, where evidence from the forensic laboratory of CNPA is presented confirming the use of various cutting agents in Afghanistan in 2008.



- **Morphine/heroin exports.** Recent morphine seizures bear evidence of morphine exports from Afghanistan to neighbouring countries. No difference is made between morphine and heroin in their estimation, as the proportion of opiates exported as morphine is not known. Morphine and heroin are both treated as pure heroin in the calculations.
- **Income from trafficking.** The value of exported opium (partly transformed into morphine/heroin) was based on its value at border areas with neighbouring countries. Opiates are usually trafficked to neighbouring countries by Afghan traffickers who, in general, are involved in shipping the opiates over the borders, from where traffickers from neighbouring countries take over the consignments. The total gross value of exported Afghan opium can therefore be estimated by multiplying wholesale prices for opium and heroin in the border regions of neighbouring countries by estimated amounts of drugs trafficked.
- **Domestic market.** The calculation of opiates consumed within Afghanistan uses the drug use estimates from the 2009 Drug Use Survey implemented by the Government of Afghanistan and UNODC, as well as more recent price data. The average quantity of opiates typically consumed per day was 0.35 grams; the quantity of opium consumed was 3.1 grams per day. The underlying assumption is that the quantity used has not changed since 2009. This might be a simplification, because recent strong increases in price levels may have led to a reduction in use (elasticity of demand), either by reducing the number of users and/or the quantities used.
- **Gross and net export value.** For the calculation of gross export value, the potential volumes of opium and heroin exported to neighbouring countries were multiplied by the corresponding average cross-border prices. The total gross export value is the combined gross export value of opium and morphine/heroin exports. As indicated above, morphine exports are not considered separately and all processed opium exports are assumed to be in the form of heroin. To estimate the net value, the value of imports has to be subtracted from the gross value of all final goods, since this is income lost to the exporting country (Afghanistan). There are many imports necessary for opiate production but only imports of the main precursor substance for heroin production were considered in the calculation.

### 7.7.2 Components of the estimation

The opium economy estimation process includes the following steps:

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

### 7.7.3 Proportion of opium converted into morphine and heroin

The proportion of opium converted into morphine and heroin was derived from seizure data in Afghanistan and its neighbouring countries. A three-year average of all reported amounts was taken.

**Table 46: Proportions of opiate seizures in Afghanistan and neighbouring countries**  
(Percentage)

Distribution	2009	2010	2011	Average 2009-2011 weighted by amounts seized
% opium	22%	33%	25%	26%
% heroin	16%	15%	36%	23%
% morphine	62%	52%	40%	50%

As seizures are often driven by pure chance and seizure data have some inherent uncertainties, changes should be interpreted with caution. Information from the CNPA laboratory indicates that not all assumed seizures of heroin turn out to actually contain heroin or contain heroin in combination with various other substances.<sup>34</sup> This is rather typical for seizures and not specific only to Afghanistan. The present level of information does not allow the correction of official seizure figures for purity.

#### 7.7.4 Prices

For Pakistan, the cross-border price of opium was the simple average of the average monthly wholesale price in Peshawar, Pakistan (between March and December 2012) and the average monthly wholesale price in Quetta, Pakistan (available between August and December 2012).<sup>35</sup>

Similarly, heroin prices were calculated from the monthly wholesale prices of best quality heroin in Peshawar and Quetta. The higher best-quality price for heroin of injection quality was used to account for adulterations and other profit-increasing methods. All these prices were collected by UNODC in the framework of its monthly drug price monitoring.

For Central Asia, no price updates were available at the time of writing.

For the Islamic Republic of Iran, prices at the country's eastern border in the first half of 2012 were used.

The simple average of the average prices (Islamic Republic of Iran and Pakistan) was used for estimating the value of exported opiates. It should be noted that price information obtained from all three countries has strong limitations and needs to be improved in order to enhance the reliability of the estimate.

#### 7.7.5 Estimation of domestic consumption

In 2009, the Ministries of Health and Counter Narcotics in collaboration with UNODC implemented an extensive national drug use survey in Afghanistan,<sup>36</sup> in which the number of opium and heroin users in the country was estimated to be 230,000 (210,000-260,000) and 120,000 (110,000-140,000), respectively. These numbers account for poly-drug use, i.e. one person is counted in both groups if using both opium and heroin.

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

<sup>34</sup> Counter Narcotics Police of Afghanistan, Forensic Laboratory/UNODC (2008): Laboratory Information Bulletin 12/2008 (LIB IV/2008). [http://www.unodc.org/pdf/scientific/LIB%20IV-2008\\_Kabul-.pdf](http://www.unodc.org/pdf/scientific/LIB%20IV-2008_Kabul-.pdf).

<sup>35</sup> Ministry of Counter Narcotics and UNODC: Afghanistan Opium Price Monitoring, 2012.

<sup>36</sup> Ministry of Counter Narcotics/Ministry of Health/UNODC: Drug Use in Afghanistan: 2009 Survey (in print).

**Table 47: Domestic opiate market, 2009**

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

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

The resulting average daily consumption is a sensible magnitude for Afghanistan and is confirmed by regular non-representative use surveys undertaken by MCN/UNODC among heavy users in Afghanistan. It should be noted that there are indications that the quality of heroin/morphine at street level is very poor.

When multiplying these quantities consumed by current end-consumer level prices, the value of the domestic opiate market can be calculated.

## ANNEX I: OPIUM POPPY CULTIVATION PER PROVINCE, 2002-2012 (HECTARES)

PROVINCE	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Change 2011-2012 (ha)	Change 2011-2012 (%)
Badakhshan	8,250	12,756	15,607	7,370	13,056	3,642	200	557	1,100	1,705	1,927	+222	+13%
Badghis	26	170	614	2,967	3,205	4,219	587	5,411	2,958	1,990	2,363	+373	+19%
Baghlan	152	597	2,444	2,563	2,742	671	475	Poppy-free	Poppy-free	161	177	+16	+10%
Balkh	217	1,108	2,495	10,837	7,232	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Bamyan	-	610	803	126	17	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Day Kundi	-	2,445	3,715	2,581	7,044	3,346	2,273	3,002	1,547	1,003	1,058	+55	+5%
Farah	500	1,700	2,288	10,240	7,694	14,865	15,010	12,405	14,552	17,499	27,733	+10234	+58%
Faryab	28	766	3,249	2,665	3,040	2,866	291	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Ghazni	-	-	62	9	-	-	Poppy-free	Poppy-free	Poppy-free	145	Poppy-free	NA	NA
Ghor	2,200	3,782	4,983	2,689	4,679	1,503	Poppy-free	Poppy-free	Poppy-free	Poppy-free	125	+125	NA
Hilmand	29,950	15,371	29,353	26,500	69,324	102,770	103,590	69,833	65,045	63,307	75,176	+11869	+19%
Hirat	50	134	2,531	1,924	2,287	1,525	266	556	360	366	1,080	+714	+195%
Jawzjan	137	888	1,673	1,748	2,024	1,085	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kabul	58	237	282	-	80	500	310	132	152	220	120	-100	-45%
Kandahar	3,970	3,055	4,959	12,989	12,619	16,615	14,623	19,811	25,835	27,213	24,341	-2872	-11%
Kapisa	207	326	522	115	282	835	436	Poppy-free	Poppy-free	181	290	+109	+60%
Khost	-	375	838	2	133	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kunar	972	2,025	4,366	1,059	932	446	290	164	154	578	1,279	+701	+121%
Kunduz	16	49	224	275	102	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Laghman	950	1,907	2,756	274	710	561	425	135	234	624	877	+253	+41%
Logar	-	-	24	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Nangarhar	19,780	18,904	28,213	1,093	4,872	18,739	0	294	719	2,700	3,151	+451	+17%
Nimroz	300	26	115	1,690	1,955	6,507	6,203	428	2,039	2,493	3,808	+1315	+53%
Nuristan	-	648	764	1,554	1,516	0	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktika	-	-	-	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktya	38	721	1,200	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Panjshir	-	-	-	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Parwan	-	-	1,310	-	124	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Samangan	100	101	1,151	3,874	1,960	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Sari Pul	57	1,428	1,974	3,227	2,252	260	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Takhar	788	380	762	1,364	2,178	1,211	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Uruzgan	5,100	4,698	7,365	2,024	9,703	9,204	9,939	9224	7,337	10,620	10,508	-112	-1%
Wardak	-	2,735	1,017	106	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Zabul	200	2,541	2,977	2,053	3,210	1,611	2,335	1,144	483	262	424	+161	+62%
<b>Total (rounded)</b>	<b>74,000</b>	<b>80,000</b>	<b>131,000</b>	<b>104,000</b>	<b>165,000</b>	<b>193,000</b>	<b>157,000</b>	<b>123,000</b>	<b>123,000</b>	<b>131,000</b>	<b>154,000</b>	<b>+23,000</b>	<b>+18%</b>

