



UNODC

United Nations Office on Drugs and Crime



**Islamic Republic of Afghanistan
Ministry of Counter Narcotics**



Afghanistan Opium Survey 2011

DECEMBER 2011

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

Each year, Afghan opium claims tens of thousands of lives worldwide, spreading pain and misery to thousands more.

As a result of Afghanistan's opium production, the country suffers one of the highest rates of opiate consumption in the world with a current prevalence rate of 2.65 per cent and an opiates domestic market worth about 1% of this year's GDP. The country also faces an HIV epidemic concentrated among the country's injecting drug users.

Faced by these rising social problems, the government of Afghanistan has a clear incentive to do everything possible to halt the production of opiates for the good of its own people. The international community must also play a role by doing more to assist in the fight against illicit drugs.

According to the *Survey*, a joint project between the Ministry of Counter Narcotics (MCN) and UNODC, cultivation in 2011 has reached 131,000 hectares compared to 123,000 hectares of the previous two years. The amount of opium produced has risen from 3,600 metric tons in 2010 to 5,800 metric tons in 2011.

Based on the 7 per cent upturn in cultivation indicated in the *Survey*, production levels may be heading in the direction of previous highs seen before 2010. The 2010 Survey pointed to a drastic decline over previous high production levels due to the opium plant disease that laid waste to poppy production.

To combat drug production and trafficking in Afghanistan, we must acknowledge that the issue of illicit drugs is not only an Afghan problem, it is our shared problem, requiring the collective action of the international community.

Moreover, while drug crimes are often local in nature, our solutions must be global. We must also appreciate the causal connections between drug trafficking and insecurity. The production and trafficking of narcotics undermines security; promoting corruption, criminality, and terrorism.

In recognition of these basic points, we have cooperated closely with partners, particularly Member States, to create a series of interlocking initiatives linking the local to the regional and global, as a means of combating drug production and trafficking from Afghanistan.

The Paris Pact Initiative creates an international forum for the discussion on drug trafficking and cross-border cooperation. The overall strategy also includes other successful forms of cooperation such as the Triangular Initiative between Afghanistan, Pakistan and Iran; the control of precursor chemicals under the Operation Tarcet flag; and the creation of the information sharing and coordination body CARICC embracing the five Central Asian countries, Russia and Azerbaijan.

To reinforce regional cooperation, UNODC is facilitating a Regional Programme for Afghanistan and Neighbouring countries. This initiative is not only a matter of international security, in which we all have a shared stake, but equally one of sustainable development.

We are also working with other partners to ensure that combating transnational organised crime and drug trafficking is mainstreamed throughout the United Nations system.

With high prices and increased production, opium is a profitable business in Afghanistan in 2011. The farm-gate value of opium production alone is US\$1.4 billion or 9 per cent of the country's GDP; the total net value of the opiate economy amounts to US\$2.4 billion or around 15 per cent of GDP, an amount that cannot be easily substituted by other economic activities. Opium is therefore a significant part of the Afghan economy and provides considerable funding to the insurgency and fuels corruption.

The *Afghan Opium Survey 2011* sends a strong message that we cannot afford to be lethargic in the face of this problem. We thank the Government of Afghanistan for the leadership and dedication already shown, but a stronger commitment from a broad range of national and international partners is needed to turn this worrying trend around.

With the transition of responsibilities towards 2014 in mind, our message is clear. Counter narcotics is not the exclusive domain of specialised units alone, but the shared responsibility of everybody concerned with security, stability, governance and development in Afghanistan and the wider region.



Yury Fedotov
Executive Director, UNODC



Zarar Ahmad Moqbil Osmani
Minister of Counter Narcotics

Fact Sheet Afghanistan Opium Survey 2011¹

	2010	Change on 2010	2011
Net opium poppy cultivation (after eradication) in % of global cultivation*	123,000 ha (104,000-145,000) 63%	+7%	131,000 ha (109,000-155,000) 63%
Number of poppy-free provinces ²	20	-3	17
Number of provinces affected by poppy cultivation	14	+3	17
Eradication	2,316 ha	+65%	3,810 ha
Weighted average opium yield **	29.2 kg/ha	+52%	44.5 kg/ha
Potential production of opium ³ ** in % of global production*	3,600 mt (3,000-4,200) 74%	+61%	5,800 mt (4,800-6,800) 82%
Average farm-gate price (weighted by production) of fresh opium at harvest time	US\$ 128/kg	+41%	US\$ 180/kg
Average farm-gate price (weighted by production) of dry opium at harvest time	US\$ 169/kg	+43%	US\$ 241/kg
Current GDP ⁴	US\$ 12.7 billion		US\$ 16.3 billion
Total farm-gate value of opium production in % of GDP	US\$ 0.6 billion 5%	+133%	US\$ 1.4 billion 9%
Potential gross export value of opiates in % of GDP	US\$ 1.4 billion (0.9-2.1 billion) 11%	+79%	US\$ 2.6 billion (2.1-3.4 billion) 16%
Potential net export value of opiates in % of GDP	US\$ 1.2 billion (0.6-2.0 billion) 9%		US\$ 2.4 billion (2.1-2.9 billion) 15%
Farmers' gross income from opium per ha ⁵	US\$ 4,900	+118%	US\$ 10,700
Farmers' net income from opium per ha	US\$ 2,900	+121%	US\$ 6,400
Ratio of farmers' gross (net) income from wheat to opium	1:6 (1:4)		1:11 (1:8)

* Based on provisional estimates for some countries and regions.

** Refers to oven-dry opium.

¹ Numbers in brackets indicate the upper and lower bounds of the estimation range.

² Poppy-free provinces are those which are estimated to have less than 100 ha of opium cultivation.

³ The 2010 opium production estimate takes into account the impact of disease on opium yield by combining different approaches. This introduces an additional uncertainty which, however, could not be expressed in statistical terms.

⁴ Nominal GDP of the respective year. Source: Government of Afghanistan, Central Statistical Office.

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

EXECUTIVE SUMMARY

The Afghanistan Opium Survey is implemented annually by the United Nations Office on Drugs and Crime (UNODC) and, since 2003, in collaboration with the Afghan Government. The survey team collects and analyses information on the location and extent of opium cultivation, potential opium production and the socio-economic situation in rural areas. As well, since 2005, UNODC has been involved in the verification of opium eradication conducted by the Government. The results provide a detailed picture of the outcome of the current year's opium season and, together with data from previous years, portray 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 2011 survey received financial contributions from the Governments of Germany, Norway, the United Kingdom, and the United States of America.

In 2011, several troubling trends emerged. The foremost was the dramatic increase in the value of the opium economy. In 2010, major opium-cultivation areas were affected by plant diseases which led to a large yield reduction (29.2 kg/ha). In 2011, opium yields were back to "normal" levels of 44.5 kg/ha. When compared to 2010, opium production increased by 61% from 3,600 mt in 2010 to 5,800 mt in 2011. However, as with other scarce commodities, the greatly reduced supply of fresh opium from the 2010 harvest time triggered a spectacular rise in opium prices. Between 2009 and 2010, dry opium prices at harvest time increased to US\$ 169/kg from US\$ 64 in 2009, a jump of 164%. This increase continued until the first quarter of 2011 when prices began to level off. Between 2010 and 2011, dry opium prices at harvest time increased to US\$ 241 from US\$ 169/kg, a jump of 43%.

Not surprisingly, this significant increase in 2011 opium prices and production resulted in a 133% increase in the farm-gate value of opium production compared to 2010. The farm-gate value of opium amounted to US\$ 1.4 billion, about 9% of the GDP estimate for 2011. While the farm-gate value was expected to be higher than 2010 when opium production was affected by plant diseases, the 2011 farm-gate value far exceeded levels reached in other years with similar or higher opium production due to higher opium prices. Similarly, in 2011, the gross per-hectare income from opium cultivation (US\$ 10,700) reached levels not observed since 2003.

When considering potential income from the opium production for the Afghan economy, numbers are striking, as well. The potential export value of opiates amounts to US\$ 2.4 billion or 15% of GDP; the domestic market worth about 1% of this year's GDP. These amounts cannot be easily substituted by other economic activities. Opium is therefore a significant part of the Afghan economy and provides considerable funding to the insurgency and fuels corruption.

This situation presents a worrying possibility, given that farmers surveyed in 2011 cited the high sale price as the most important reason (59%) for cultivating opium poppy in 2011. The high level of opium prices in 2011 continues to provide a strong incentive to plant opium in the upcoming poppy season. In 2011, the ratio between gross income from opium and wheat, the main crop cultivated in the same agricultural season as opium, was 11:1, the most unfavourable ratio for wheat since 2003.

This high opium price, however, may not last long. A similar phenomenon was observed in 2004 when opium production fell due to disease and prices rose. The price hike then was relatively short-lived, lasting less than a year.

Another disquieting development in 2011 was the 7% increase since 2010 in the total area devoted to opium cultivation in Afghanistan. In statistical terms, this change was not significant and may rather indicate a stable situation. However, it is worrying to note that opium cultivation in Afghanistan has not seen any major decline since 2009. Afghanistan continues to account for just under two-thirds of global opium cultivation.

The increase in 2011 in the number of provinces growing opium is also unsettling. In 2011, 17 provinces grew poppy compared to 14 in 2010. Furthermore, the number of provinces that remained poppy-free (17) decreased by 3 compared to 2010 (20). Kapisa in the Eastern region, Baghlan and Faryab provinces in the Northern region lost their poppy-free status in 2011.

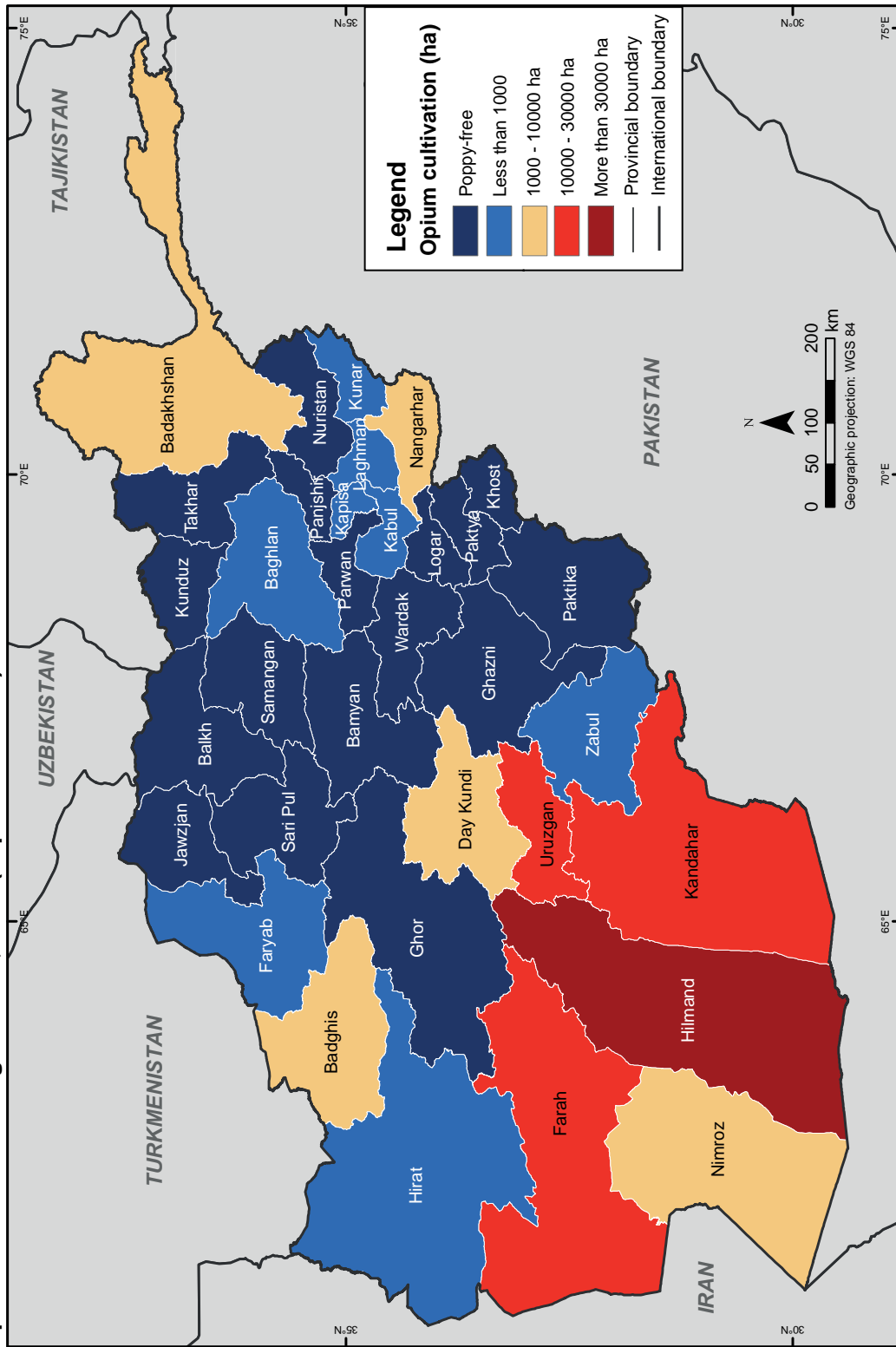
Ninety-five per cent of the Afghanistan cultivation took place in nine provinces in the Southern and Western regions - the most insecure provinces in the country. Most of the districts in these regions were inaccessible to the United Nations and NGOs. This strong link between insecurity and opium cultivation confirms that the less secure areas are the most likely to grow opium. Thus, Hilmand, one of the most dangerous provinces in the country remains the single largest opium-cultivating province, growing almost half of all opium in Afghanistan (48%).

Opium cultivation in Hilmand province decreased by 3% in 2011. While at the province level, this indicates a stable situation in statistical terms, diverging trends were observed within the province. The central part of Hilmand (Marja, Lashkargah (Provincial Center), Nawa-i-Barukzayi and Garm Ser districts) witnessed a massive reduction in opium cultivation, mainly due to the implementation of comprehensive counter-narcotics strategies by the Ministry of Counter Narcotics and the Governor of Hilmand province. The district of Marja south of Nad Ali district, which witnessed very strong cultivation in the past, had negligible cultivation this year. Similarly, North of Garm Ser district markedly reduced its opium cultivation this year. However, the strong reduction in the opium cultivation in central Hilmand did not compensate for the increase in cultivation in northern and southern areas of Hilmand province.

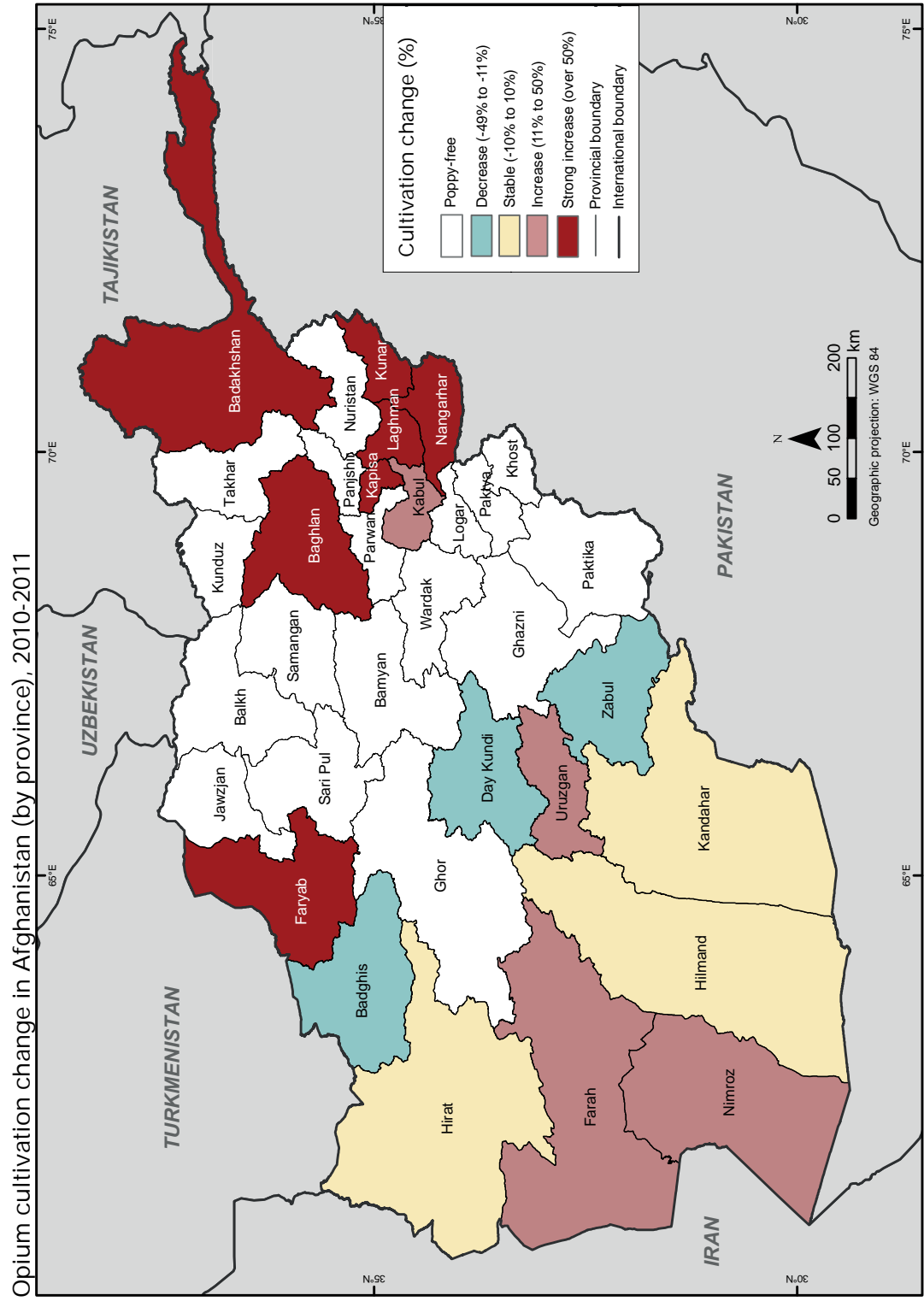
Strong increases in opium cultivation were observed in some regions. In the Central region, North-eastern and Western region, cultivation increased by 45%, 55% and 12% respectively. In the Eastern region there was a dramatic increase of 276% (719 hectares in 2010 to 2,700 hectares in 2011) in Nangarhar province where, due to tough resistance from anti-government elements (AGE), proper eradication did not take place and cultivation increased. There was also an increase of poppy cultivation in the Northern region where two provinces namely Baghlan and Faryab lost their poppy-free status in 2011. In the Southern region, opium poppy cultivation remained at about the 2010 level (+2%).

One positive change in 2011 concerns opium eradication. The hostile security situation continued for eradication campaigns as most opium cultivation was confined to the Southern and Western provinces which are affected by insurgency and organized crime groups. However, the total hectares of opium fields eradicated increased in 2011 by 65%, from 2,316 hectares in 2010 to 3,810 hectares in 2011. But, as eradication increased in 2011, so too did the number of security incidents during the Governor-led eradication (GLE) in 2011, GLE teams were attacked 48 times compared to 12 times in 2010. Fortunately, however, there were fewer deaths in 2011. Twenty eradication-campaign-related fatalities were reported in 2011 (mostly of policemen) compared to 28 such fatalities in 2010.

Opium cultivation in Afghanistan, 2011 (at province level)

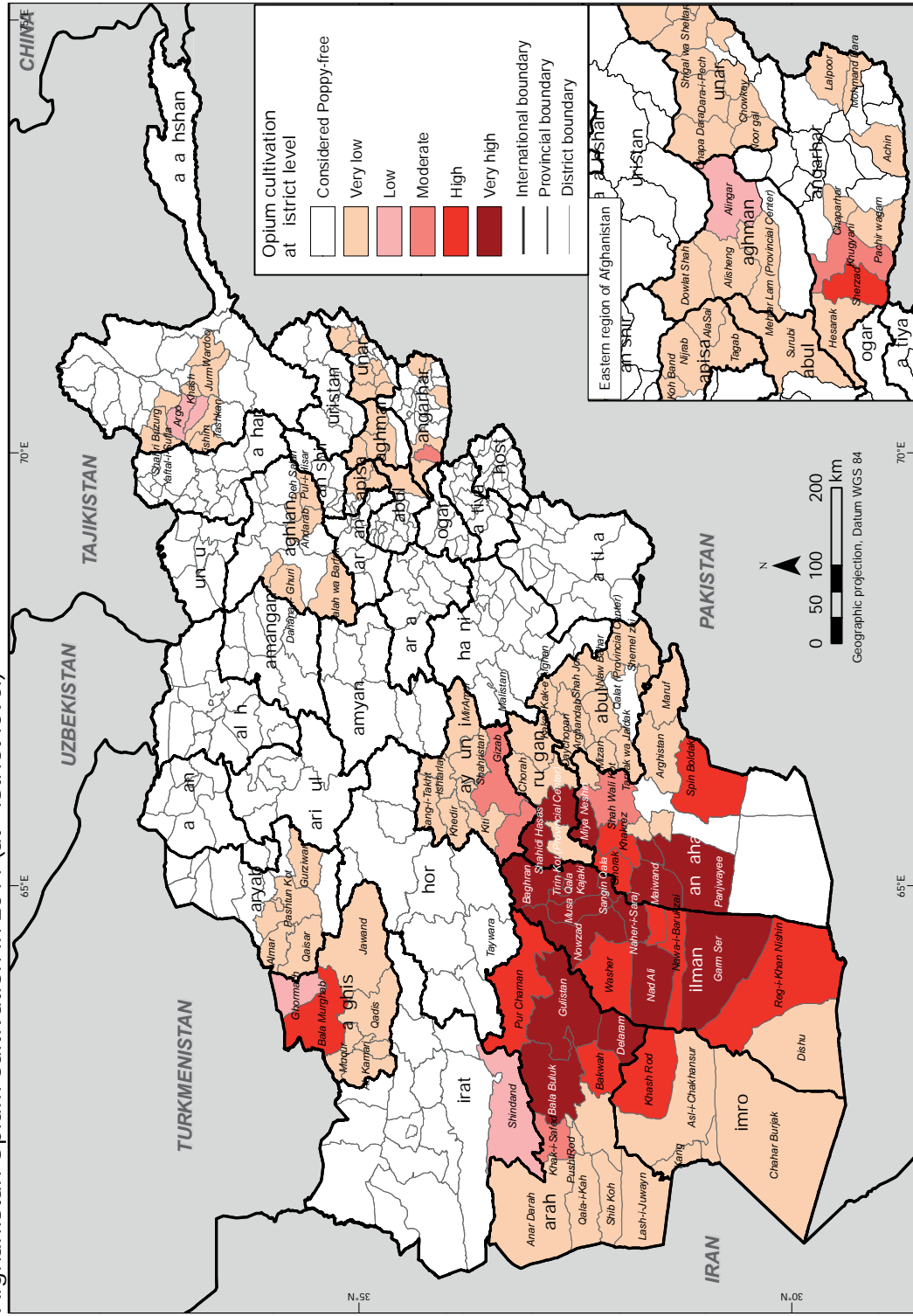


Source: Government of Afghanistan - National monitoring system implemented by UNODC
 Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

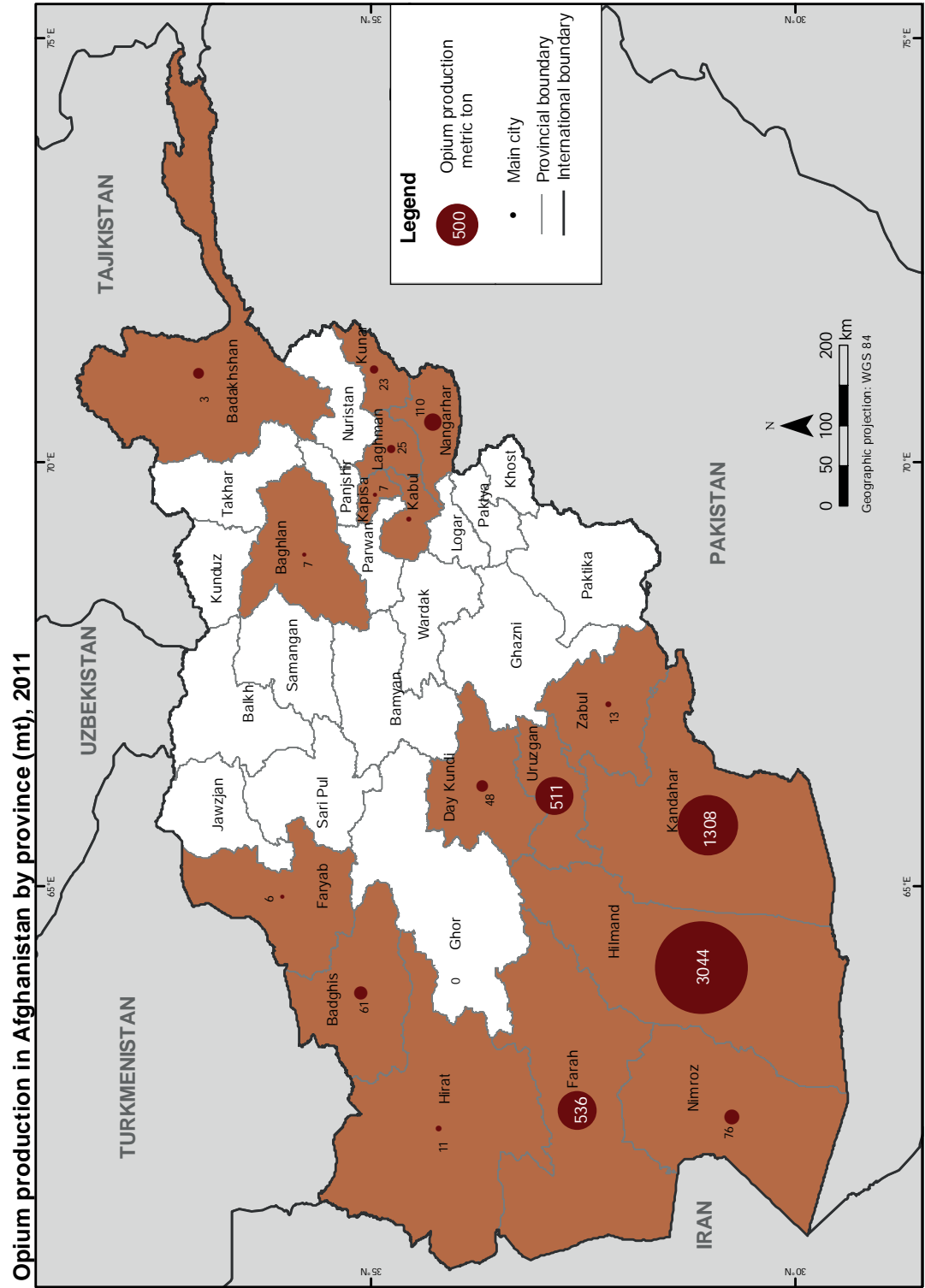


Source: Government of Afghanistan - National monitoring system implemented by UNODC
 Note: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Afghanistan Opium cultivation in 2011 (at district level)

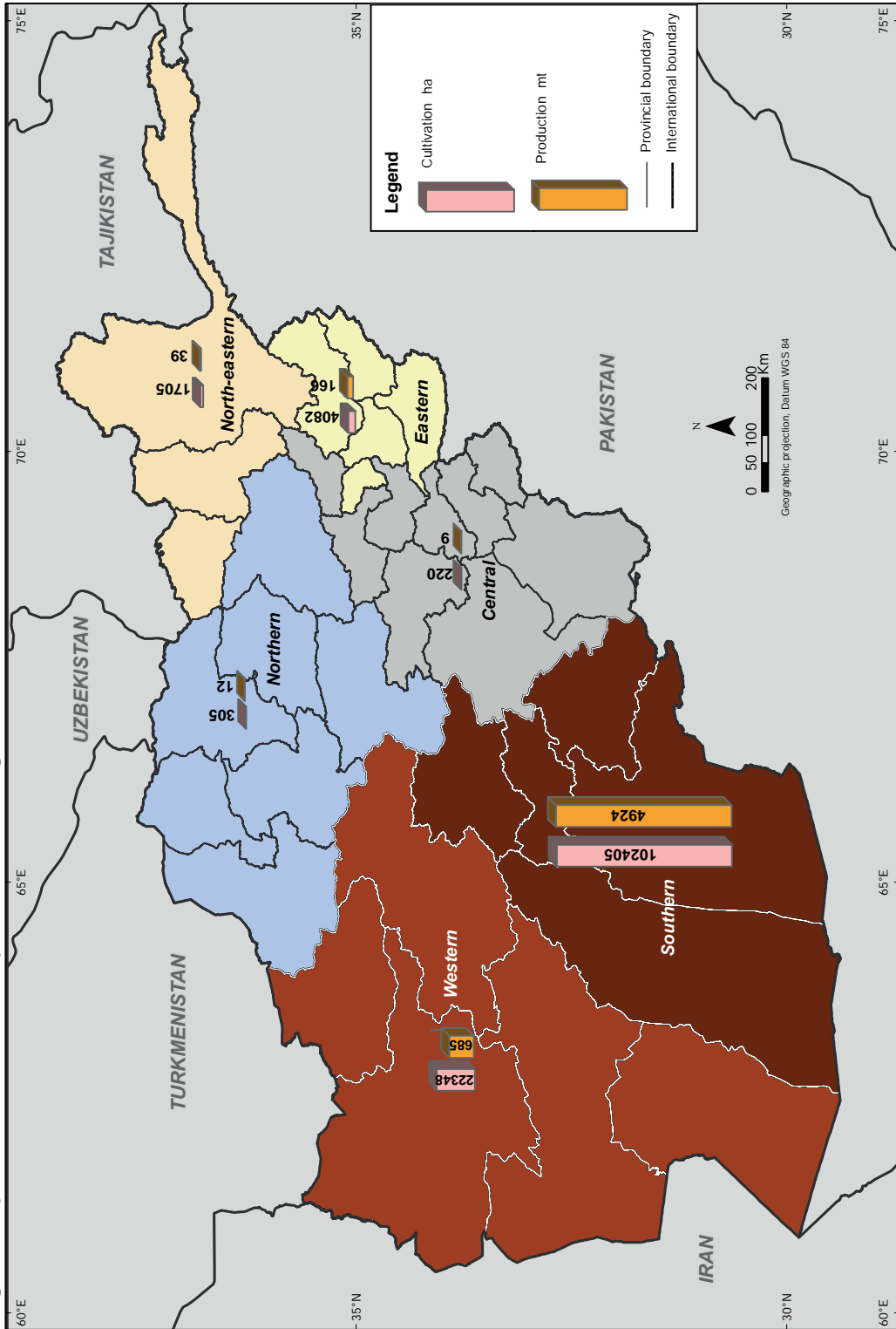


Source: Government of Afghanistan - National monitoring system implemented by UNODC
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Source: Government of Afghanistan - National monitoring system implemented by UNODC
 Note: The boundaries and names shown and the designations used on this map do not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

Regional opium cultivation and production in Afghanistan, 2011



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.