## ANNEX II: INDICATIVE DISTRICT LEVEL ESTIMATES OF OPIUM CULTIVATION, 2001-2012 (HECTARES)<sup>37</sup>

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Badakhshan	Arghanj Klwah							54	0	0	0	0	0
Badakhshan	Arzo							210	60	203	327	617	610
Badakhshan	Baharak	345	180		5,544	1,635	710	0	14	2	0	0	43
Badakhshan	Darayim							682	43	145	289	662	898
Badakhshan	Darwaz-i Payin (mamay)						0	0	0	0	0	0	0
Badakhshan	Darwaz-i Bala (mesay)							0	0	0	0	0	0
Badakhshan	Faiz abad (Provincial Center)	868	2,370	3,109	2,362	3,111	7,154	83	64	11	10	64	7
Badakhshan	Eshkashim							0	0	0	0	0	0
Badakhshan	Jurm	2,897	2,690	4,502	4,818	1,460	2,027	170	6	6	2	43	98
Badakhshan	Khash							999	7	6	4	46	0
Badakhshan	Khwahan							0	0	0	0	0	0
Badakhshan	Kishim	2,191	2,840	4,530	2,883	1,076	3,165	0	2	68	204	73	45
Badakhshan	Kohistan							0	0	0	0	0	2
Badakhshan	Kuf Ab							0	0	0	0	0	0
Badakhshan	Kiran wa Munjan					48	0	10	0	0	0	0	0
Badakhshan	Raghistan							0	400	0	0	0	19
Badakhshan	Shahri Buzurg	41	170	615		39	0	313	0	2	3	3	36
Badakhshan	Shighnan							0	0	0	0	0	0
Badakhshan	Shiki							0	0	0	0	0	0
Badakhshan	Shuhada							0	0	0	0	0	12
Badakhshan	Tagab							93	0	0	0	0	22
Badakhshan	Tashkan							136	0	57	163	145	73
Badakhshan	Wakhan						0	0	0	0	0	0	0
Badakhshan	Wardooj							9	3	14	1	1	0
Badakhshan	Yaftal-i-Sufla							305	0	43	97	50	32
Badakhshan	Yamgan							10	0	0	0	1	0
Badakhshan	Yawan							166	0	0	0	0	30
Badakhshan	Zaybak							0	0	0	0	0	0
<b>Badakhshan Total</b>		<b>6,342</b>	<b>8,250</b>	<b>12,756</b>	<b>15,607</b>	<b>7,369</b>	<b>13,056</b>	<b>3,642</b>	<b>200</b>	<b>557</b>	<b>1,100</b>	<b>1,705</b>	<b>1,927</b>
Badghis	Ab Kamari						127	0	11	161	16	5	14
Badghis	Ghormach		4	101		944	624	250	328	299	486	1485	1005
Badghis	Jawand				226	134	431	66	13	1,090	130	106	187
Badghis	Muqur						220	149	7	102	81	9	61
Badghis	Bala Muqhab		22	69	345	1,889	1,034	3,557	81	2,754	2055	284	870
Badghis	Qadis						391	198	146	906	135	92	152
Badghis	Qala-i-Now (Provincial Center)				43		378	0	0	99	55	9	75
<b>Badghis Total</b>		<b>0</b>	<b>26</b>	<b>170</b>	<b>614</b>	<b>2,967</b>	<b>3,205</b>	<b>4,219</b>	<b>587</b>	<b>5,411</b>	<b>2,958</b>	<b>1,990</b>	<b>2,363</b>
Baghlan	Andarab	81	31	301	564	548	947	130	475	0	0	18	5
Baghlan	Baghlan *		120	16	154	374	72		0	0	0	0	0
Baghlan	Baghlan-i-Jadeed				81	248	371	287	0	0	0	0	0
Baghlan	Burka				198	242	39	31	0	0	0	0	0
Baghlan	Dahana-i- Ghuri			37	200	24	35	0	0	0	0	0	0
Baghlan	Deh Salah							14	0	0	0	113	33
Baghlan	Dushi				89	116	174	68	0	0	0	0	0
Baghlan	Firing Wa Ghauri							0	0	0	0	0	0
Baghlan	Gozargah-i-Noor							30	0	0	0	0	0
Baghlan	Kahmard *				527	263	255		0	0	0	0	0
Baghlan	Khurjan			9	21	92	137	23	0	0	0	0	0
Baghlan	Khost Wa Firing			21	0	295	442	56	0	0	0	0	0
Baghlan	Khwajah Hijran (Jalgah)							10	0	0	0	0	0
Baghlan	Nahreem	1		63	276	35	36	0	0	0	0	0	0
Baghlan	Pul-i-Hisar							0	0	0	0	30	139
Baghlan	Pul-i-Khumri (Provincial Center)		1	37	173	224	81	21	0	0	0	0	0
Baghlan	Talah wa Barfak			113	161	102	153	0	0	0	0	0	0
<b>Baghlan Total</b>		<b>82</b>	<b>152</b>	<b>597</b>	<b>2,444</b>	<b>2,563</b>	<b>2,742</b>	<b>671</b>	<b>475</b>	<b>p-f</b>	<b>p-f</b>	<b>161</b>	<b>177</b>
Balkh	Balkh	1	22	332	411	2,786	1,975	0	0	0	0	0	0
Balkh	Chahar Bolak			68	877	2,701	799	0	0	0	0	0	0
Balkh	Chahar Kent				23	25	16	0	0	0	0	0	0
Balkh	Chimtal		153	617	258	1,878	2,074	0	0	0	0	0	0
Balkh	Dowlat abad	3	-		141	202	181	0	0	0	0	0	0
Balkh	Dehdadi		8	35	16	990	307	0	0	0	0	0	0
Balkh	Kaldar (Shahrak-i-Hairatan)				152	395	123	0	0	0	0	0	0
Balkh	Khulm				50	367	0	0	0	0	0	0	0
Balkh	Kishindeh				111	290	189	0	0	0	0	0	0
Balkh	Marrmul				3	18	12	0	0	0	0	0	0
Balkh	Mazar-i-Sharif				50	119	78	0	0	0	0	0	0
Balkh	Nahr-i-Shahi		14	30	139	425	833	0	0	0	0	0	0
Balkh	Sholgarah		19	28	256	543	245	0	0	0	0	0	0
Balkh	Shortepa				8	98	401	0	0	0	0	0	0
Balkh	Zari							0	0	0	0	0	0
<b>Balkh Total</b>		<b>4</b>	<b>217</b>	<b>1,108</b>	<b>2,495</b>	<b>10,837</b>	<b>7,233</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>

<sup>37</sup> The survey is designed to produce province level estimates. District estimates are derived by a combination of different approaches. They are indicative only, and suggest a possible distribution of the estimated provincial poppy area among the districts of a province.