1 INTRODUCTION

The *Afghanistan Opium Survey* is implemented annually by the United Nations Office on Drugs and Crime (UNODC) and, since 2003, in collaboration with the Afghan Government. The survey team collects and analyses information on the location and extent of opium cultivation, potential opium production and the socio-economic situation in rural areas. Since 2005, UNODC has 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 53rd 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 and Peru in Latin America.

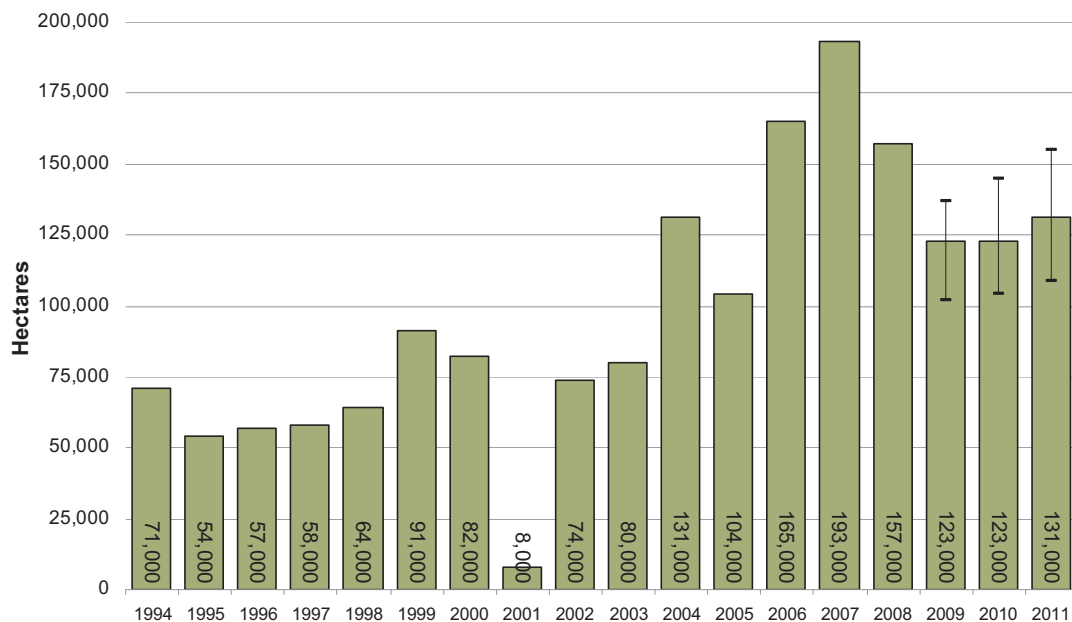
The *2011 Afghanistan Opium Survey* was implemented under project AFG/F98, "Monitoring of Opium Production in Afghanistan", and project GLO/U34, "Trends Monitoring and Analysis Programme Support (Illicit Crop Monitoring)", with financial contributions from the Governments of Germany, Norway, the United Kingdom, and the United States of America.

2 FINDINGS

2.1 Opium cultivation

The total opium poppy cultivation estimated for Afghanistan in 2011 increased to 131,000 hectares, a 7% increase from 2010 (123,000 ha)⁶. In statistical terms, this change was not significant and may rather indicate a stable situation. Ninety five per cent of the total cultivation took place in nine provinces in the Southern and Western regions⁷, including the most insecure provinces in the country. This further substantiates the link between insecurity and opium cultivation observed since 2007. Hilmand still remains the dominant opium cultivating province (63,307 ha), followed by Kandahar (27,213 ha), Farah (17,499 ha), Uruzgan (10,620 ha), Nangarhar (2,700 ha), Nimroz (2,493 ha), Badghis (1,990 ha), Badakhshan (1,700 ha), Day Kundi (1,003 ha), Laghman (624 ha), Kunar (578 ha), Hirat (366 ha), Zabul (262 ha) and Kabul (220 ha). In 2011, based on preliminary results from other countries, opium cultivation in Afghanistan represented just under two thirds of global cultivation.

Figure 1: Opium cultivation in Afghanistan (ha), 1994-2011



Sources: UNODC and UNODC/MCN opium surveys 1994-2011. The high-low lines represent the upper and lower bounds of the 95% confidence interval.

This year a change occurred in the number of poppy-free provinces. Of the 34 provinces in the country, 17 remained poppy-free while three provinces, namely Kapisa in the East region and Baghlan and Farayb in the North region,⁸ lost their poppy-free status in 2011. Kapisa (Eastern region), Baghlan and Faryab (both Northern region) provinces became poppy-free for the first time in 2009. There were 13 provinces poppy-free in 2007 and 18 provinces in 2008 while in 2009 and 2010, 20 provinces became poppy-free.

Although at the national level the total number of hectares under poppy cultivation did not change significantly, different trends were observed at the sub-national level. In the Central and North-eastern regions, cultivation increased by 45% and 55% respectively while in the Eastern region

⁶ This did not confirm the results of the Opium Winter Assessment Survey 2011 which in February anticipated a slight decrease situation in opium cultivation (UNODC, Afghanistan Opium Winter Rapid Assessment Report (phase I & II, April 2011).

⁷ Regions as designated by UNODC for analytical purposes. Please refer to Table 2 for a full list.

⁸ A province is defined as poppy-free when it is estimated to have less than 100 ha of opium cultivation.

there was an alarming increase of 269%. The increase happened mainly in Nangarhar province (276%) as compared to 2010. Nangarhar province became poppy-free for the first time in 2008. In 2009, however, 294 ha of opium poppy were detected, despite 226 ha being eradicated. In 2010 and 2011, due to tough resistance of the AGE, proper eradication did not happen and cultivation increased to 2,700 ha in 2011 (a 276% increase as compared to 2010). Laghman and Kunar provinces of the Eastern region were virtually poppy-free with negligible amounts of cultivation (135 ha and 164 ha respectively) in 2009. In 2011, there were a 275% and 166% increase in the level of opium cultivation of Kunar and Laghman provinces respectively. Kapisa province in the Eastern region also lost its poppy-free status in 2011 with 181 ha of opium being cultivated whereas it was poppy-free in 2009 and 2010.

In 2009, for the first time in almost a decade, all the provinces in the Northern region (Baghlan, Balkh, Bamyán, Faryab, Jawzjan, Samangan and Sari Pul provinces) were poppy-free and remained so in 2010. In 2011, two provinces of the Northern region, Baghlan and Farayb lost their poppy-free status having opium cultivation of 161 ha and 145 ha respectively.

Table 1: Number of provinces by opium cultivation trends, 2006-2011

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

The regional divide of opium cultivation between the south, the west and the rest of the country continued in 2011. Most opium cultivation was confined to the provinces of Hilmand, Kandahar, Uruzgan, Badghis, Farah and Nimroz of the Southern and Western regions, which are dominated by insurgency and organized criminal networks. This mirrors the sharper polarization of the security situation between the lawless south and the relatively stable north of the country. This clearly highlights the strong link between opium cultivation and the lack of security.

Table 2: Regional distribution of opium cultivation, 2010-2011

Region	2010 (ha)	2011 (ha)	Change 2010-2011 (%)	2010 (ha) as % of total	2011 (ha) as % of total
Southern	100,247	102,405	2%	82%	78%
Western	19,909	22,348	12%	16%	17%
Eastern	1,107	4,082	269%	0.9%	3%
North-eastern	1,100	1,705	55%	0.9%	1%
Central	152	220	45%	0.1%	0.2%
Northern	Poppy-free	305	NA	NA	NA
Rounded Total	123,000	131,000	7%	100%	100%

In 2011, the estimated potential opium production amounted to 5,800 mt, an increase of 61% over 2010. As opium cultivation remained relatively stable between 2009 and 2011, the differences in opium production in those years were due to changes in per-hectare opium yield. In 2009, there were high opium yields (56.1 kg/ha), while in 2010, major opium cultivation areas were affected by plant diseases which led to a strong yield reduction (29.2 kg/ha). In 2011, opium yields were back to “normal” levels of 44.5 kg/ha.

In 2011, the Southern region continued to produce the most opium in Afghanistan, representing 85% of national production, followed by the Western region (12%). Other provinces contributed only 4% of total opium production in the country.

The gross income for farmers who cultivated opium was estimated at US\$ 1.4 billion. This is an increase of 133% from 2010 when farm-gate income for opium was estimated at US\$ 605 million. This high level of income from poppy was due to the very high price of opium observed in 2011 (US\$ 241/kg).

Cultivation in the Southern region increased by 2% and continued to account for 78% of the total opium cultivated in 2011. Due to security problems in the South and West since 2006, the so-called anti-government elements (AGEs) encouraged farmers to cultivate opium poppy and threatened those who were reluctant to do so. The total area under opium cultivation in the Southern region in 2011 (102,405 ha) was very close to the total national opium cultivation in 2005 (104,000 ha). A total of 2,701 ha of opium cultivation were eradicated in the region. However, this amount is negligible considering the total area cultivating opium in the region.

Table 3: Main opium cultivating provinces in Afghanistan, 2007-2011

Province	2007	2008	2009	2010	2011	Change 2010-2011 (%)	2011 (ha) as % of total
Hilmand	102,770	103,590	69,833	65,045	63,307	-3%	48%
Kandahar	16,615	14,623	19,811	25,835	27,213	+5%	21%
Farah	14,865	15,010	12,405	14,552	17,499	+20%	13%
Uruzgan	9,204	9,939	9,224	7,337	10,620	+45%	8%
Nangarhar	18,739	Poppy-free	294	719	2,700	+276%	2%
Badakhshan	3,642	200	557	1,100	1,705	+55%	1%
Badghis	4,219	587	5,411	2,958	1,990	-33%	2%
Day Kundi	3,346	2,273	3,002	1,547	1,003	-35%	1%
Nimroz	6,507	6,203	428	2,039	2,493	+22%	2%
Rest of the country	13,074	4,828	2,131	1,383	2,535	+83%	2%
Rounded Total	193,000	157,000	123,000	123,000	131,000	7%	100%

Figure 2: Global opium cultivation (ha), 1997-2011

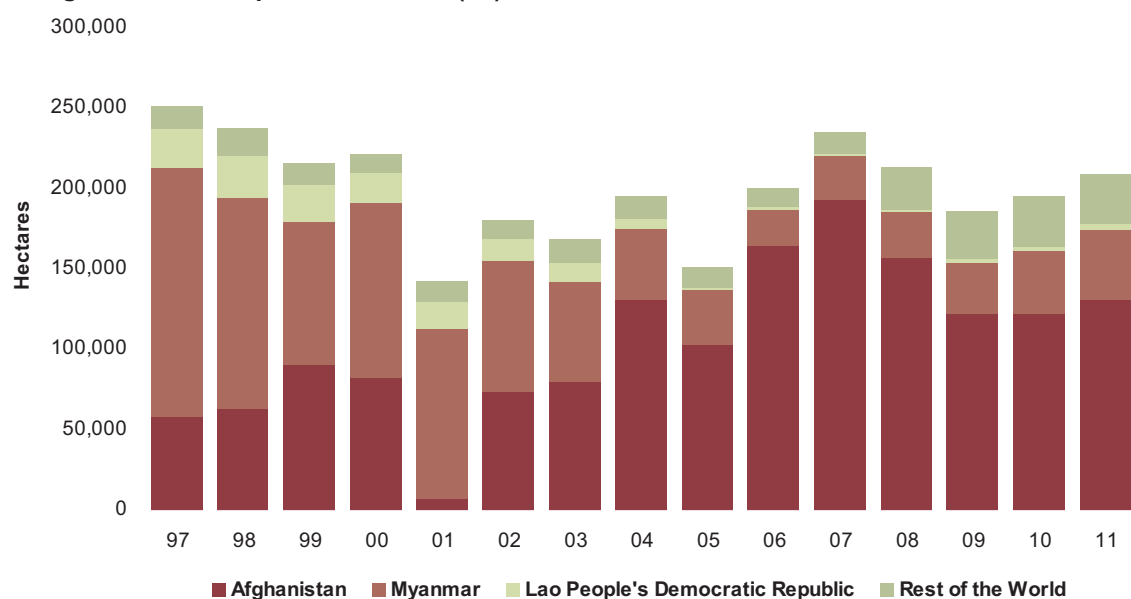


Table 4: Opium cultivation (2007-2011) and eradication (2010-2011) in Afghanistan

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Change 2010-2011 (%)	Estimation method 2011	Eradication in 2010 (ha)	Eradication in 2011 (ha)
Kabul	500	310	132	152	220	+45%	T	0.48	80
Khost	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	NA	V	0	0
Paktya	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	NA	V	0	0
Parwan	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	NA	V	0	0
Ghazni	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	NA	V	0	0
Central Region	500	310	132	152	220	45%		0.48	80
Kapisa	835	436	Poppy-free	Poppy-free	181	NA	V	1	5
Kunar	446	290	164	154	578	+275%	T	0	1
Laghman	561	425	135	234	624	+166%	T	10	21
Nangarhar	18,739	Poppy-free	294	719	2,700	+276%	T	16	61
Nuristan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Eastern Region	20,581	1,151	593	1,107	4,082	269%		27	89
Badakhshan	3,642	200	557	1,100	1,705	+55%	T	302	367
Takhar	1,211	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	T	12	0
Kunduz	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
North-eastern Region	4,853	200	557	1,100	1,705	55%		314	367
Baghlan	671	475	Poppy-free	Poppy-free	161	NA	T	0	31
Balkh	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	T	0	0
Bamyan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Faryab	2,866	291	Poppy-free	Poppy-free	145	NA	T	0	2
Jawzjan	1,085	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	V	0	0
Samangan	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	NA	T	0	0
Northern Region	4,882	766	Poppy-free	Poppy-free	305	NA		0	34
Hilmand	102,770	103,590	69,833	65,045	63,307	-3%	S	1602	1940
Kandahar	16,615	14,623	19,811	25,835	27,213	+5%	S	0	287
Uruzgan	9,204	9,939	9,224	7,337	10,620	+45%	S	15	154
Zabul	1,611	2,335	1,144	483	262	-46%	S	0	85
Day Kundi	3,346	2,273	3,002	1,547	1,003	-35%	S	0	235
Southern Region	133,546	132,760	103,014	100,247	102,405	2%		1617	2701
Badghis	4,219	587	5,411	2,958	1,990	-33%	S	0	36
Farah	14,865	15,010	12,405	14,552	17,499	+20%	S	198	212
Ghor	1,503	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	T	0	43
Hirat	1,525	266	556	360	366	+2%	T	159	227
Nimroz	6,507	6,203	428	2,039	2,493	+22%	S	0	20
Western Region	28,619	22,066	18,800	19,909	22,348	12%		357	539
Total (rounded)	193,000	157,000	123,000	123,000	131,000	6.5%		2316	3810

Area estimation method: S=sample survey, T=target survey, V=village 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 ha of opium cultivation.

Due to administrative boundary changes, the 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.

Southern region

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

In 2011, opium cultivation and production in the Southern region increased by 2% and 65% respectively. A total of 102,405 ha of opium poppy were cultivated in the Southern region, equivalent to 78% of the total cultivation in Afghanistan. A total of 4,924 metric tons of opium was produced, representing 84% of the entire 2011 production in Afghanistan.

Table 5: Opium cultivation and eradication in the Southern region (ha) (2007-2011)

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Change 2010-2011 (%)	Eradication in 2010 (ha)	Eradication in 2011 (ha)
Hilmand	102,770	103,590	69,833	65,045	63,307	-3%	1,602	1,940
Kandahar	16,615	14,623	19,811	25,835	27,213	+5%	0	287
Uruzgan	9,204	9,939	9,224	7,337	10,620	+45%	15	154
Zabul	1,611	2,335	1,144	483	262	-46%	0	85
Day Kundi	3,346	2,273	3,002	1,547	1,003	-35%	0	235
Southern Region	133,546	132,760	103,014	100,247	102,405	2%	1,617	2,701

Table 6: Potential opium production in the Southern region (mt), 2010-2011

Province	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)
Hilmand	1,933	3,044	+1,111	+57%
Kandahar	768	1,308	+541	+70%
Uruzgan	218	511	+293	+134%
Zabul	14	13	-2	-12%
Day Kundi	46	48	2	+5%
Southern Region	2,979	4,924	+1,945	+65%

Hilmand

Hilmand remains the single largest opium-cultivating province with 63,307 ha (48% of the total cultivation in Afghanistan) despite a 3% decrease from 2010. In statistical terms, this indicates a stable situation. In 2010, opium cultivation in Hilmand was estimated at 65,045 ha. Between 2002 and 2008, cultivation in Hilmand province more than tripled. Hilmand accounted for 48% of the country's total opium cultivation in 2011, compared to 53% in 2010, 57% in 2009, 66% in 2008, 53% in 2007, 42% in 2006, 25% in 2005, 23% in 2004 and 19% in 2003.

At the district level, opium cultivation levels were higher in Naher-i-Saraj, Musa Qala, Baghran, Kajaki, Nad Ali and Nawzad districts. Significant decreases (68%, 57% and 31%) occurred in opium cultivation in Lashkargah (Provincial Center), Nad Ali and Garm Ser districts respectively compared to 2010. On contrast, significant increase took place in opium cultivation in Kajaki, Baghran, Nawzad and Washer districts (95%, 66%, 65% and 46% respectively). A total of 1,940 ha of Governor-led opium poppy eradication were verified by MCN/UNODC in 2011. Only 3% of the estimated opium cultivation was eradicated in 2011. Opium production increased by 57% and reached 3,044 mt. This is equivalent to 52% of the total 2011 production in Afghanistan.

The 2011 opium survey showed a new development in Hilmand. While most areas in the periphery of the province and those north of the canal showed a clear increase in opium cultivation, central Hilmand experienced a definite decrease in poppy cultivation. This included the main agricultural area in central Hilmand province between the Hilmand River in the South and the main canal (Boghra canal) in the North and coincides largely with the area covered by the 2010 Food Zone programme. Poppy cultivation within the 2010 Food-Zone declined 38% compared to 2010. The satellite survey covered both zones but the 2011 village survey missed an important opium-growing area, as in past years, opium cultivation was not spatially divided between the centre and the periphery and less people were living in the area north of the main canal.

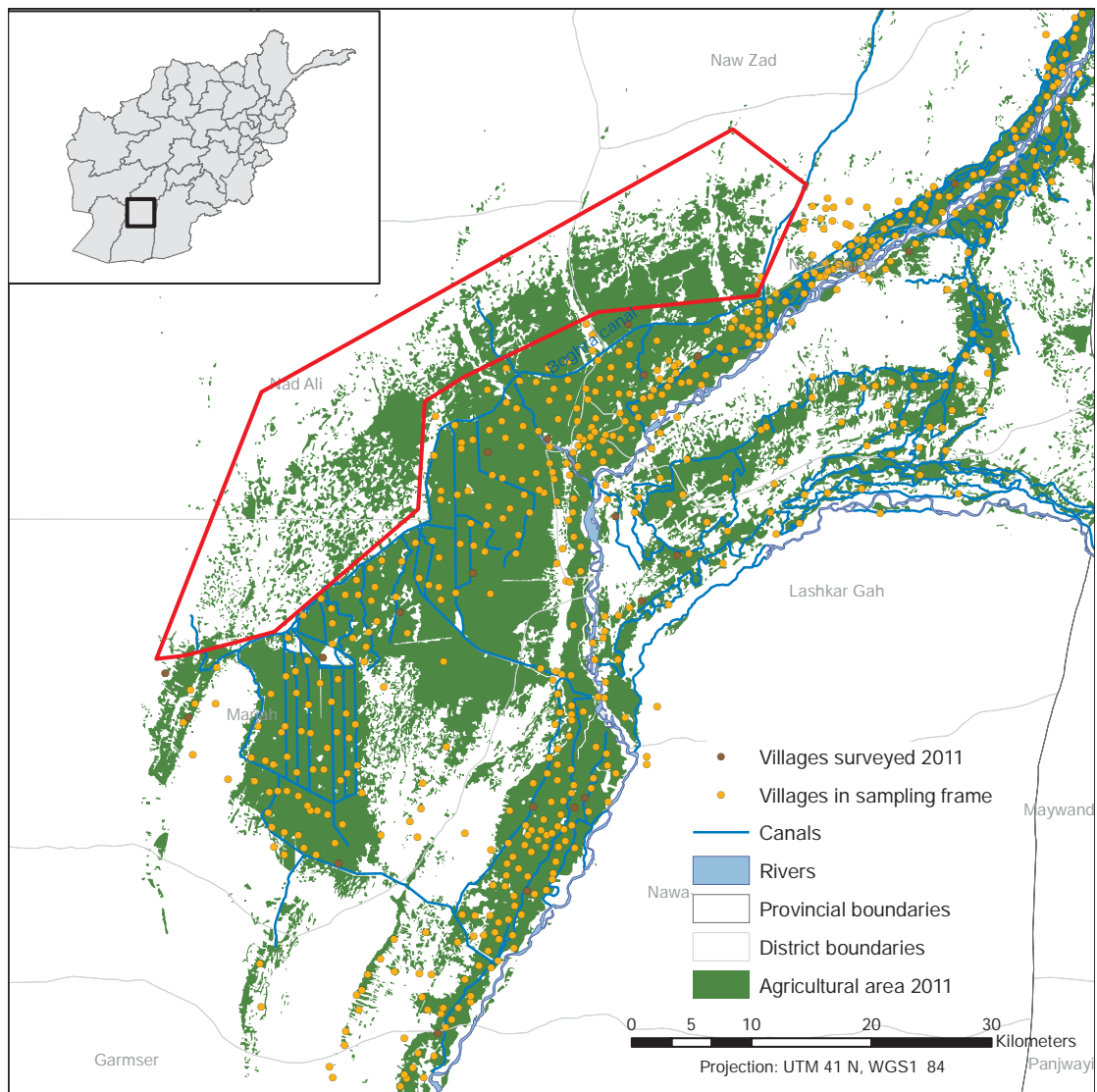
According to a recent study⁹, the area north of the Boghra canal saw a rapid expansion of the agricultural area mainly through the influx of migrants, from only 834 ha of arable land in 1999 to 26,571 ha in 2010. A comparison of the village sampling frame (the list of all villages) with the map of the agricultural area in Hilmand revealed that the area north of the main canal, the Boghra

⁹ See Mansfield, D. (2011): Between a Rock and a Hard Place. Counter-narcotics efforts and their effects in Nangarhar and Helmand in the 2010-11 growing season. Afghanistan Research and Evaluation Unit. Case Study Series.

canal, was underrepresented by the village survey (see area outlined in red on the map). The village sampling frame lists only 11 villages with a total population of less than 10,000 in that area. However, according to a recent study, in 2010 this area had a population of 72,000 – 135,000 for whom opium cultivation was a major livelihood strategy. These opium-growing households were not properly counted in the survey, therefore the number of opium growing households in Hilmand were underestimated. As a consequence, an estimate of the total number of poppy-growing households in Afghanistan in 2011 could not be provided.

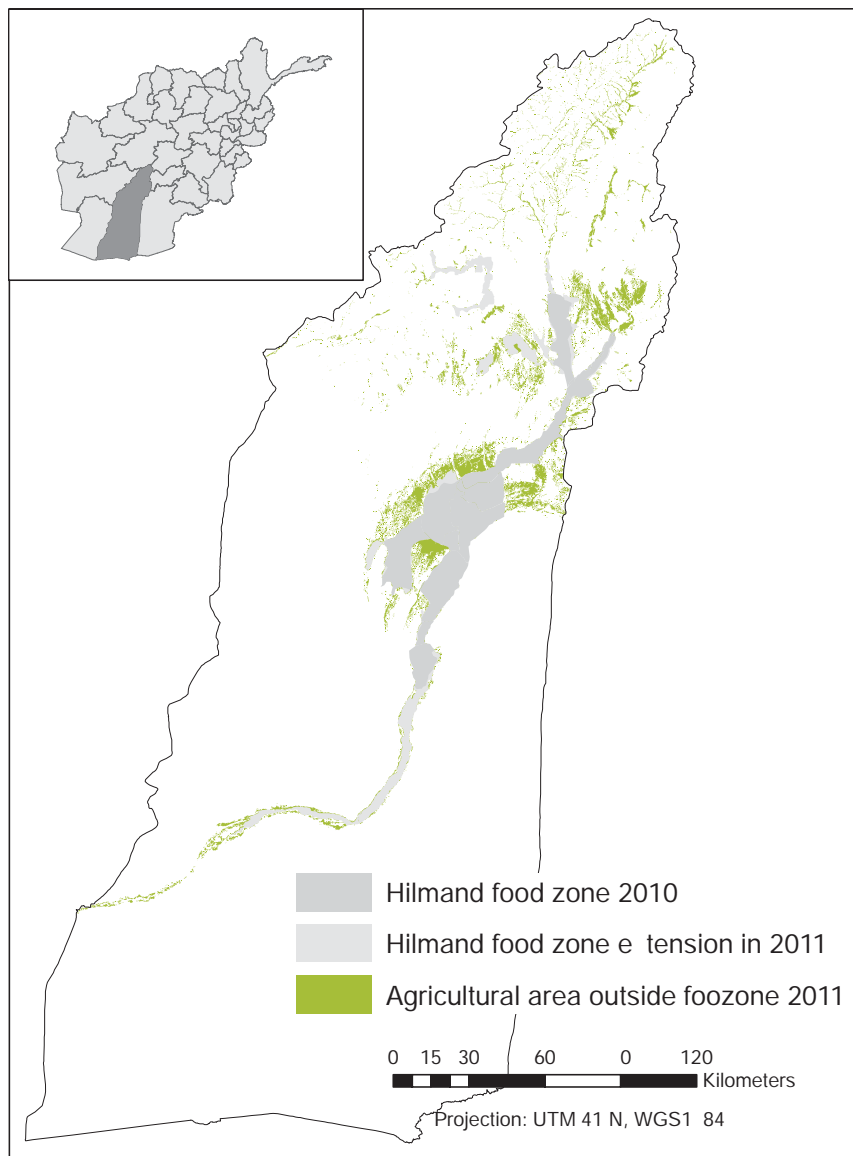
In Afghanistan, an up-to-date list of all settlements is not available. The village list used for the survey is based on information from the Central Statistical Office of Afghanistan which has been updated with UN data on settlement locations to include as many villages as possible. Unfortunately, it does not reflect recent developments. Action will be taken to cover these settlements in future surveys.

Coverage of Central Hilmand by village survey, 2011



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

Hilmand province with food zone



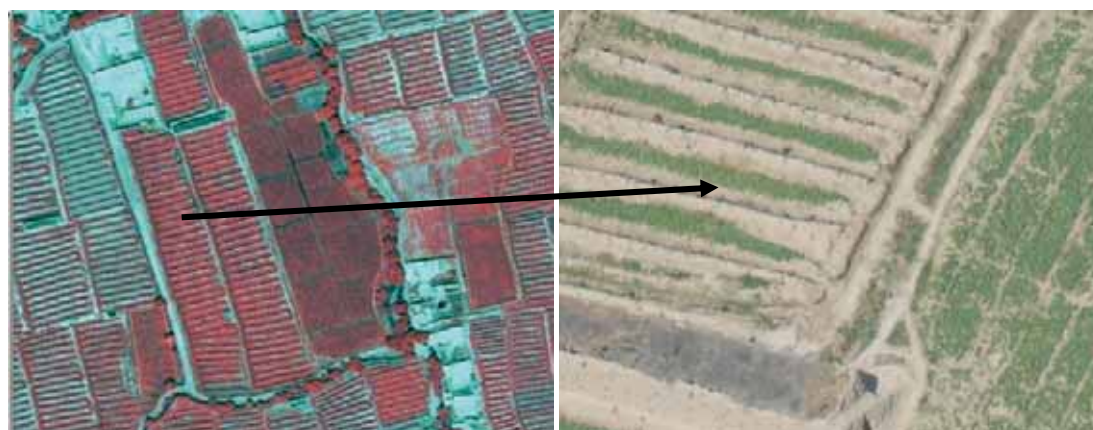
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Kandahar

In Kandahar province, opium cultivation was 27,213 ha in 2011, an increase of 5% from 2010. This increase in opium cultivation started after 2004, when only 4,959 ha were cultivated. Since then, the area under opium poppy has increased more than five times. The main opium cultivation districts are Maiwand, Zhire and Panjwayee. A significant increase (65%) took place in Panjwayee district. Opium production increased by 70% in Kandahar and reached 1,308 mt. This is equivalent to 23% of the total 2011 production in Afghanistan.

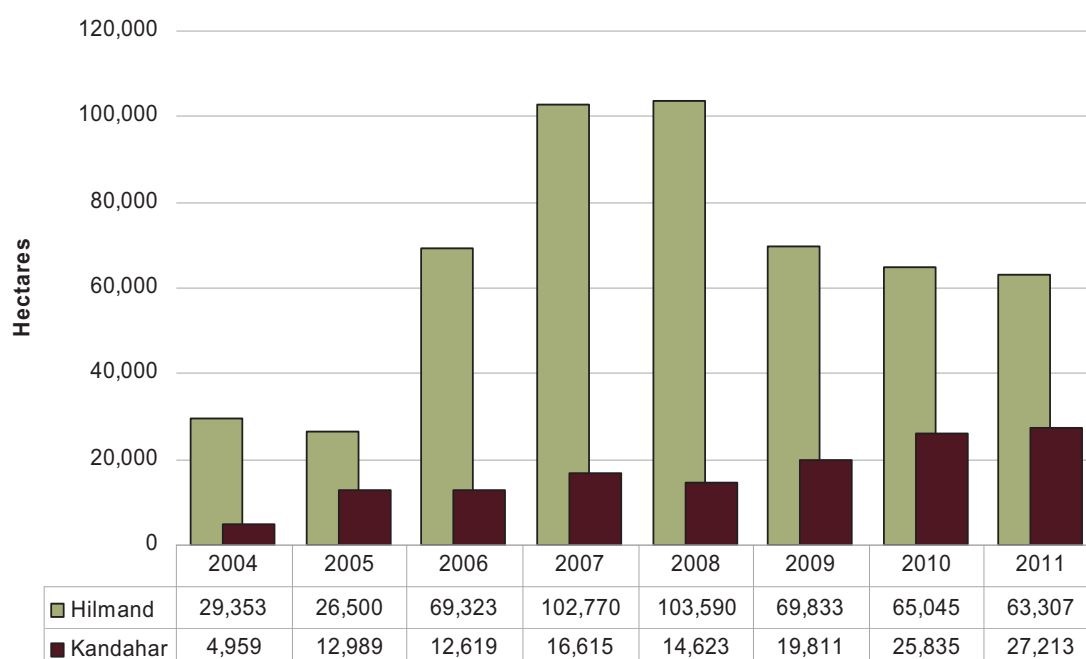
A total of 287 ha of Governor-led opium poppy eradication were verified by MCN/UNODC in 2011.