## ANNEX II (continued...)

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Bamyan	Bamyan (Provincial Center)			20	93	19	17	0	0	0	0	0	0
Bamyan	Panjab			250	31		0	0	0	0	0	0	0
Bamyan	Saighan							0	0	0	0	0	0
Bamyan	Shebar			36	492	107	0	0	0	0	0	0	0
Bamyan	Waras			191	64		0	0	0	0	0	0	0
Bamyan	Yakawlang			112	123		0	0	0	0	0	0	0
<b>Bamyan Total</b>				<b>610</b>	<b>803</b>	<b>126</b>	<b>17</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Day Kundi	Day Kundi *	0	-	836	1,996		1,948			0	0	0	0
Day Kundi	Gizab	0	-	776	1,109		1,243	1,054	665	810	722	621	684
Day Kundi	Ishtarlay							535	214	239	9	9	9
Day Kundi	Kajran	0	-	418	189		1,633	366	357	704	622	153	288
Day Kundi	Khedir							531	289	160	5	8	9
Day Kundi	Kiti							282	168	284	134	151	14
Day Kundi	Mir Amor							512	281	703	19	22	5
Day Kundi	Nili (Provincial Center)							0	214	5	5	9	16
Day Kundi	Sang-i-Takht							2	1	68	10	15	8
Day Kundi	Shahristan	1	-	415	421		2,220	64	85	29	21	13	25
<b>Day Kundi Total</b>		<b>1</b>	<b>0</b>	<b>2,445</b>	<b>3,715</b>	<b>2,581</b>	<b>7,044</b>	<b>3,346</b>	<b>2,273</b>	<b>3,002</b>	<b>1,547</b>	<b>1,003</b>	<b>1,058</b>
Farah	Anar Darah				91	1,828	143	16	239	79	1	9	3
Farah	Bakwah				39	390	1,093	3,458	3,090	3,570	1,936	800	5,822
Farah	Bala Buluk			513	336	1,665	1,669	5,312	1,509	2,705	2,586	3,157	3,951
Farah	Delaram									3,011	4,404	4,263	8,899
Farah	Farah (Provincial Center)				87	729	905	1,328	1,013	1,142	51	0	129
Farah	Gulistan			1,187	447	163	202	1,132	4,756	1,355	2,661	4,565	3,920
Farah	Khaki-Safed				84	432	537	99	609	232	645	1,103	2,220
Farah	Lash-i-Juwayn				41	1,568	215	233	109	45	3	6	2
Farah	Pur Chaman				409	293	363	1,549	1,046	96	2,175	3,512	2,164
Farah	PushtRod				554	2,482	1,709	1,314	1,588	46	61	46	505
Farah	Qala-i-Kah				189	407	506	337	888	47	11	39	117
Farah	Shib Koh				12	283	352	87	163	77	18	0	0
<b>Farah Total</b>		<b>0</b>	<b>500</b>	<b>1,700</b>	<b>2,289</b>	<b>10,240</b>	<b>7,694</b>	<b>14,865</b>	<b>15,010</b>	<b>12,405</b>	<b>14,552</b>	<b>17,499</b>	<b>27,733</b>
Faryab	Almar				239	57	338	213	0	0	0	0	0
Faryab	Andkhoy				15	13	31	0	0	0	0	0	0
Faryab	Bi Chiragh		26	232	24		322	620	102	0	0	0	0
Faryab	Dowlat abad				78	133	27	0	0	0	0	0	0
Faryab	Gurziwan							101	0	0	0	75	0
Faryab	Khani ChaharBagh				205	6	490	0	0	0	0	0	0
Faryab	Khvajah Sabz Poshi Wali				129	451	375	238	0	0	0	0	0
Faryab	Kohistan				640	50	84	152	10	0	0	49	0
Faryab	Maimanah				248		218	66	10	0	0	0	0
Faryab	Pashtun Kot		1	281	429	97	60	249	0	0	0	9	0
Faryab	Qaram Qul				55	138	43	0	0	0	0	0	0
Faryab	Qaisar			150	1,050	579	880	303	168	0	0	13	0
Faryab	Qurghan							0	0	0	0	0	0
Faryab	Shirin Tagab			103	137	1,141	172	924	0	0	0	0	0
<b>Faryab Total</b>		<b>0</b>	<b>28</b>	<b>766</b>	<b>3,249</b>	<b>2,665</b>	<b>3,040</b>	<b>2,866</b>	<b>291</b>	<b>p-f</b>	<b>p-f</b>	<b>146</b>	<b>p-f</b>
Ghazni	Ab Band							0	0	0	0	0	0
Ghazni	Ajristan				62			0	0	0	0	0	0
Ghazni	Andar							0	0	0	0	0	0
Ghazni	Bahram-e Shahid (Jaghata)					9		0	0	0	0	0	0
Ghazni	Deh Yak							0	0	0	0	0	0
Ghazni	Gelan							0	0	0	0	0	0
Ghazni	Ghazni (Provincial Center)							0	0	0	0	0	0
Ghazni	Giro							0	0	0	0	0	0
Ghazni	Jaghata *							0	0	0	0	0	0
Ghazni	Jaghori							0	0	0	0	0	0
Ghazni	Khvajah Omari							0	0	0	0	0	0
Ghazni	Malistan							0	0	0	0	0	0
Ghazni	Muqur							0	0	0	0	0	0
Ghazni	Nawa							0	0	0	0	0	0
Ghazni	Nawur							0	0	0	0	0	0
Ghazni	Qara Bagh							0	0	0	0	0	0
Ghazni	Rashidan							0	0	0	0	0	0
Ghazni	Waghaz							0	0	0	0	0	0
Ghazni	Wali Muhammad Shadid Khugyani							0	0	0	0	0	0
Ghazni	Zanakhan							0	0	0	0	0	0
<b>Ghazni Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>62</b>	<b>9</b>	<b>0</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Ghor	Chaghcharan (Provincial Center)		700	1,189	872	1,149	1,233	910	0	0	0	0	71
Ghor	Chahar Sadah							41	0	0	0	0	0
Ghor	Dowlatyar							132	0	0	0	0	5
Ghor	Do Lainah							131	0	0	0	0	16
Ghor	Lal Wa Sarjangal				1,055	718	771	200	0	0	0	0	0
Ghor	Pasaband		700	805	175	48	241	17	0	0	0	0	0
Ghor	Saghar		300	256	340	120	283	18	0	0	0	0	0
Ghor	Shahrak			640	902	18	1,398	0	0	0	0	0	33
Ghor	Taywara		500	808	649	240	608	39	0	0	0	0	0
Ghor	Tulak			84	990	396	145	16	0	0	0	0	0
<b>Ghor Total</b>			<b>2,200</b>	<b>3,782</b>	<b>4,983</b>	<b>2,689</b>	<b>4,679</b>	<b>1,503</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>125</b>

## ANNEX II (continued...)

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Hilmand	Baghran		1,800	2,309	2,232	2,507	2,890	4,287	4,279	3,343	4,049	6,739	2,788
Hilmand	Dishu		-		369	911	851	1,160	688	475	119	481	1,601
Hilmand	Garm Ser		2,020	462	1,922	1,912	6,168	6,523	8,000	5,789	6,333	4,342	1,246
Hilmand	Kajaki		2,640	1,392	1,676	1,639	6,760	5,807	6,240	3,696	3,299	6,435	9,065
Hilmand	Lashkargah (Provincial Center)		1,140	605	1,380	1,332	4,008	6,320	7,857	4,379	2,014	649	1,469
Hilmand	Musa Qala		3,690	2,455	2,404	1,664	6,371	8,854	12,687	8,603	8,415	10,340	7,235
Hilmand	Nad Ali		5,880	870	4,177	2,356	11,652	20,045	20,824	17,063	18,646	5,413	8,038
Hilmand	Marja										0	2,629	2,046
Hilmand	Naher-i-Saraj		1,850	1,575	6,486	3,548	10,386	22,769	13,270	9,598	11,517	12,638	22,468
Hilmand	Nowzad		2,650	3,096	1,051	3,737	2,707	6,192	3,863	6,473	2,845	4,694	10,822
Hilmand	Nawa-i-Barukzai		2,730	1,240	3,506	2,552	10,168	6,314	13,978	4,416	1,328	1,610	41
Hilmand	Reg-i-Khan Nishin		1,940		1,893	2,772	3,765	8,484	4,720	2,056	2,292	2,120	2,718
Hilmand	Sangin Qala		2,810	777	1,365	1,184	2,862	5,150	5,532	2,754	2,631	2,941	2,882
Hilmand	Washer		800	590	892	386	735	865	1,653	1,188	1,555	2,275	2,757
<b>Hilmand Total</b>		<b>0</b>	<b>29,950</b>	<b>15,371</b>	<b>29,383</b>	<b>26,500</b>	<b>69,323</b>	<b>102,770</b>	<b>103,590</b>	<b>69,833</b>	<b>65,045</b>	<b>63,307</b>	<b>75,176</b>
Hirat	Adraskan				133	9	99	196	22	1	0	0	0
Hirat	Chiisht-i-Sharif				166	42	42	0	0	0	0	0	0
Hirat	Fersi			134	28	110	111	0	0	0	0	0	0
Hirat	Ghoryan				60	238	204	302	0	0	0	0	0
Hirat	Gulran				240	33	32	0	0	0	0	0	0
Hirat	Guzara				88	231	233	0	0	0	0	0	0
Hirat	Hirat				0	16	16	0	0	0	0	0	0
Hirat	Enjil				41	394	382	0	0	0	0	0	0
Hirat	Karrukh				265	124	121	0	0	0	0	0	0
Hirat	Kohsan				4	72	73	146	0	0	0	0	0
Hirat	Kushk (Rabat-i-Sangi)				73	64	50	367	43	0	0	0	0
Hirat	Kusk-i-Kohnah				3	15	15	0	0	0	0	0	0
Hirat	Obe				842	144	131	0	0	0	0	0	0
Hirat	Pashtun Zarghun				154	249	242	0	0	0	0	0	0
Hirat	Shindand				427	54	408	516	201	555	360	366	1,080
Hirat	Zendah Jan				7	128	129	0	0	0	0	0	0
<b>Hirat Total</b>		<b>0</b>	<b>50</b>	<b>134</b>	<b>2,531</b>	<b>1,924</b>	<b>2,288</b>	<b>1,526</b>	<b>266</b>	<b>556</b>	<b>360</b>	<b>366</b>	<b>1,080</b>
Jawzjan	Aqchah		47	171	247	631	30	0	0	0	0	0	0
Jawzjan	Darzab				625	272	16	803	0	0	0	0	0
Jawzjan	Faizabad		24	280	218	112	473	21	0	0	0	0	0
Jawzjan	Khamyab		30	51	40	68	2	0	0	0	0	0	0
Jawzjan	Khanaqa							0	0	0	0	0	0
Jawzjan	Khwajah DuKoh				19	15	271	0	0	0	0	0	0
Jawzjan	Mardyan		4	228	174	21	348	62	0	0	0	0	0
Jawzjan	Mingajik		7	64	101	77	38	0	0	0	0	0	0
Jawzjan	Qarqin		24	58	151	43	17	0	0	0	0	0	0
Jawzjan	Qush Tepah							43	0	0	0	0	0
Jawzjan	Sheberghan (Provincial Center)		1	36	98	508	828	156	0	0	0	0	0
<b>Jawzjan Total</b>		<b>0</b>	<b>137</b>	<b>888</b>	<b>1,673</b>	<b>1,748</b>	<b>2,023</b>	<b>1,086</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Kabul	Bagrami						0	0	0	0	0	0	0
Kabul	Chahar Asyab						0	0	0	0	0	0	0
Kabul	DehSabz						0	0	0	0	0	0	0
Kabul	Farzah						0	0	0	0	0	0	0
Kabul	Gulara						0	0	0	0	0	0	0
Kabul	Estalef						0	0	0	0	0	0	0
Kabul	Kabul						0	0	0	0	0	0	0
Kabul	Kalakan						0	0	0	0	0	0	0
Kabul	Khak-i-Jabar						0	0	0	0	0	0	0
Kabul	Mir Bacha Kot						0	0	0	0	0	0	0
Kabul	Musahi						0	0	0	0	0	0	0
Kabul	Paghman						0	0	0	0	0	0	0
Kabul	Qara Bagh						0	0	0	0	0	0	0
Kabul	Shakar Dara						0	0	0	0	0	0	0
Kabul	Surubi		29	58	237	282	80	500	310	132	152	220	120
<b>Kabul Total</b>		<b>29</b>	<b>58</b>	<b>237</b>	<b>282</b>	<b>0</b>	<b>80</b>	<b>500</b>	<b>310</b>	<b>132</b>	<b>152</b>	<b>220</b>	<b>120</b>
Kandahar	Arghandab		330	139	261	287	735	1,016	57	158	22	84	114
Kandahar	Arghistan		80	14	651	2,449	784	310	28	43	7	42	90
Kandahar	Daman		190	357	895	775	183	375	19	119	0	0	0
Kandahar	Ghorak		380	166	241	233	336	1,445	232	628	1,466	1,165	952
Kandahar	Kandahar (Provincial Center)		640	293		0	1,367	1,220	590	425	108	262	11
Kandahar	Khakrez		560	312	145	185	217	132	1,224	1,474	1,215	1,190	794
Kandahar	Maruf		-	63	117	150	464	914	182	36	33	31	28
Kandahar	Maiwand		1,090	353	514	1,281	1,362	2,878	3,375	6,524	9,966	10,114	12,690
Kandahar	Miya Neshin							322	1,603	158	44	45	30
Kandahar	Nesh							432	3,284	1,717	2,842	2,096	620
Kandahar	Panjwayee		150	482	864	4,687	4,714			1,564	2,982	4,914	4,780
Kandahar	Reg				0	327		4	0	0	0	0	0
Kandahar	Shah Wali Kot		260	489	923	2,379	1,593	1,258	560	911	813	615	242
Kandahar	Shorabak			111	45	19	409	308	4	0	0	0	0
Kandahar	Spin Boldak		290	277	303	218	454	768	541	650	1,359	1,368	121
Kandahar	Zhire							5,232	2,923	5,405	4,978	5,288	3,867
<b>Kandahar Total</b>		<b>0</b>	<b>3,970</b>	<b>3,055</b>	<b>4,959</b>	<b>12,990</b>	<b>12,618</b>	<b>16,615</b>	<b>14,623</b>	<b>19,811</b>	<b>25,835</b>	<b>27,213</b>	<b>24,341</b>



ANNEX II (continued...)

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Kapisa	Ala Sai				77	82	0	367	0	0	0	3	34
Kapisa	Hisah-i-Awal Kohistan							0	0	0	0	0	0
Kapisa	Hisah-i-Duwumi Kohistan							0	0	0	0	0	0
Kapisa	Koh Band				111	33	0	0	0	0	0	9	16
Kapisa	Kohistan *				116		0			0	0	0	116
Kapisa	Mahmood-i-Raqi (Provincial Center)				10		0	0	0	0	0	0	0
Kapisa	Nijrab				92		0	0	0	0	0	14	21
Kapisa	Tagab	0	207	326	116		282	468	436	0	0	155	219
<b>Kapisa Total</b>		<b>0</b>	<b>207</b>	<b>326</b>	<b>522</b>	<b>115</b>	<b>282</b>	<b>835</b>	<b>436</b>	<b>p-f</b>	<b>p-f</b>	<b>181</b>	<b>290</b>
Khost	Bak				0		14	0	0	0	0	0	0
Khost	Gurruz				47		10	0	0	0	0	0	0
Khost	Jaji Maidan				8		16	0	0	0	0	0	0
Khost	Khost Matun (Provincial Center)				0		0	0	0	0	0	0	0
Khost	Manduzay (Jamyal Khel)				125		0	0	0	0	0	0	0
Khost	Musa Khel (Mangal)				86		0	0	0	0	0	0	0
Khost	NadirShah Kot				75		0	0	0	0	0	0	0
Khost	Qalandar				39		0	0	0	0	0	0	0
Khost	Sabari (Yaqubi)				0		0	0	0	0	0	0	0
Khost	Shamul (Dzadran)						0	0	0	0	0	0	0
Khost	Speza			118	0		5	0	0	0	0	0	0
Khost	Tanay	6		257	458	2	88	0	0	0	0	0	0
Khost	Terayzai (Ali Sher)				0		0	0	0	0	0	0	0
<b>Khost Total</b>		<b>6</b>	<b>0</b>	<b>375</b>	<b>838</b>	<b>2</b>	<b>133</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Kunar	Asad Abad (Provincial center)	1	140	396	841	270	356	42	252	4	0	0	61
Kunar	Bar Kunar (Asmar)	31	40	163	52	14	10	111	7	9	7	18	62
Kunar	Chapa Dara				535	147	23	0	0	0	12	42	0
Kunar	Dangam	4	49		44	22	9	90	0	9	0	43	30
Kunar	Dara-i-Pach	11	263	310	585	76	183	0	0	1	5	170	298
Kunar	Ghazi Abad							5	0	0	4	13	0
Kunar	Khas Kunar		70		298	41	18	8	1	0	0	0	57
Kunar	Masa warah			345	170	22	33	6	0	84	0	2	4
Kunar	Narang wa Badil	10	100	173	425	55	25	57	0	4	1	1	41
Kunar	Nari	1	-	60	0	19	0	80	15	1	0	0	21
Kunar	Noor Gal	9	70	353	460	58	88	7	0	4	20	20	101
Kunar	Sar Kani	8	100	141	385	50	75	11	6	1	0	0	14
Kunar	Shigal wa Sheltan							5	0	36	73	102	459
Kunar	Sawka	8	140	83	571	284	111	19	9	4	33	30	124
Kunar	Watapoor							3	0	6	0	137	7
<b>Kunar Total</b>		<b>74</b>	<b>832</b>	<b>1,942</b>	<b>3,795</b>	<b>775</b>	<b>820</b>	<b>446</b>	<b>290</b>	<b>164</b>	<b>155</b>	<b>578</b>	<b>1,279</b>
Kunduz	Ali Abad		3	5	41		0	0	0	0	0	0	0
Kunduz	Dashti-i-Archi				9		102	0	0	0	0	0	0
Kunduz	Chahar Darah	6	15	37			0	0	0	0	0	0	0
Kunduz	Hazrati Imam Sahib				28		0	0	0	0	0	0	0
Kunduz	Khanabad			11	70		0	0	0	0	0	0	0
Kunduz	Kunduz (Provincial Center)	3	9	32			0	0	0	0	0	0	0
Kunduz	Qala-i-Zal	5	8	7	275		0	0	0	0	0	0	0
<b>Kunduz Total</b>		<b>0</b>	<b>16</b>	<b>49</b>	<b>224</b>	<b>275</b>	<b>102</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Laghman	Alingar	3	146	354	593	107	259	23	13	1	48	343	303
Laghman	Alisheng	0	104	148	597	69	192	237	370	1	65	124	335
Laghman	Dowlat Shah	12	-	571	233	44	118	124	3	0	31	52	158
Laghman	Mahtaram (Provincial Center)		240	366	580	25	0	0	16	43	90	104	69
Laghman	Qarghayee	0	460	468	753	30	140	177	23	90	0	0	12
<b>Laghman Total</b>		<b>15</b>	<b>950</b>	<b>1,907</b>	<b>2,766</b>	<b>274</b>	<b>709</b>	<b>561</b>	<b>425</b>	<b>135</b>	<b>234</b>	<b>624</b>	<b>877</b>
Logar	Azra						0	0	0	0	0	0	0
Logar	Baraki Barak						0	0	0	0	0	0	0
Logar	Charikh						0	0	0	0	0	0	0
Logar	Kharwar						0	0	0	0	0	0	0
Logar	Khoshi						0	0	0	0	0	0	0
Logar	Muhammad Aghah						0	0	0	0	0	0	0
Logar	Pul-i-Alam						0	0	0	0	0	0	0
<b>Logar Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Nangarhar	Achin	1	940	2,131	1,907	198	1,274	1,797	0	14	10	254	580
Nangarhar	Bati Kot		2,390	1,994	4,683	166	550	1,774	0	0	0	0	0
Nangarhar	Behsud						0	0	0	0	0	0	0
Nangarhar	Chaparthar	2	990	1,169	1,818	20	209	878	0	0	0	12	19
Nangarhar	Darah-i-Noor		380	24	472	2	0	322	0	0	0	0	0
Nangarhar	Deh Bala	11	650	927	358	17	68	1,075	0	0	0	0	14
Nangarhar	Dur Baba		40	31	99	5	19	36	0	0	0	0	0
Nangarhar	Goshta	99	150	13	217	10	41	109	0	0	0	0	0
Nangarhar	Hesarak	2	620	1,016	1,392	64	283	295	0	18	5	178	89
Nangarhar	Jalalabad		90	4	1,658	77	0	0	0	0	0	0	0
Nangarhar	Kama		1,120	558	1,898	82	0	0	0	0	0	0	0
Nangarhar	Khuyvani	3	2,640	2,986	2,269	117	750	3,253	0	108	131	557	1,481
Nangarhar	Kot							0	0	0	0	0	0
Nangarhar	Kuzkunar		500	102	801	37	151	153	0	0	0	0	0
Nangarhar	Lalpoor	95	250	1	362	17	68	356	0	5	59	185	0
Nangarhar	Mohmand Dara		720	19	1,170	54	221	995	0	0	1	1	0
Nangarhar	Nazyan		150	98	168	8	160	266	0	1	0	0	0
Nangarhar	Pachir wagan	3	420	1,142	1,091	35	143	594	0	0	0	3	418
Nangarhar	Rodat		2,760	3,313	3,633	50	0	3,755	0	0	0	0	0
Nangarhar	Sherzad	2	1,470	1,641	1,229	57	430	864	0	148	513	1,510	550
Nangarhar	Shinwar		2,060	1,616	1,759	79	504	2,218	0	0	0	0	0
Nangarhar	Surkh Rud	0	1,440	118	1,229	0		0	0	0	0	0	0
<b>Nangarhar Total</b>		<b>218</b>	<b>19,780</b>	<b>18,904</b>	<b>28,213</b>	<b>1,093</b>	<b>4,871</b>	<b>18,739</b>	<b>0</b>	<b>294</b>	<b>719</b>	<b>2,700</b>	<b>3,151</b>
Nimroz	Asl-i-Chakhansur				0		0	0	1	0	183	855	98
Nimroz	Chahar Bugjak				65	526	1,119	87	4	84	144	181	696
Nimroz	Kang				0		40	0	0	0	10	31	36
Nimroz	Khash Rod			26	50	1164	661	6,421	6,197	326	1,621	1,323	2,536
Nimroz	Zaranj (Provincial Center)						135	0	0	17	81	102	442
<b>Nimroz Total</b>		<b>0</b>	<b>300</b>	<b>26</b>	<b>115</b>	<b>1,690</b>	<b>1,955</b>	<b>6,507</b>	<b>6,202</b>	<b>428</b>	<b>1,856</b>	<b>2,493</b>	<b>3,808</b>