As the pictures below show, cultivation of opium poppy was observed between vineyards in Arghandab, Panjwayee and Zhire districts.



Satellite image (infra-red)

Aerial photograph (natural colour)

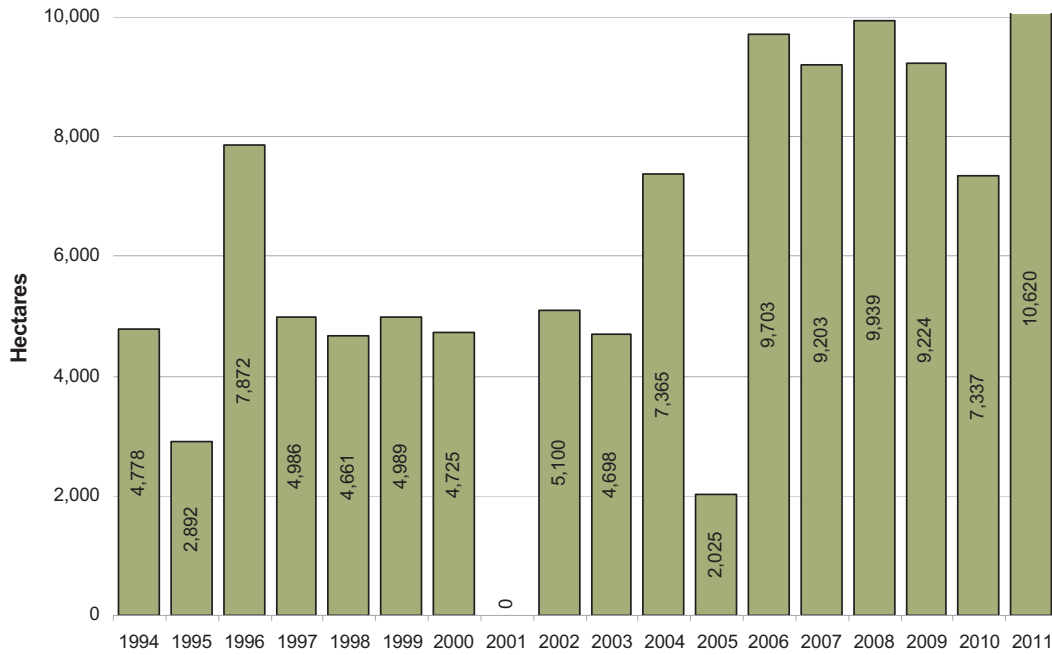
Figure 3: Opium cultivation in Kandahar and Hilmand provinces (ha), 2004-2011

Uruzgan

Opium cultivation in Uruzgan province increased by 45% in 2011 (from 7,337 ha in 2010 to 10,620 ha in 2011) and accounted for 8% of the total Afghan opium cultivation.

Shahidi Hassas, Dihrawud and Tirin Kot (Provincial center) were the top opium poppy cultivating districts in Uruzgan province. A large increase (2,271%) took place in opium cultivation in Dihrawud district (from 145 ha in 2010 to 3,438 ha in 2011). Between 2009 and 2010, a vice-versa situation occurred when there was a significant decrease in opium cultivation, down from 2,038 ha in 2009 to 145 ha in 2010. The above mentioned districts are adjacent to Hilmand and Kandahar provinces. Cultivation in other districts was negligible. A total of 154 ha of opium crops were eradicated in this province in 2011. Opium production increased by 134% from 2010, reaching 511 mt which was equivalent to 9% of the total 2011 production in Afghanistan.

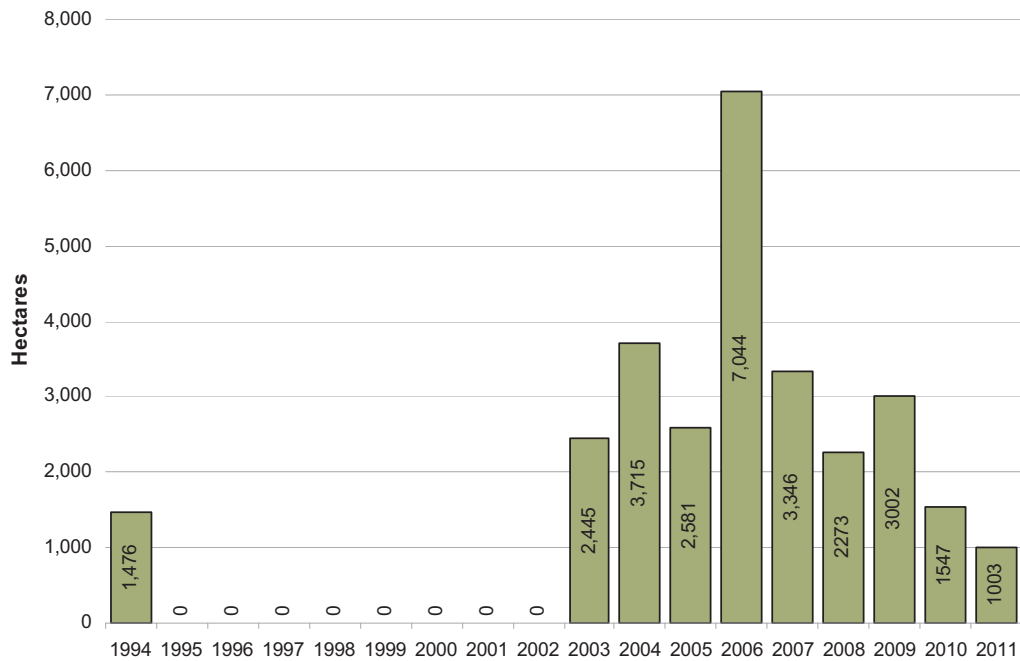
Figure 4: Opium cultivation in Uruzgan province (ha), 1994-2011



Day Kundi

In 2011 opium cultivation decreased in Day Kundi province significantly (35%) to 1,003 ha compared to 1,547 ha in 2010 and 3,002 ha in 2009. The main districts of opium cultivation in Day Kundi were Gizab and Kejrán where security is poor. Governor-led eradication forces eradicated a total of 235 ha in this province in 2011.

Figure 5: Opium cultivation in Day Kundi province, 1994-2011



Zabul

Opium cultivation in Zabul decreased significantly (46%) in 2011, down from 483 ha in 2010 to 262 ha in 2011. Since 2008, opium cultivation decreases in Zabul province. Prior to 2007, cultivation in this province ranged between 2,000 and 3,000 ha.

Eastern region

(Kapisa, Kunar, Laghman, Nangarhar, Nuristan)

Although it accounted for a very small proportion of opium cultivation (3% of the total area cultivated in Afghanistan), the Eastern region experienced a significant increase in 2011 (269%). A total of 4,082 ha of opium were cultivated in 2011 compared to 1,107 ha in 2010, which represents 3% of the total opium cultivation that year. Opium production, increased in 2011 by 109%, from 56 mt in 2010 to 166 mt in 2011.

A total of 89 ha of Governor-led opium poppy eradication were verified by MCN/UNODC in 2011.

Table 7: Opium cultivation and eradication in the Eastern region (ha), 2007-2011

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Change 2010-2011 (%)	Eradication in 2010 (ha)	Eradication in 2011 (ha)
Kapisa	835	436	Poppy free	Poppy free	181	NA	1	5
Kunar	446	290	164	154	578	+275%	0	1
Laghman	561	425	135	234	624	+166%	10	21
Nangarhar	18,739	Poppy-free	294	719	2,700	+276%	16	61
Nuristan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Eastern Region	20,581	1,151	593	1,107	4,082	269%	27	89

Table 8: Opium production in the Eastern region (mt), 2010-2011

Province	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)
Kapisa	Poppy-free	7	NA	NA
Kunar	8	23	+16	+199%
Laghman	12	25	+13	+112%
Nangarhar	37	110	+73	+199%
Nuristan	Poppy-free	Poppy-free	NA	NA
Eastern Region	56	166	+109	194%

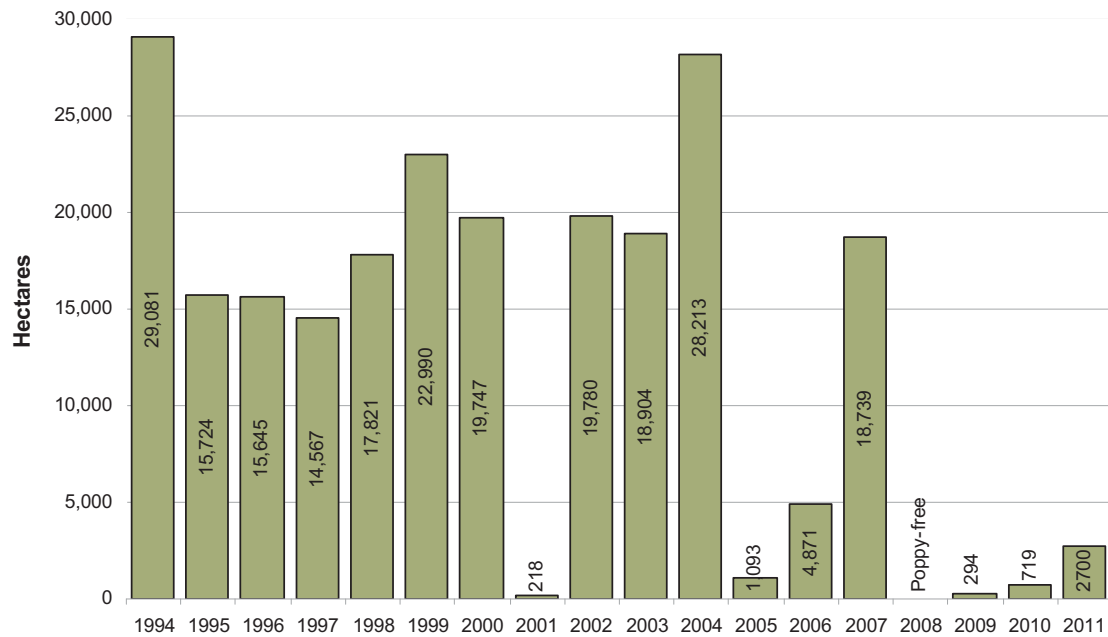
Nangarhar

Traditionally, Nangarhar was a large poppy-growing province, and in 2007, it was estimated to have 18,739 ha of opium cultivation. In 2008, Nangarhar province became poppy-free for the first time. In 2009, however, 294 ha of opium poppy were detected, despite 226 ha being eradicated. In 2010, security continued to deteriorate and opium cultivation increased by 145%, from 294 ha in 2009 to 719 ha in 2010. In 2011 a significant increase (276%) in the opium cultivation of Nangarhar province took place (from 719 ha in 2010 to 2,700 ha). Opium cultivation mainly took place in Sherzad and Khogyani districts of Nangarhar province where security was very poor. Due to tough resistance of the AGE, a total of only 61 ha of opium cultivation were eradicated by Governor-led eradication in the province.

In the last seven years, the level of opium cultivation in Nangarhar has been erratic. In 2004, cultivation was at 28,213 ha, the following year it dropped drastically to 1,093 ha and was confined to remote parts of the province. In 2006, it increased to 4,872 ha, increasing again in 2007 to 18,739 ha, before becoming poppy-free in 2008. In 2009 Nangarhar lost its poppy-free status with 294 ha of opium cultivation followed by an increase of 145% in 2010 (719 ha).

Nangarhar had the highest opium cultivation in 1994 with 29,081 ha of land under poppy cultivation. Opium production, increased in 2011 by 199%, from 37 mt in 2010 to 110 mt in 2011.

Figure 6: Opium cultivation in Nangarhar province (ha), 1994-2011



Opium poppy disease

Occurrence of opium poppy disease was reported in a few villages of Khogyani and Sherzad districts, where opium poppy fields were partially damaged during the capsule stage. The disease caused the opium poppy plants to turn yellowish at the bottom and then the colour spread to the top of the plants. This diminished the opium yield in the diseased fields. The reported disease however did not seem to be wide spread within the province and did not affect the overall yield. (See pictures below)



Disease affected opium poppy plants in Nangarhar, 2011.



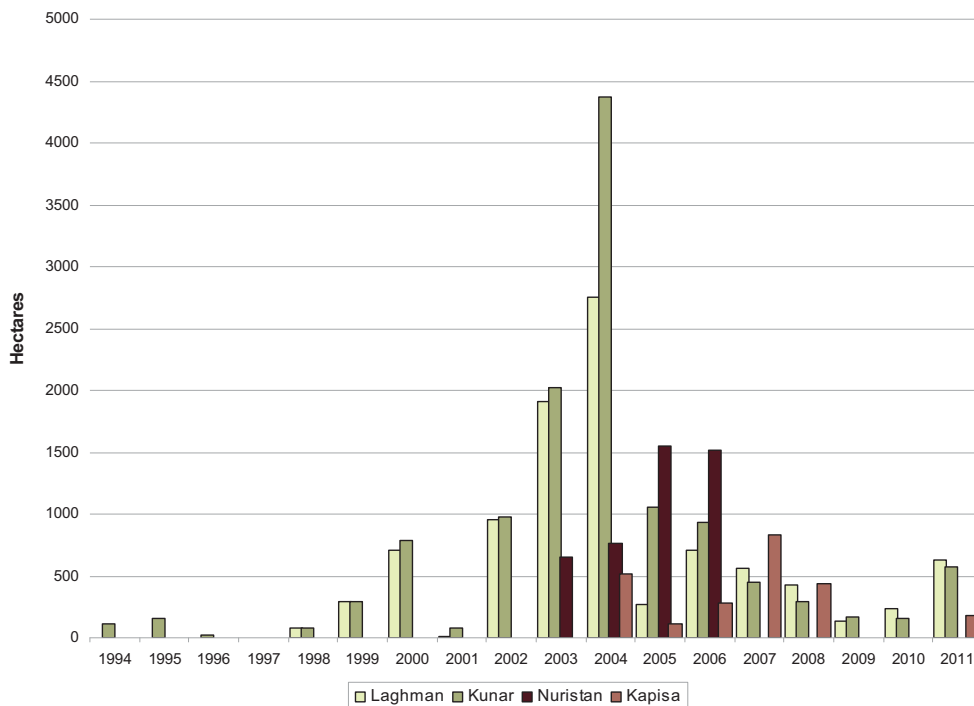
Disease affected opium poppy plants in Nangarhar, 2011.

Laghman, Kunar, Kapisa and Nuristan

In 2010, Laghman and Kunar provinces in the Eastern region were close to gaining poppy-free status having only small amounts of cultivation (154 ha and 234 ha respectively). However in 2011, the two provinces had a significant increase in cultivation by 166% and 275% with 624 ha and 578 ha, respectively. Only 1 ha of opium cultivation was eradicated by GLE in Kunar province and 21 ha eradicated in Laghman province.

In 2011, Kapisa lost its poppy-free status obtained two consecutive years (2008 and 2009) with 181 ha of land under poppy cultivation. The main opium growing district in Kapisa province was Tagab, a district with very poor security. Nuristan maintained its poppy-free status achieved in 2007. Only 5 ha of opium cultivation were eradicated by Governor-led eradication forces as verified by MCN/UNODC in Kapisa province. In Kunar and Laghman, opium production, increased in 2011 by 147%, from 20 mt in the two provinces in 2010 to 49 mt in 2011. In Kapisa province, only 7 mt of opium was produced in 2011.

Figure 7: Opium cultivation in Laghman, Kunar , Nuristan and Kapisa provinces (ha), 1994-2011



North-eastern region

(Badakhshan, Kunduz and Takhar)

Opium cultivation in the North-eastern region reached 1,705 ha in 2011 an increase of 55% from 1,100 ha in 2010 while opium production decreased by 30% from 56 mt in 2010 to 39 mt in 2011. The increase in opium cultivation happened only in Badakhshan province since the two other provinces in the region, Kunduz and Takhar were poppy-free.

A total of 367 ha of Governor-led eradication of opium poppy were verified by MCN/UNODC in 2011 in Badakhshan province.

Table 9: Opium cultivation and eradication in the North-eastern region (ha), 2007-2011

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Change 2010-2011 (%)	Eradication in 2010 (ha)	Eradication in 2011 (ha)
Badakhshan	3,642	200	557	1,100	1,705	+55%	302	367
Kunduz	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Takhar	1,211	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	12	0
North-eastern Region	4,853	200	557	1,100	1,705	55%	314	367

Table 10: Opium production in the North-eastern region (mt), 2010-2011

Province	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)
Badakhshan	56	39	-17	-30%
Takhar	Poppy-free	Poppy-free	NA	NA
Kunduz	Poppy-free	Poppy-free	NA	NA
North-eastern Region	56	39	-17	-30%

Badakhshan

Opium cultivation in Badakhshan province increased by 55% in 2011, to 1,705 ha from 1,100 ha in 2010. Opium cultivation was 557 ha in 2007, 200 ha in 2008 and 3,642 ha in 2009. Cultivation was confined mostly to rain-fed areas which are cultivated in spring. Main opium cultivation districts in Badakhshan were Argo and Darayim. A total of 367 ha of opium cultivation were eradicated by Governor-led eradication forces as verified by MCN/UNODC in Badakhshan province.

Opium production decreased by 30% to 39 mt in 2011 compared to 56 mt in 2010.

Figure 8: Opium cultivation in Badakhshan province (ha), 1994-2011

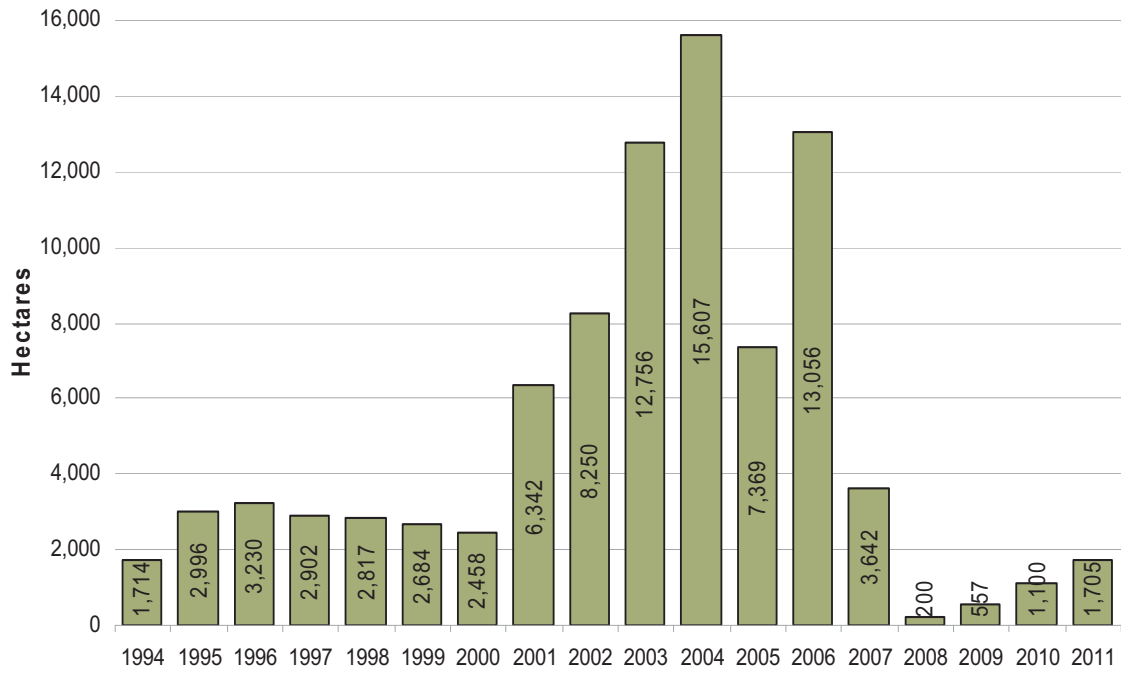
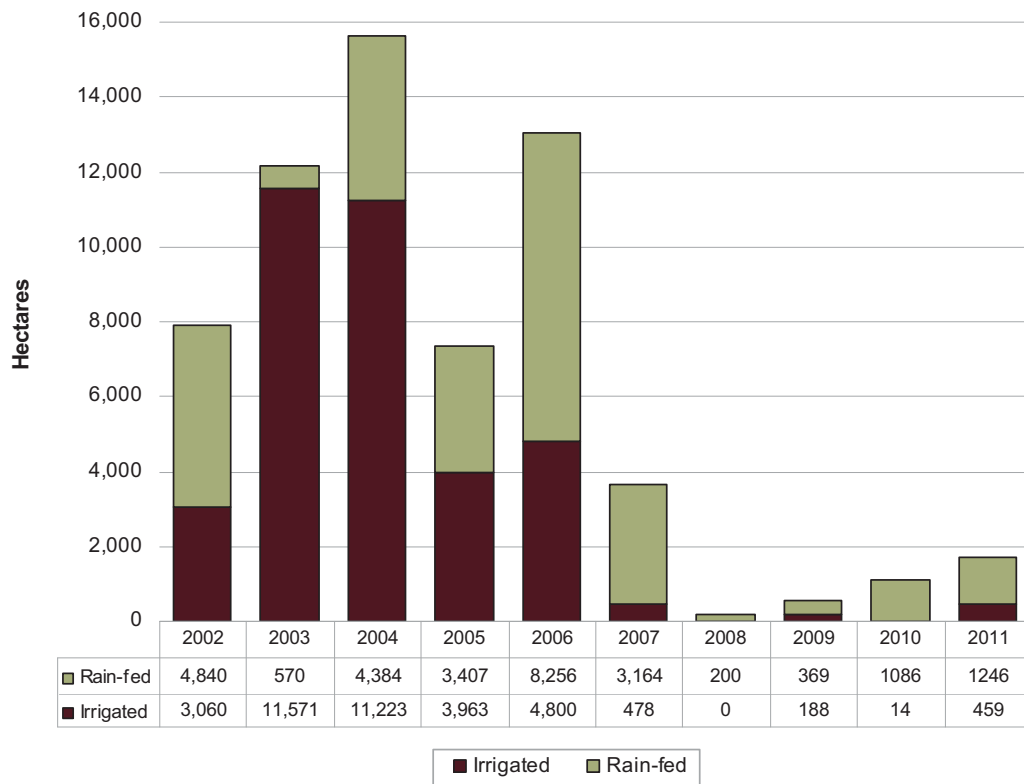


Figure 9: Distribution of irrigated and rain-fed opium cultivation in Badakhshan (ha), 2002-2011



Takhar

Takhar province has been poppy-free since 2008 and maintained its poppy-free status in 2011. In 2005, 2006 and 2007, opium cultivation in Takhar was 1,364 ha, 2,178 ha and 1,211 ha respectively.

Kunduz

Kunduz has been poppy-free since 2007 and remained poppy free in 2011. An insignificant amount of cultivation was observed in this province during recent years. However, the province maintained the cultivation under 100 ha which is the threshold for obtaining the poppy-free status. The province is well known for growing a wide range of crops, from vegetables and fruits to cotton.

Northern region

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

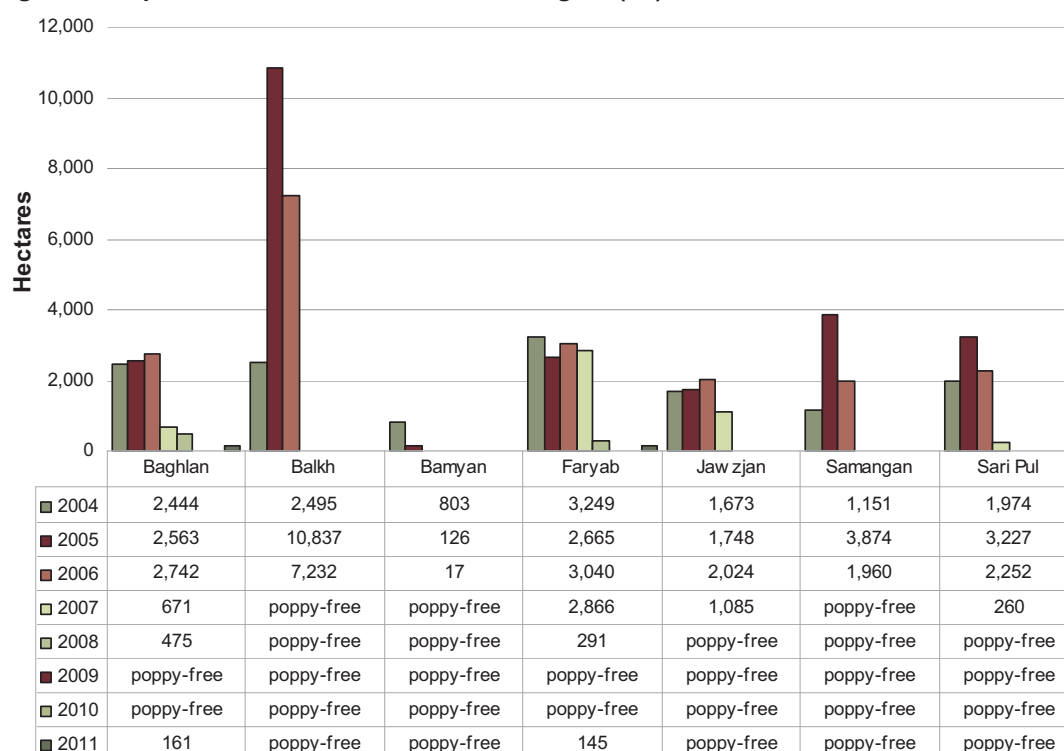
All provinces of the Northern region were poppy-free in 2009 and 2010; however the situation changed in 2011.

Two provinces, Baghlan and Faryab, resumed opium cultivation (161 ha and 145 ha respectively). Poor security and the high price of opium in 2010 could be the main factors which made farmers restart opium cultivation in these two provinces.

These two provinces were poppy-free in 2009 and 2010. Most of the provinces in the North sustained moderate levels of opium cultivation in the past except Balkh. This province emerged as a major opium cultivating province in 2005 and 2006 (10,837 ha and 7,232 ha respectively), whereas the rest of the Northern provinces contributed in the range of 2,000 to 3,000 ha. This decline in opium cultivation in the Northern region started with strict law enforcement and counter-narcotic initiatives. In 2008, poppy cultivation in these provinces was already negligible and Balkh had remained poppy-free since 2007. In 2007, three provinces (Balkh, Bamyan and Samangan) became poppy-free. In 2008, Sari Pul province also became poppy-free. The Northern region contributed only 0.2% (12 mt) of total opium production in 2011.

Table 11: Opium production in the Northern region (mt), 2010-2011

Province	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)
Baghlan	Poppy-free	7	NA	NA
Balkh	Poppy-free	Poppy-free	NA	NA
Bamyan	Poppy-free	Poppy-free	NA	NA
Faryab	Poppy-free	6	NA	NA
Jawzjan	Poppy-free	Poppy-free	NA	NA
Samangan	Poppy-free	Poppy-free	NA	NA
Sari Pul	Poppy-free	Poppy-free	NA	NA
Northern Region	Poppy-free	12	NA	NA

Figure 10: Opium cultivation in the Northern region (ha), 2004-2011

Balkh

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

Faryab

In 2011, Faryab province lost its poppy-free status obtained 2009 and 2010. There were 145 ha of opium cultivation in 2011. Opium cultivation mainly took place in Kohistan and Gurziwan where security was very poor. The province had 291 ha of opium cultivation in 2008 and 2,866 ha in 2007. Poor security and the high price of opium in 2010 could be the main factors for the return to opium cultivation.

Samangan, Bamyan and Sari Pul

Samangan and Bamyan were poppy-free in 2007, 2008, 2009 and 2010 and remained so in 2011. Sari Pul was poppy-free in 2008, 2009 and maintained its poppy-free status in 2011. In the past, cultivation in Bamyan was negligible. Opium cultivation in Samangan province ranged between 1,000 and 4,000 ha from 2004 to 2006.

Jawzjan and Baghlan

Jawzjan province was found to be poppy-free in 2008, 2009, 2010 and 2011.

Baghlan became poppy-free in 2009 for the first time and remained poppy-free in 2010 (in 2008 there were 475 ha of cultivation concentrated in Andarab district only). In 2011, Baghlan lost its poppy-free status with 161 ha of land under opium cultivation. The main opium cultivating districts were Andarab, Deh Salah Pul-i-Hisar. Poor security and high price of opium in 2010 could be main factors for the province returning to opium cultivation.

Central region

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

Opium cultivation in the Central region increased by 45% in 2011. The total area cultivated with opium increased to 220 ha in 2011 from 152 ha in 2010. The opium cultivation was limited to the Uzbeen valley of Surobi district in Kabul province, where security is extremely poor. A total of 80 ha of opium poppy cultivation were eradicated in Surobi district of Kabul province in 2011. All other Central provinces apart from Kabul were poppy-free in 2008, 2009, 2010 and 2011. The Central region contributes only 0.2% (9 mt) of the total opium production in Afghanistan.