## ANNEX II (continued...)

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Nuristan	Barg-i-Matal				2	535	522	0	0	0	0	0	0
Nuristan	Du Ab							0	0	0	0	0	0
Nuristan	Kamdesh			210	307	269	262	0	0	0	0	0	0
Nuristan	Mandol				0	731	713	0	0	0	0	0	0
Nuristan	Noor Gram							0	0	0	0	0	0
Nuristan	Nuristan Paroon (Provincial Center)			438	185	19	19	0	0	0	0	0	0
Nuristan	Wama				66		0	0	0	0	0	0	0
Nuristan	Waygal				205		0	0	0	0	0	0	0
<b>Nuristan Total</b>				<b>648</b>	<b>765</b>	<b>1,554</b>	<b>1,516</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Paktika	Barmal						0	0	0	0	0	0	0
Paktika	Dialah wa Khwoshmand						0	0	0	0	0	0	0
Paktika	Giyan						0	0	0	0	0	0	0
Paktika	Gomal						0	0	0	0	0	0	0
Paktika	Jani Khel						0	0	0	0	0	0	0
Paktika	Mata Khan						0	0	0	0	0	0	0
Paktika	Nika						0	0	0	0	0	0	0
Paktika	Omna						0	0	0	0	0	0	0
Paktika	Sar Rowza						0	0	0	0	0	0	0
Paktika	Sharan (Provincial Center)						0	0	0	0	0	0	0
Paktika	Surubi						0	0	0	0	0	0	0
Paktika	Turwo						0	0	0	0	0	0	0
Paktika	Urgun						0	0	0	0	0	0	0
Paktika	Wazahichwah						0	0	0	0	0	0	0
Paktika	Wor Mamay						0	0	0	0	0	0	0
Paktika	Yahya Khel						0	0	0	0	0	0	0
Paktika	Yosuf Khel						0	0	0	0	0	0	0
Paktika	Zarghun Shahr						0	0	0	0	0	0	0
Paktika	Ziruk						0	0	0	0	0	0	0
<b>Paktika Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Paktya	Azra *	1	38	419	603		0	0	0	0	0	0	0
Paktya	Ahmadabad *									0	0	0	0
Paktya	Samkani	0	-	76	275		0	0	0	0	0	0	0
Paktya	Dand Patan				175		0	0	0	0	0	0	0
Paktya	Gardez (Provincial Center)						0	0	0	0	0	0	0
Paktya	Woza Jadran						0	0	0	0	0	0	0
Paktya	Jaji	0	-	185	11		0	0	0	0	0	0	0
Paktya	Jani Khel				18		0	0	0	0	0	0	0
Paktya	Laja Ahmad Khel								0	0	0	0	0
Paktya	Lija Mangal	0	-		118		0	0	0	0	0	0	0
Paktya	Sayyid Karam	0	-	41	0		0	0	0	0	0	0	0
Paktya	Shamul *				0		0	0	0	0	0	0	0
Paktya	Shwak				0		0	0	0	0	0	0	0
Paktya	Zormat				0		0	0	0	0	0	0	0
<b>Paktya Total</b>		<b>1</b>	<b>38</b>	<b>721</b>	<b>1,200</b>	<b>0</b>	<b>0</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Panjshir	Bazarak (Provincial Center)							0	0	0	0	0	0
Panjshir	Darah							0	0	0	0	0	0
Panjshir	Hissa-i-Awal(Khinj)				0		0	0	0	0	0	0	0
Panjshir	Hissa-i-Duwumi				0		0	0	0	0	0	0	0
Panjshir	Panjshir				0		0	0	0	0	0	0	0
Panjshir	Paryan						0	0	0	0	0	0	0
Panjshir	Rukhah						0	0	0	0	0	0	0
Panjshir	Shutul						0	0	0	0	0	0	0
Panjshir	Unaba						0	0	0	0	0	0	0
<b>Panjshir Total</b>					<b>0</b>		<b>0</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Parwan	Bagram				274		0	0	0	0	0	0	0
Parwan	Charikar (Provincial Center)				181		0	0	0	0	0	0	0
Parwan	Syahgird (Ghorband)				141		0	0	0	0	0	0	0
Parwan	Jabalussaraj				21		0	0	0	0	0	0	0
Parwan	Koh-i-Safi				41		124	0	0	0	0	0	0
Parwan	Salang				0		0	0	0	0	0	0	0
Parwan	Sayyid Khel						0	0	0	0	0	0	0
Parwan	Shaykh Ali				263		0	0	0	0	0	0	0
Parwan	Shinwari				389		0	0	0	0	0	0	0
Parwan	Surkh-i-Parsa				0		0	0	0	0	0	0	0
<b>Parwan Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>1,310</b>	<b>0</b>	<b>124</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Samangan	Aybak (Provincial Center)				14	27	0	0	0	0	0	0	0
Samangan	Darah-i-Soof-i-Bala	614		34	196	1,454	1,182		0	0	0	0	0
Samangan	Darah-i-Suf-i-Payin							0	0	0	0	0	0
Samangan	Fayroz Nakhcheer								0	0	0	0	0
Samangan	Hazrat-i-Sultan			29	85	280	90	0	0	0	0	0	0
Samangan	Khuram wa Sar Bagh	0		24	238	307	99	0	0	0	0	0	0
Samangan	Roi-Do-Ab				605	1,833	589	0	0	0	0	0	0
<b>Samangan Total</b>		<b>614</b>	<b>100</b>	<b>101</b>	<b>1,151</b>	<b>3,874</b>	<b>1,960</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Sari Pul	Balkhab			453	204	95	188	0	0	0	0	0	0
Sari Pul	Gosfandi							0	0	0	0	0	0
Sari Pul	Kohistanat				471	1,424	377	0	0	0	0	0	0
Sari Pul	Sangcharak				687	441	1,122	16	0	0	0	0	0
Sari Pul	Sari Pul (Provincial Center)			593	476	959	413	203	0	0	0	0	0
Sari Pul	Sayyad				23	52	25	41	0	0	0	0	0
Sari Pul	Sozma Qala	0	57	380	113	256	124	0	0	0	0	0	0
<b>Sari Pul Total</b>		<b>0</b>	<b>57</b>	<b>1,428</b>	<b>1,974</b>	<b>3,227</b>	<b>2,261</b>	<b>260</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>