Table 12: Opium cultivation and eradication in the Central region (ha), 2007-2011

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Change 2010-2011 (%)	Eradication in 2010 (ha)	Eradication in 2011 (ha)
Ghazni	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Kabul	500	310	132	152	220	+45%	0.48	80
Khost	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Logar	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Paktika	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Paktya	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Panjshir	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Parwan	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Wardak	Poppy-free	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	0
Central Region	500	310	132	152	220	45%	0.48	80

Table 13: Opium production in the Central region (mt), 2010-2011

Province	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)
Kabul	8	9	+1	+15%
Khost	Poppy-free	Poppy-free	NA	NA
Logar	Poppy-free	Poppy-free	NA	NA
Paktya	Poppy-free	Poppy-free	NA	NA
Panjshir	Poppy-free	Poppy-free	NA	NA
Parwan	Poppy-free	Poppy-free	NA	NA
Wardak	Poppy-free	Poppy-free	NA	NA
Ghazni	Poppy-free	Poppy-free	NA	NA
Paktika	Poppy-free	Poppy-free	NA	NA
Central Region	8	9	+1	15%

Western region

(Badghis, Farah, Ghor, Hirat, Nimroz)

Opium cultivation in the Western region increased by 12% to 22,348 ha in 2011 from 19,909 ha in 2010. This increase took place in Farah and Nimroz province. Only 539 ha of opium poppy eradication took place in 2011 in the region. Due to administrative boundary changes, the 2009 and later estimates for Farah and Nimroz included parts of Khash Rod district, the main opium cultivating district in Nimroz, in Farah province. Figures for 2008 and earlier include Khash Rod district in Nimroz province.

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

Opium production in this region increased by 43% from 478 mt in 2010 to 685 mt in 2011.

Table 14: Opium cultivation and eradication in the Western region (ha), 2007-2011

PROVINCE	Cultivation 2007 (ha)	Cultivation 2008 (ha)	Cultivation 2009 (ha)	Cultivation 2010 (ha)	Cultivation 2011 (ha)	Change 2010-2011 (%)	Eradication in 2010 (ha)	Eradication in 2011 (ha)
Badghis	4,219	587	5,411	2,958	1,990	-33%	0	36
Farah	14,865	15,010	12,405	14,552	17,499	+20%	198	212
Ghor	1,503	Poppy-free	Poppy-free	Poppy-free	Poppy-free	0%	0	43
Hirat	1,525	266	556	360	366	+2%	159	227
Nimroz	6,507	6,203	428	2,039	2,493	+22%	0	20
Western Region	28,619	22,066	18,800	19,909	22,348	12%	357	539

Table 15: Opium production in the Western region (mt), 2010-2011

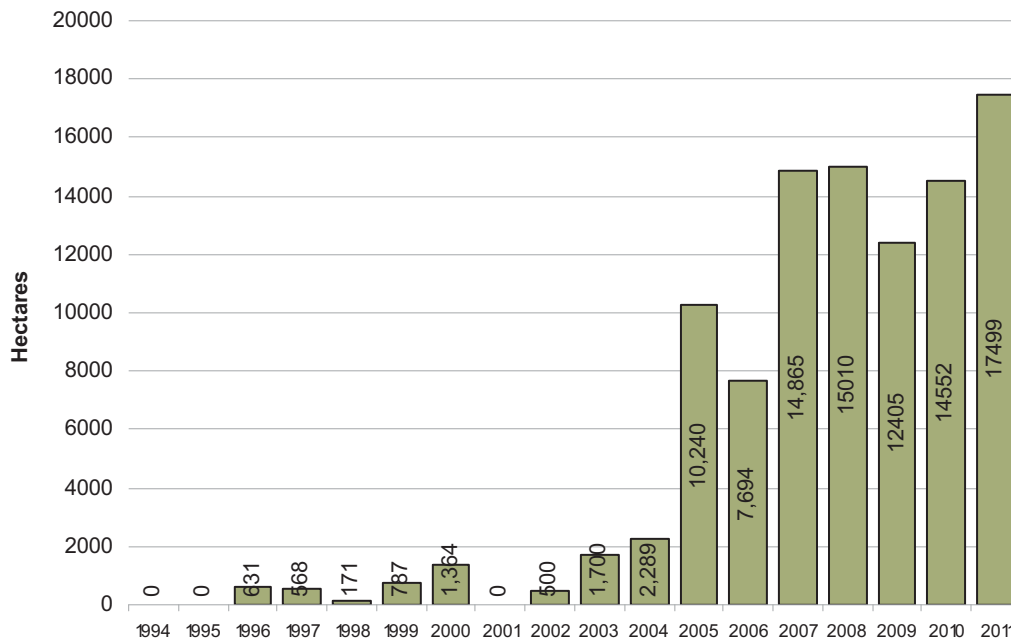
Province	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)
Badghis	71	61	-10	-14%
Farah	349	536	+187	+54%
Ghor	Poppy-free	Poppy-free	NA	NA
Hirat	9	11	+3	+30%
Nimroz	49	76	+27	+56%
Western Region	478	685	+207	+43%

Farah

Opium cultivation in Farah province rose to 17,449 ha in 2011 from 14,552 in 2010, an increase of 20%. Opium cultivation has been increasing in Farah province since 2009. The main opium cultivating districts in Farah were Delaram, Bala Buluk Gulistan, and Pur Chaman. Significant increase occurred in Gulistan (72%) and Pur Chaman (61%) in 2011. Security in Farah is very poor. Opium production increased by 54% from 349 mt in 2010 to 536 mt in 2011.

Nimroz

Opium poppy cultivation in Nimroz province in the Western region increased to 2,493 ha in 2011 from 2,039 ha in 2010, an increase of 22%. The main district of opium cultivation in Nimroz province was Khash Rod.

Figure 11: Opium cultivation in Farah province (ha), 1994-2011

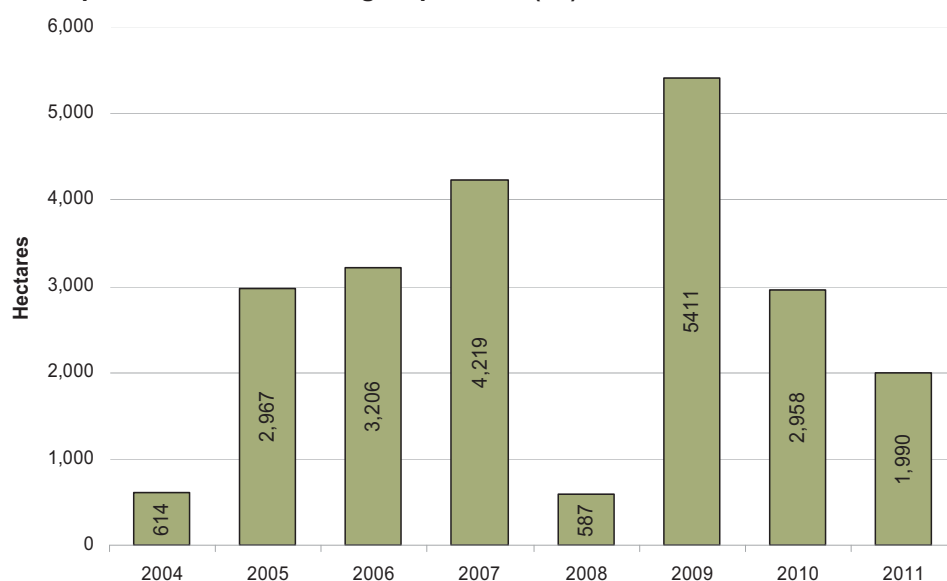
Due to administrative boundary changes, since 2009 the estimates for Farah and Nimroz include parts of Khash Rod district, the main opium cultivating district in Nimroz, as part of Farah province. The figures of 2008 and before include all of Khash Rod district in Nimroz province.

Hirat and Ghor

Opium cultivation slightly increased in Hirat province to 366 ha in 2011 from 360 ha in 2010, an increase of 2%. The only district in Hirat province where opium cultivation took place is Shindand. Compared to the years of 2004 to 2007, opium cultivation decreased significantly in Hirat province. Ghor remained poppy-free in 2011 as eradication efforts kept opium cultivation below the 100 ha threshold.

Badghis

Opium poppy cultivation in Badghis fell to 1,990 ha in 2011 from 2,958 ha in 2010, a decline of 33%, which mainly happened in irrigated land. The main opium growing district in Badghis is Bala Murghab. 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 rain-fed areas of this province, enabling farmers to grow more poppy. This contributed to a large increase in opium cultivation from 587 ha in 2008 to 5,411 ha in 2009. Most cultivation took place in areas difficult to access. With the exception of the drought year 2008 and the year 2010, Badghis has experienced a continuous increase in opium cultivation between 2004 and 2010. Opium production increased by 56% from 49 mt in 2010 to 76 mt in 2011.

Figure 12: Opium cultivation in Badghis province (ha), 2004-2011

2.2 Eradication

In 2011, eradication of opium fields increased 65% from 2,316 ha in 2010 to 3,810 ha in 2011. Only Governor-led eradication was implemented. There was no PEF eradication in 2010 and 2011.

This year, MCN/UNODC field surveyors verified 10,774 fields in 593 villages of 18 provinces. Quality control using high resolution satellite image was carried out to authenticate the figures reported by the surveyors from the field, particularly in Badakhshan, Farah, Hilmand, Hirat, Kabul, Kandahar and Uruzgan provinces. In 2010, MCN/UNODC verifiers visited 402 villages (6,876 poppy fields) in 11 provinces where eradication had been carried out by Governor-led eradication teams.

Major observations on eradication campaigns in 2010 and 2011 are given below:

- Total eradication in 2011 was 65% more than 2010. In 2011, total eradication was **3,810 hectares** in **18** provinces compared to **2,316 hectares** in **11** provinces in 2010.
- Eradication campaigns took place in more provinces compared to 2010. In 2011, eradication campaigns were carried out in **18** provinces while in 2010 in **11** provinces.
- In 2011, eradication campaigns started in mid-February and at the end of February in Kandahar and Hilmand provinces respectively. In 2010, eradication campaigns had started in mid-February in Hilmand while no eradication occurred in Kandahar province.
- In 2011, eradication campaigns were mostly active in the South, West, and North-eastern regions while there was less eradication in the Eastern and Northern regions as compared to last year.
- In 2011, the number of security incidents increased from 2010. GLE teams were attacked **48** times in 2011 while there were **12** attacks on GLE in 2010. However, in 2011 the number of fatalities dropped. This year, **20** eradication campaign-related fatalities were reported compared to **28** in 2010.

Table 16: Governor-led eradication by province (ha), 2011

Province	Eradication (ha) verified	No. of fields eradication reported	No. of villages eradication reported
Badakhshan	367	1,655	72
Badghis	36	69	4
Baghlan	31	55	12
Day Kundi	235	605	26
Farah	212	440	24
Faryab	2.4	24	7
Ghor	43	82	7
Hilmand	1,940	4,435	207
Hirat	227	1,088	69
Kabul	80	757	30
Kandahar	287	520	56
Kapisa	5	87	9
Kunar	1	4	1
Laghman	21	148	8
Nangarhar	61	295	22
Nimroz	20	44	8
Uruzgan	154	421	16
Zabul	85	45	15
Total	3,810	10,774	593

Figure 13: Percentage of total opium poppy eradication by province, 2010 - 2011

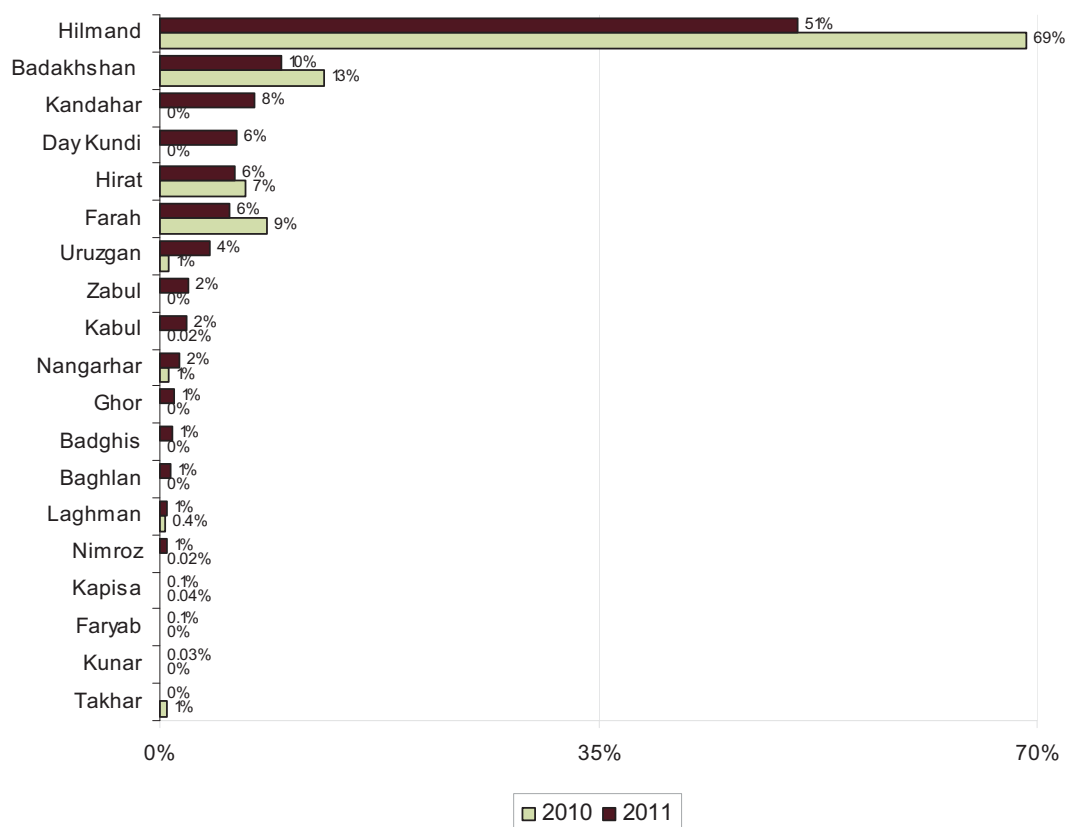
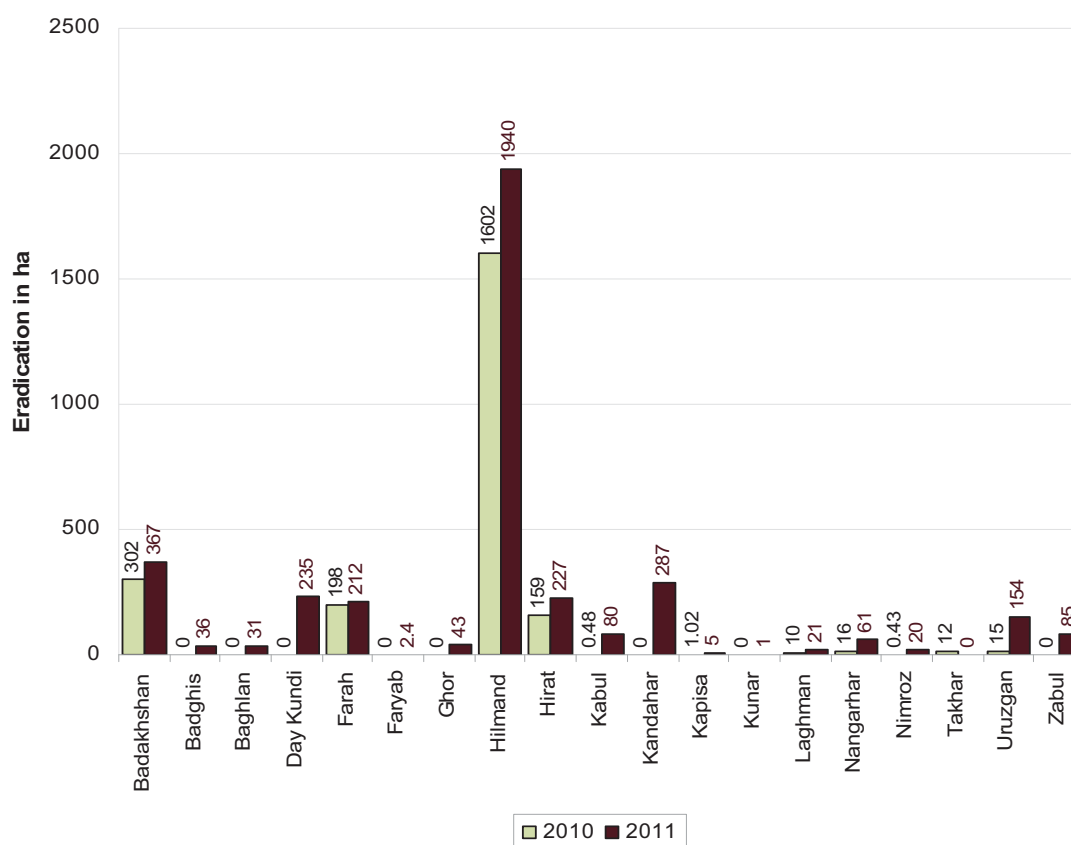


Figure 14: Governor-led eradication at province level, 2010 - 2011**Table 17: Eradication and cultivation in Afghanistan (ha) 2005-2011**

Year	2005	2006	2007	2008	2009	2010	2011
Governor-led Eradication (GLE), (ha)	4,000	13,050	15,898	4,306	2,687	2,316	3,810
Poppy Eradication Force (PEF), (ha)	210	2,250	3,149	1,174	2,663	0	0
Total (ha)	4,210	15,300	19,510	5,480	5,351	2,316	3,810
Cultivation (ha) *	104,000	165,000	193,000	157,253	119,141	123,000	131,000
% poppy in insecure provinces of South and West	56%	68%	80%	98%	99%	95%	95%
Poppy-free provinces	8	6	13	18	20	20	17
Number of provinces eradication carried out	11	19	26	17	12	11	18
Eradication as % of net opium cultivation	4%	9%	10%	3%	4%	2%	3%

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

Methods used for eradication

Governor-led eradication teams used several methods including tractor, manual eradication (using sticks, blade, hand and uprooting) and animal plough. Seventy five per cent of the governor-led eradication was carried out by tractor, 25% by manual and 0.07% by animal plough in 2011.