## ANNEX II (continued...)

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Takhar	Baharak							0	0	0	0	0	0
Takhar	Bangi	0		20	13		0	79	0	0	0	0	0
Takhar	Chahab	19		4	27		70	0	0	0	0	0	0
Takhar	Chal	20			30		13	9	0	0	0	0	0
Takhar	Darqad				15		0	0	0	0	0	0	0
Takhar	Dashti Qala							0	0	0	0	0	0
Takhar	Farkhar	26		43	27	43	118	32	0	0	0	0	0
Takhar	Hazar Sumuch							32	0	0	0	0	0
Takhar	Eshkamish	19		77	40		2	47	0	0	0	0	0
Takhar	Kalafgan	27		77	69		609	318	0	0	0	0	0
Takhar	Khwaja Bahawuddin							0	0	0	0	0	0
Takhar	Khwaja Ghar	32		26	35		109	0	0	0	0	0	0
Takhar	Namak Ab							0	0	0	0	0	0
Takhar	Rustaq	24		34	194	1,321	816	118	0	0	0	0	0
Takhar	Taloqan (Provincial Center)	16		14	115		77	577	0	0	0	0	0
Takhar	Warsaj	10		14	66		46	0	0	0	0	0	0
Takhar	Yangi Qala	20		71	131		317	0	0	0	0	0	0
<b>Takhar Total</b>		<b>211</b>	<b>788</b>	<b>380</b>	<b>762</b>	<b>1,364</b>	<b>2,179</b>	<b>1,211</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Uruzgan	Chorah	0	1,330	975	1,402	259	2,024	71	316	306	221	301	349
Uruzgan	Dihrawud	0	1,340	1,282	2,523	209	1,704	3,538	2,849	2,038	145	3,438	4,375
Uruzgan	Khas Uruzgan	0	-	580	358	338	886	173	304	407	230	384	38
Uruzgan	Nesh *	0	490	59	426	352	614			0	0	0	0
Uruzgan	Shahidi Hasas	0	1,190	1,333	782	646	1,127	3,109	4,403	2,445	3,635	3,601	3,617
Uruzgan	Tirin Kot (Provincial Center)	0	750	469	1,874	221	3,348	2,312	2,067	4,028	3,106	2,895	2,129
<b>Uruzgan Total</b>		<b>0</b>	<b>5,100</b>	<b>4,698</b>	<b>7,365</b>	<b>2,025</b>	<b>9,703</b>	<b>9,203</b>	<b>9,939</b>	<b>9,224</b>	<b>7,337</b>	<b>10,620</b>	<b>10,508</b>
Wardak	Chak-i-Wardak			211	284		0	0	0	0	0	0	0
Wardak	Daimirdad			0	90	106	0	0	0	0	0	0	0
Wardak	Hisah-i-Awal Behsud			22	0		0	0	0	0	0	0	0
Wardak	Jaghathu									0	0	0	0
Wardak	Jalrez			531	78		0	0	0	0	0	0	0
Wardak	Markaz-i-Behsud			472	0		0	0	0	0	0	0	0
Wardak	Maidan Shahr (Provincial Center)			527	102		0	0	0	0	0	0	0
Wardak	Nerikh			780	215		0	0	0	0	0	0	0
Wardak	Savvyidabad			192	248		0	0	0	0	0	0	0
<b>Wardak Total</b>				<b>2,735</b>	<b>1,017</b>	<b>106</b>	<b>0</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>	<b>p-f</b>
Zabul	Arghandab	0		302	526	205	346	79	55	103	91	47	79
Zabul	Atghar			188	32	86	36	16	3	2	16	1	5
Zabul	Daychopan	0		646	431	1,016	742	389	422	147	122	26	25
Zabul	Kakar Kak-e Afghan							104	110	219	44	40	38
Zabul	Mizan	0		309	251	56	123	129	289	309	140	74	155
Zabul	Naw Bahar							63	44	33	4	2	12
Zabul	Qalat (Provincial Center)	0		689	317	188	657	78	310	19	20	56	10
Zabul	Shah Joi	0		178	679	240	538	320	237	175	20	11	69
Zabul	Shemel Zayi			65	44	16	35	159	153	46	15	1	5
Zabul	Shinkai			164	287	102	228	139	105	87	0	0	0
Zabul	Tarnak wa Jaldak	1			410	145	506	136	608	5	10	5	26
<b>Zabul Total</b>		<b>1</b>	<b>200</b>	<b>2,541</b>	<b>2,977</b>	<b>2,053</b>	<b>3,211</b>	<b>1,611</b>	<b>2,335</b>	<b>1,144</b>	<b>482</b>	<b>262</b>	<b>424</b>
<b>TOTAL</b>		<b>7,598</b>	<b>73,905</b>	<b>80,399</b>	<b>126,328</b>	<b>103,635</b>	<b>164,858</b>	<b>192,981</b>	<b>157,252</b>	<b>123,095</b>	<b>122,332</b>	<b>131,065</b>	<b>154,436</b>
<b>Rounded Total</b>		<b>8,000</b>	<b>74,000</b>	<b>80,000</b>	<b>131,000</b>	<b>104,000</b>	<b>165,000</b>	<b>193,000</b>	<b>157,000</b>	<b>123,000</b>	<b>122,000</b>	<b>131,000</b>	<b>154,000</b>

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

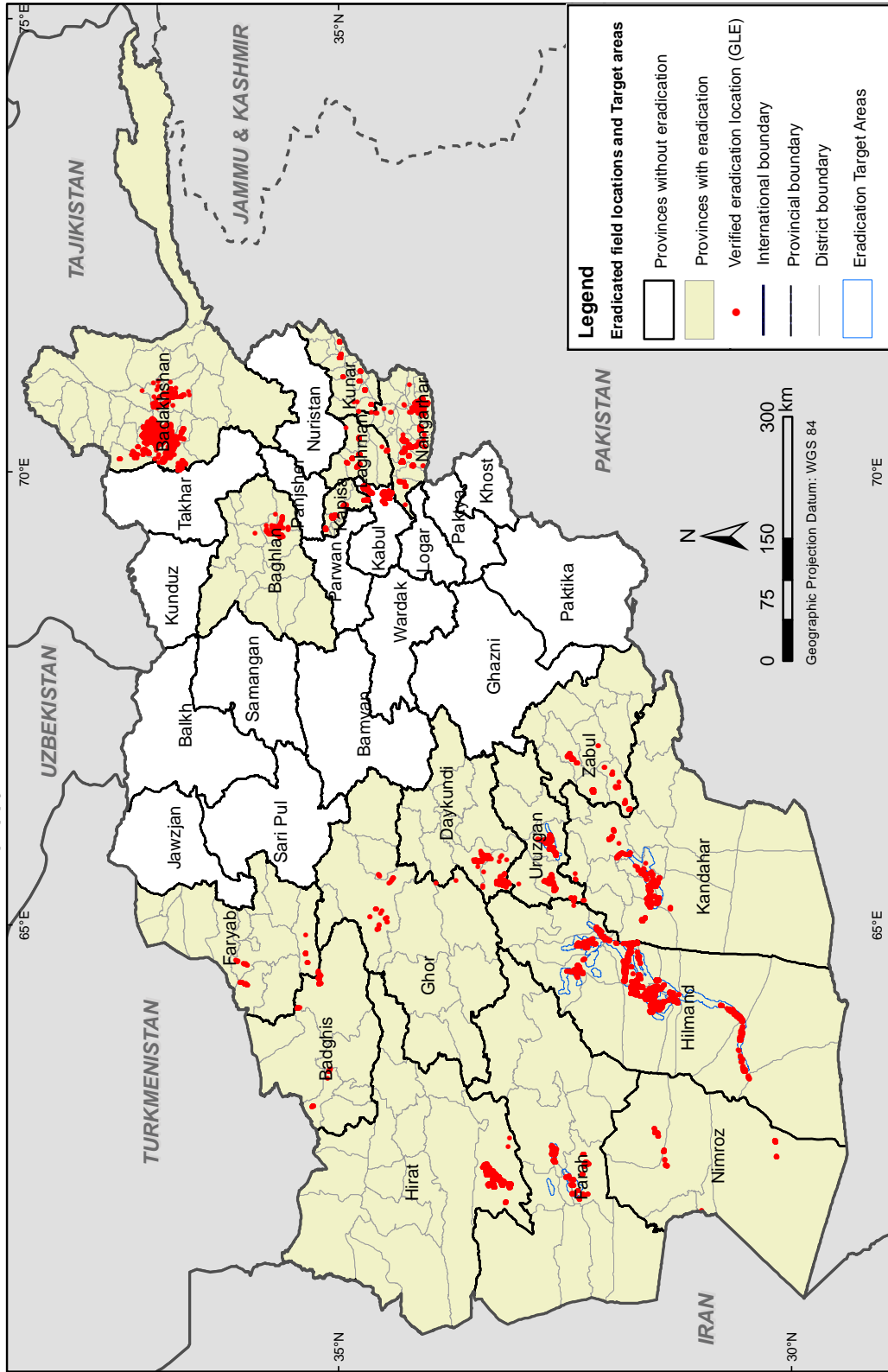
## ANNEX III: ERADICATION FIGURES, BY DISTRICT (2012)

PROVINCE	DISTRICT	Eradication verified (hectares)	No. of fields eradication reported	No. of villages eradication reported
Badakhshan	Argo	792	2,261	85
	Bahark	1	4	1
	Darayim	291	729	38
	Jurm	51	249	17
	Khash	131	497	16
	Kishim	138	670	24
	Shahri Buzurg	21	52	4
	Tashkan	360	409	23
<b>Badakhshan Total</b>		<b>1,784</b>	<b>4,871</b>	<b>208</b>
Badghis	Muqur	53	40	5
<b>Badghis Total</b>		<b>53</b>	<b>40</b>	<b>5</b>
Baghlan	Andarab (Bano)	10	29	5
	Deh Salah	126	241	30
	Pul-i-Hisar	116	165	22
<b>Baghlan Total</b>		<b>252</b>	<b>435</b>	<b>57</b>
Day Kundi	Kejran	150	523	10
	Kiti	86	284	3
<b>Day Kundi Total</b>		<b>236</b>	<b>807</b>	<b>13</b>
Farah	Bala Buluk	200	452	17
	Farah (Provincial Center )	116	248	11
<b>Farah Total</b>		<b>316</b>	<b>700</b>	<b>28</b>
Faryab	Kohistan	44	160	9
	Pashtun Kot	6	61	8
	Qaisar	0.5	5	2
<b>Faryab Total</b>		<b>50</b>	<b>226</b>	<b>19</b>
Ghor	Chighcheran (Provincial Center)	11	47	8
<b>Ghor Total</b>		<b>11</b>	<b>47</b>	<b>8</b>
Hilmand	Garm Ser	194	265	27
	Lashkargah (Provincial Center)	1,182	2,095	40
	Musa Qala	117	285	18
	Nad Ali (Marja)	926	2,141	71
	Naher-i- Saraj	311	448	37
	Nawa-i- Barukzai	321	766	29
	Nawzad	189	188	20
	Regi-i-Khan Nishin	280	186	26
	Sangin Qala	117	220	21
<b>Hilmand Total</b>		<b>3,637</b>	<b>6,594</b>	<b>289</b>
Hirat	Shindand	600	2,484	69
<b>Hirat Total</b>		<b>600</b>	<b>2,484</b>	<b>69</b>
Kabul	Surubi	103	937	35
<b>Kabul Total</b>		<b>103</b>	<b>937</b>	<b>35</b>
Kandahar	Arghandab	80	73	8
	Kandahar (Provincial Center)	3	8	2
	Maiwand	492	338	21
	Panjwayee	68	235	17
	Shah Wali Kot	88	166	19
	Zhire	278	544	39
<b>Kandahar Total</b>		<b>922</b>	<b>1,364</b>	<b>106</b>

## ANNEX III (continued...)

PROVINCE	DISTRICT	Eradication verified (hectares)	No. of fields eradication reported	No. of villages eradication reported
Kapisa	Hissa-i-Awal Kohistan	0.86	13	1
	Koh Band	16	319	3
	Nijrab	6	73	3
	Tagab	32	326	4
<b>Kapisa Total</b>		<b>54</b>	<b>731</b>	<b>11</b>
Kunar	Chawkay	16	62	6
	Dangam	9	36	2
	Narang	5	20	3
	Noor Gal	12	77	7
	Pech (Manogay)	3	12	2
	Sar Kani	5	16	2
	Shigal Wa Sheltan	21	90	4
<b>Kunar Total</b>		<b>70</b>	<b>313</b>	<b>26</b>
Laghman	Alingar	40	196	2
	Alishing	17	140	4
	Mehterlam (Provincial Center)	19	124	1
<b>Laghman Total</b>		<b>76</b>	<b>460</b>	<b>7</b>
Nangarhar	Achin (Speen Ghar)	362	1,954	32
	Chaparhar	175	536	3
	Deh Bala	38	211	3
	Hesarak	28	139	5
	Khugyani	76	533	12
	Nazyan	11	40	2
	Pachir Wagam	94	343	8
<b>Nangarhar Total</b>		<b>784</b>	<b>3,756</b>	<b>65</b>
Nimroz	Chakhansur	11	38	2
	Char Burjak	73	46	2
	Khashrod	64	152	4
	Zaranj (Provincial Center)	0.20	2	1
<b>Nimroz Total</b>		<b>148</b>	<b>238</b>	<b>9</b>
Uruzgan	Dihrawud	119	443	25
	Tirinkot (Provincial Center)	366	816	17
<b>Uruzgan Total</b>		<b>485</b>	<b>1,259</b>	<b>42</b>
Zabul	Arghandab	47	95	10
	Mizan	15	40	5
	Qalat (Provincial Center)	4	8	5
	Tarnak Wa Jaldak	22	81	10
<b>Zabul Total</b>		<b>88</b>	<b>224</b>	<b>30</b>
<b>Grand Total</b>		<b>9,672</b>	<b>25,486</b>	<b>1,027</b>

Annex 3: Locations of Governor-led eradication of poppy fields, 2012



Source: MCN - UNODC Afghanistan Eradication Survey, 2012  
 Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.



## ANNEX IV: ERADICATION SCENES, BY REGION

### Eastern region (Kapisa, Kunar, Laghman, Nangarhar)

 <p>18/04/12 8:37:19 AM (+4.5 hrs) Dir=ESE Lat=34.1338 Lon=70.73047 Alt=2939ft MSL WGS-84</p>	 <p>31/03/12 8:42:31 AM (+4.5 hrs) Dir=ENE Lat=34.76666 Lon=70.37229 Alt=3211ft MSL WGS-84</p>
<p>Governor-led eradication in Achin district, Nangarhar province</p>	<p>Governor-led eradication in Alingar district, Laghman province</p>
 <p>07/04/2012 10:18:07 O (+7.0 hrs) Dir=NNE Lat=34.63332 Lon=70.74326 Alt=2627ft MSL WGS-84</p>	 <p>07/05/12 1:46:17 PM (+4.5 hrs) Dir=N Lat=34.70226 Lon=69.67976 Alt=3807ft MSL WGS-84</p>
<p>Governor-led eradication in Narang district, Kunar province</p>	<p>Governor-led eradication in Tagab district, Kapisa province</p>

### Southern region (Day Kundi, Hilmand, Kandahar, Uruzgan, Zabul)

 <p>Province: Hilmand District: Lashkargah Village: <i>[Handwritten]</i> Eradication Date: 13/04/12 Field No: 12 Photo No: 12 Percentage: 100%</p> <p>13/03/12 1:13:03 PM (+4.5 hrs) Dir=NNW Lat=31.50842 Lon=64.24394 Alt=2547ft MSL WGS-84</p>	 <p>Province: Hilmand District: Musa Qala Village: <i>[Handwritten]</i> Eradication Date: 18/04/12 Field No: 3 Photo No: 3</p> <p>17/04/12 11:20:56 AM (+4.5 hrs) Dir=SSW Lat=32.1846 Lon=64.8404 Alt=3140ft MSL WGS-84</p>
<p>Governor-led eradication in Lashkargah (Provincial Centre) district, Hilmand province</p>	<p>Governor-led eradication in Musa Qala district, Hilmand province</p>





Governor-led eradication in Nad Ali district, Helmand province



Governor-led eradication in Arghandab district, Kandahar province



Governor-led eradication in Panjwayee district, Kandahar province



Governor-led eradication in Zhire district, Kandahar province



Governor-led eradication in Tirinkot (Provincial Centre) district, Uruzgan province



Governor-led eradication in Mizan district, Zabul province



**Western region (Badghis, Farah, Ghor, Hirat, Nimroz)**



Governor-led eradication in Farah (Provincial Centre) district, Farah province



Governor-led eradication in Shindand district, Hirat province



Governor-led eradication in Muqur district, Badghis province



Governor-led eradication in Khashrod district, Nimroz province

**Northern region (Baghlan, Faryab)**



Governor-led eradication in Kohistanat district, Faryab province



Governor-led eradication in Pul-i-Hisar district, Baghlan province



**North-eastern region (Badakhshan)**



Governor-led eradication in Argo district, Badakhshan province



Governor-led eradication in Darayim district, Badakhshan province



Governor-led eradication in Khash district, Badakhshan province



Growth stage of wheat in Jurm district, Badakhshan province

**Central region (Kabul)**



Governor-led eradication in Surubi district, Kabul province



Governor-led eradication in Surubi district, Kabul province



## ANNEX V: SELECTED EXAMPLES OF ERADICATION OVER- AND UNDER-REPORTING

	<p>Over-reporting in Musa Qala district, Hilmand province. Date of eradication: 2 April 2012 Verifier reported: 1.84 hectares Checked with satellite: 0.43 hectares <i>Figures in white: reported by verifiers</i> <i>Figures in yellow: calculated from satellite imagery</i></p> 
	<p>Over-reporting in Naher-i-Saraj district of Hilmand province. Date of eradication: 1 April 2012 Verifier reported: 10.73 hectares Checked with satellite: 3.39 hectares <i>Figures in white: reported by verifiers</i> <i>Figures in yellow: calculated from satellite imagery</i></p>





Under-reporting in Naher-i-Saraj district of Hilmand province.

Date of eradication: 26 March 2012

Verifier reported: 2.4 hectares

Checked with satellite: 4.04 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



Eradicated fields not reported by verifiers in Lashkargah district of Hilmand province.

Date of eradication: 26 March 2012

Verifier reported: 1.65 hectares

Checked with satellite: 2.45 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



Good matching between verifier's report and check with satellite imagery in Lashkargah district of Hilmand province

Date of eradication: 22 March 2012

Verifier reported: 0.76 hectares

Checked with satellite: 0.78 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*





Over-reporting in Bala Buluk district of Farah province.

Date of eradication: 18 April 2012

Verifier reported: 5.62 hectares

Checked with satellite: 2.02 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*

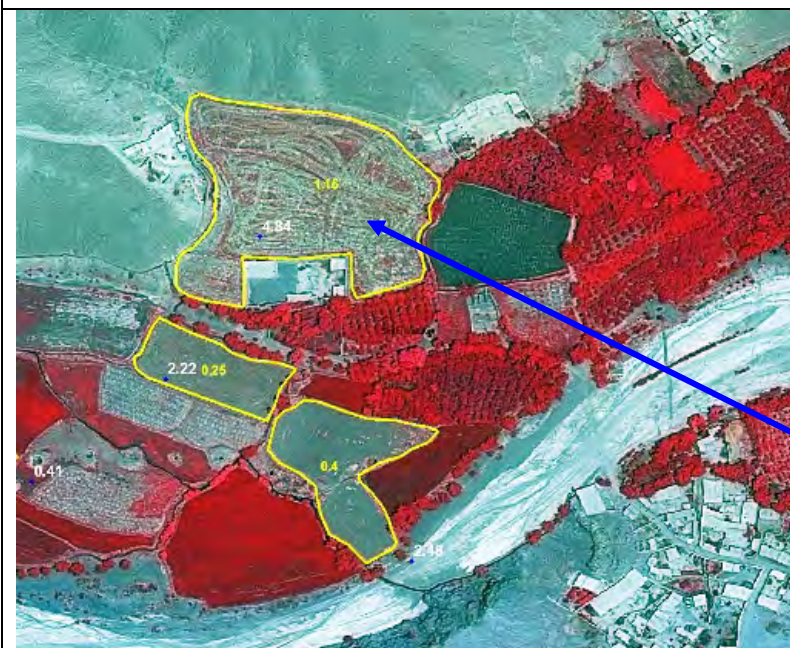


Over-reporting in Bala Buluk district of Farah province.

Date of eradication: 18 April 2012

Verifier reported: 3.46 hectares

Checked with satellite: 1.15 hectares



Over-reporting in Shah Wali Kot district of Kandahar province.

Date of eradication: 22 April 2012

Verifier reported: 9.54 hectares

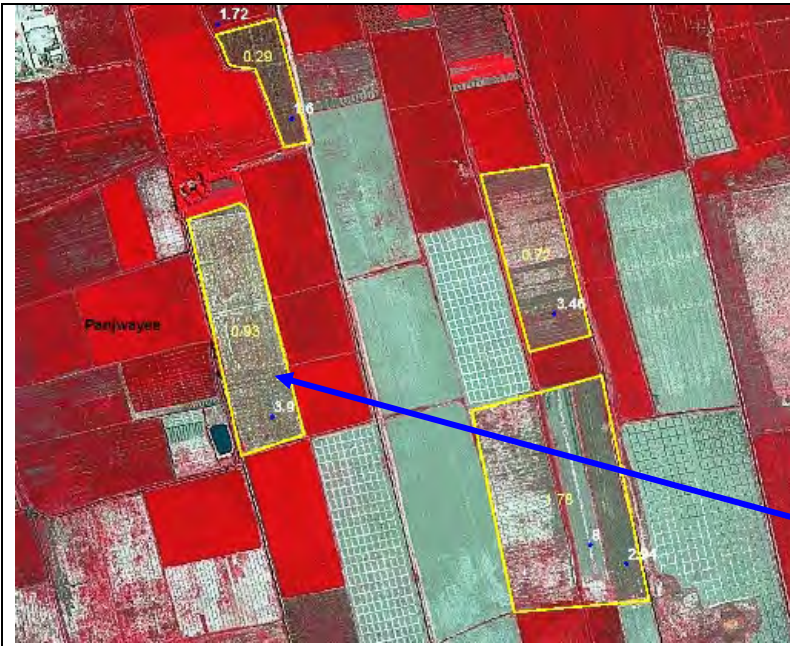
Checked with satellite: 1.8 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*







Over-reporting in Panjwayee district of Kandahar province.

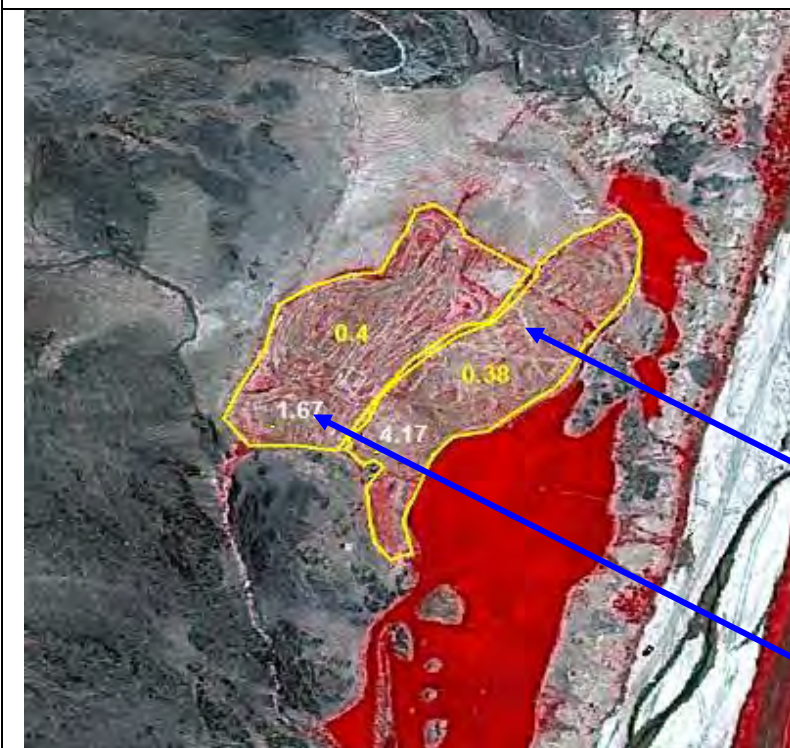
Date of eradication: 26 March 2012

Verifier reported: 19.9 hectares

Checked with satellite: 3.72 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



Over-reporting in Shah Wali Kot district of Kandahar province.

Date of eradication: 25 April 2012

Verifier reported: 5.8 hectares

Checked with satellite: 0.78 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*







Over-reporting in Panjwayee district of Kandahar province.

Date of eradication: 30 April 2012

Verifier reported: 50.16 hectares

Checked with satellite: 4.25 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



Over reporting in Khogyani district of Nangarhar province.

Date of eradication: 1 April 2012

Verifier reported: 4.06 hectares

Checked with satellite: 1.09 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



Over-reporting in Pachir Wa Agam district of Nangarhar province.

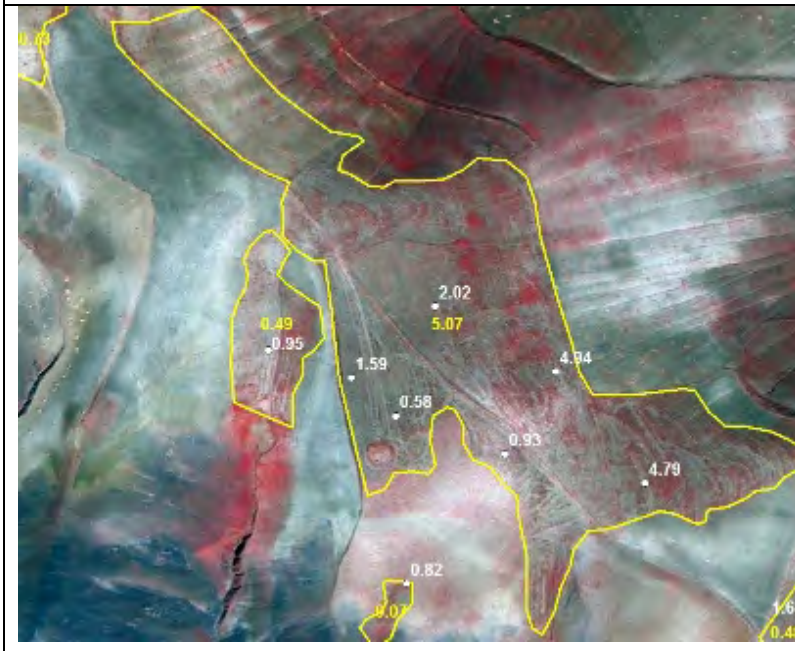
Date of eradication: 27 March 2012

Verifier reported: 6.72 hectares

Checked with satellite: 2.1 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



Over-reporting in Argo district of Badakhshan province.

Date of eradication: 2 June 2012

Verifier reported: 16.42 hectares

Checked with satellite: 5.63 hectares

*Figures in white: reported by verifiers*

*Figures in yellow: calculated from satellite imagery*



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