Timing and percentage of eradication by month

The best timing of eradication of opium is when the poppy is at the cabbage stages since poppy plants are recognized clearly at this stage. Eradication of poppy started in February, 2011 in the South, West and East regions and in May, 2011 in the North and North-east regions. Ninety-two per cent of eradication was carried out in three months from March, 2011 to May, 2011.

Compared to last year the eradication progressed later this year due of the delay in growth stages of poppy because of cold weather.

Governor-led eradication started at the end of February in Hilmand and Kandahar provinces and continued till July in Faryab province. The table below shows the start and end dates of eradication in each province.

Figure 15: Area of opium poppy eradication by different methods (as % of total), 2010 - 2011

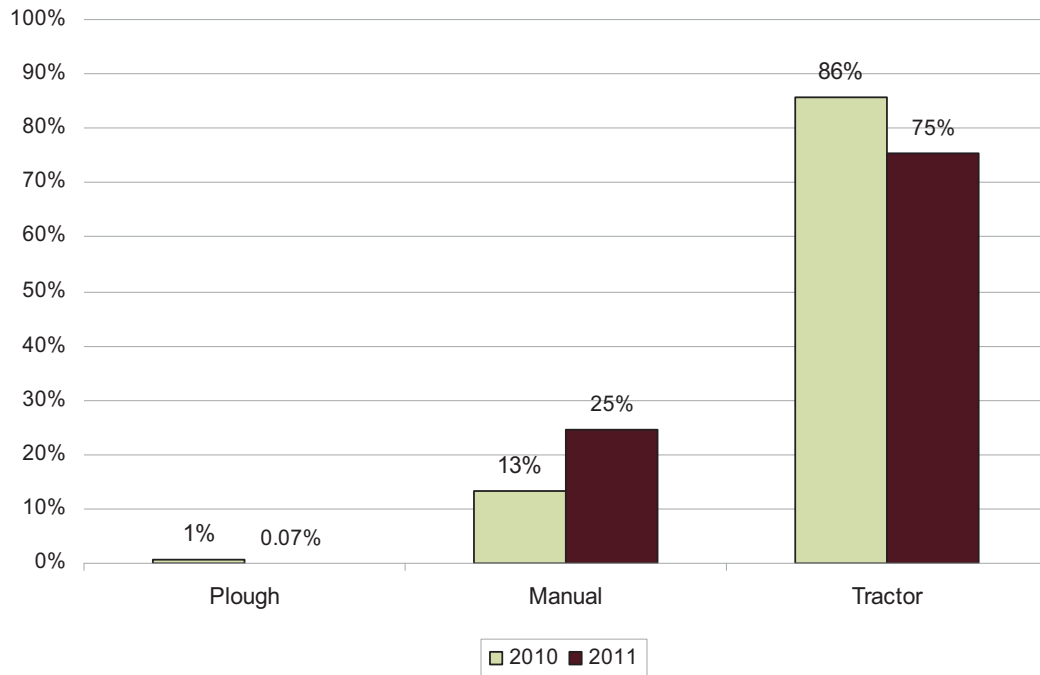


Figure 16: Area of opium poppy eradication in each month (as % of total), 2010 - 2011

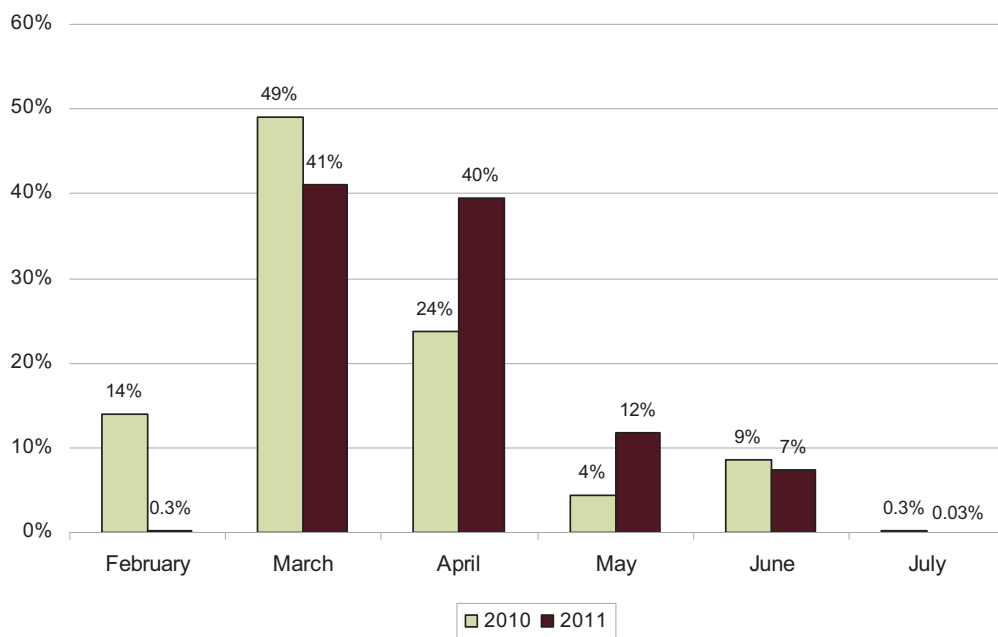


Table 18: Start and end dates of governor-led eradication, 2011

Region	Province	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Eradication (ha)
Central	Kabul			14-Apr 27-Apr				80
	Kapisa			29-Apr	19-May			5
East	Kunar			14-Apr 15-Apr				1
	Laghman		26-Mar		11-May			21
	Nangarhar		23-Mar		02-May			61
North	Baghlan					12-Jun 14-Jun		31
	Faryab				17-May		02-Jul	2
North-east	Badakhshan				16-May	23-Jun		367
South	Day Kundi			16-Apr	04-May			235
	Hilmand	28-Feb		28-Apr				1940
	Kandahar	23-Feb			04-May			287
	Uruzgan			29-Apr	12-May			154
	Zabul			30-Apr		04-Jun		85
West	Badghis				02-May	11-Jun		36
	Farah		12-Mar	26-Apr				212
	Ghor				22-May	13-Jun		43
	Hirat		23-Mar		15-May			227
	Nimroz		28-Mar	11-Apr				20

Eradication and security

Farmers showed resistance against opium poppy eradication in different ways in Badghis, Day Kundi, Farah, Ghor, Hilmand, Hirat, Kabul, Kandahar, Kapisa, Kunar, Nangarhar, Nimroz, Uruzgan and Zabul provinces. Their resistance included direct attack, mine explosions, flooding poppy fields with water and demonstrations. In 2011, there were more attacks on GLE team (48 attacks) compared to 2010 (12 attacks). However, in 2011 the number of fatalities was less than in 2010. This year, 20 persons (13 police and 7 farmers) were killed and 45 persons (40 police and 5 farmers/tractor driver) were injured during the GLE operations. Most of the attacks took place against GLE operations in Hilmand province where most of the fatalities were reported.



Resistance against opium poppy eradication

Table 19: Summary of security incidents during opium poppy eradication, 2011

Province	No. of resistance	No. of personnel injured	No. of personnel dead	Eradication (ha)
Badakhshan	No resistance	-	-	367
Badghis	1	-	-	36
Baghlan	No resistance	-	-	31
Day Kundi	22	-	-	235
Farah	9	-	-	212
Faryab	No resistance	-	-	2.4
Ghor	2	-	-	43
Hilmand	103	36	13	1,940
Hirat	19	-	-	227
Kabul	1	-	-	80
Kandahar	24	3	4	287
Kapisa	6	-	-	5
Kunar	1	-	-	1
Laghman	No resistance	-	-	21
Nangarhar	4	5	1	61
Nimroz	3	-	-	20
Uruzgan	2	-	2	154
Zabul	1	1	-	85
Total	198	45	20	3,810

*Resistance against opium poppy eradication***Quality control of eradicated fields by using satellite images**

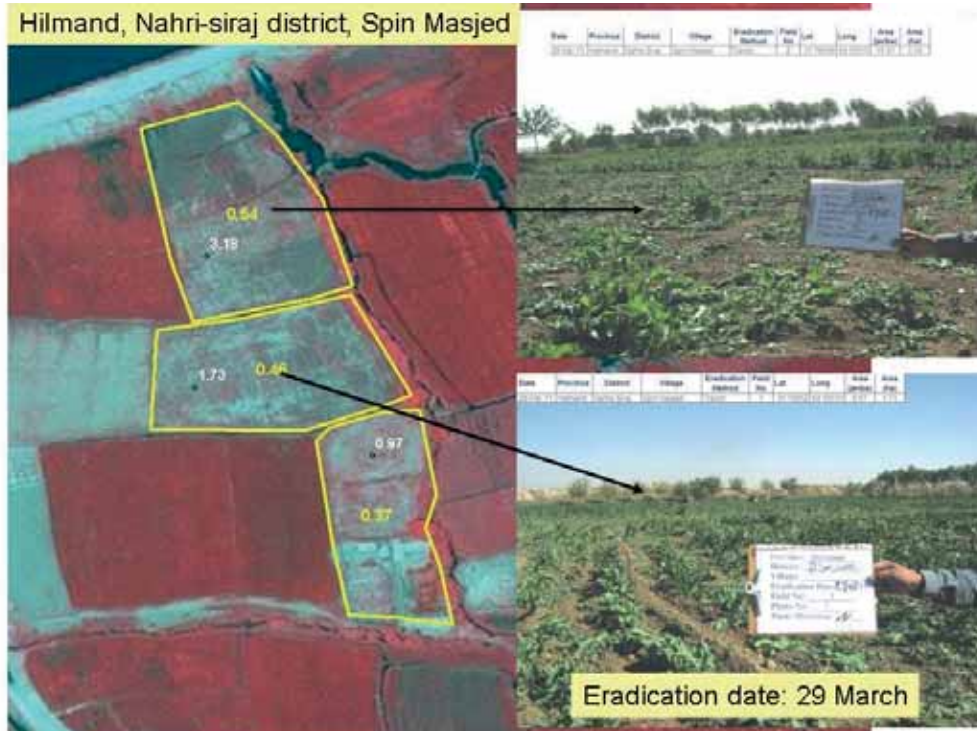
Cross checking of eradication verification reported by verifiers was done using high resolution satellite images. UNODC procured satellite images based on the field coordinates recorded by verifiers in the eradicated poppy fields to validate authenticity of the reported eradication area. The Governor-led eradication of opium poppy of Badakhshan, Farah, Hilmand, Hirat, Kabul, Kandahar and Uruzgan provinces were checked with satellite images as quality control of field reports.

Satellite images of eradicated fields were interpreted and compared with the figures available from the ground. Generally, a good match was observed between eradicated areas calculated from satellite images and those measured on the ground by verifiers.

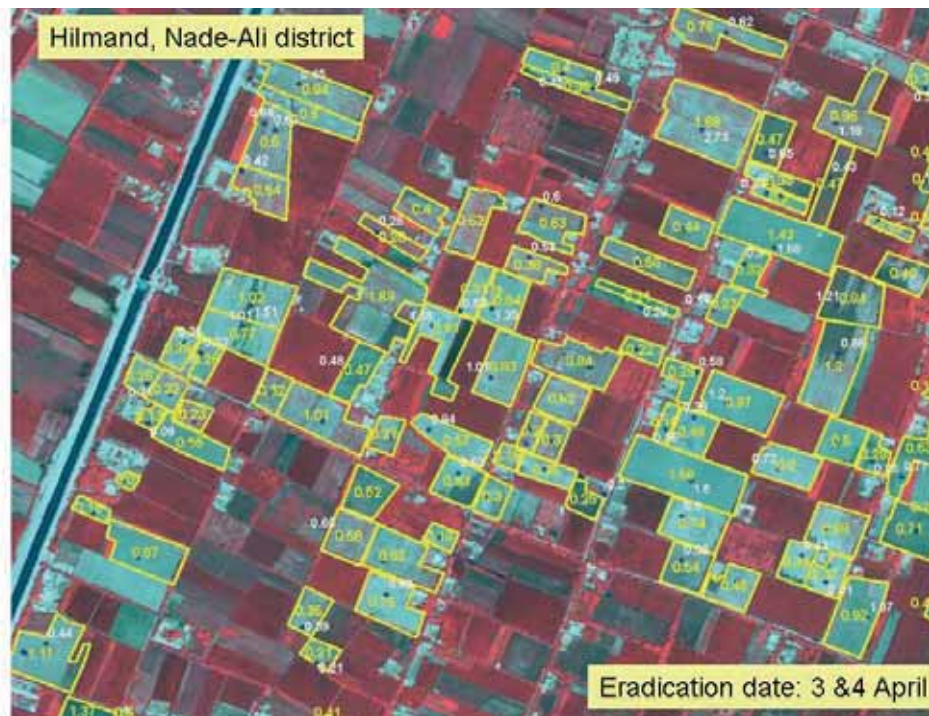
Hilmand Province

Eradication verification of Hilmand province was checked with satellite images and an over-reporting to the extent of **253 ha** was found out of **2,111 ha** reported by field verifiers. The final eradication figure in Hilmand province is corrected to **1,940 ha**. The quality of eradication as seen on satellite images as well as heli-pictures was generally very good and effective at most places in Hilmand province.

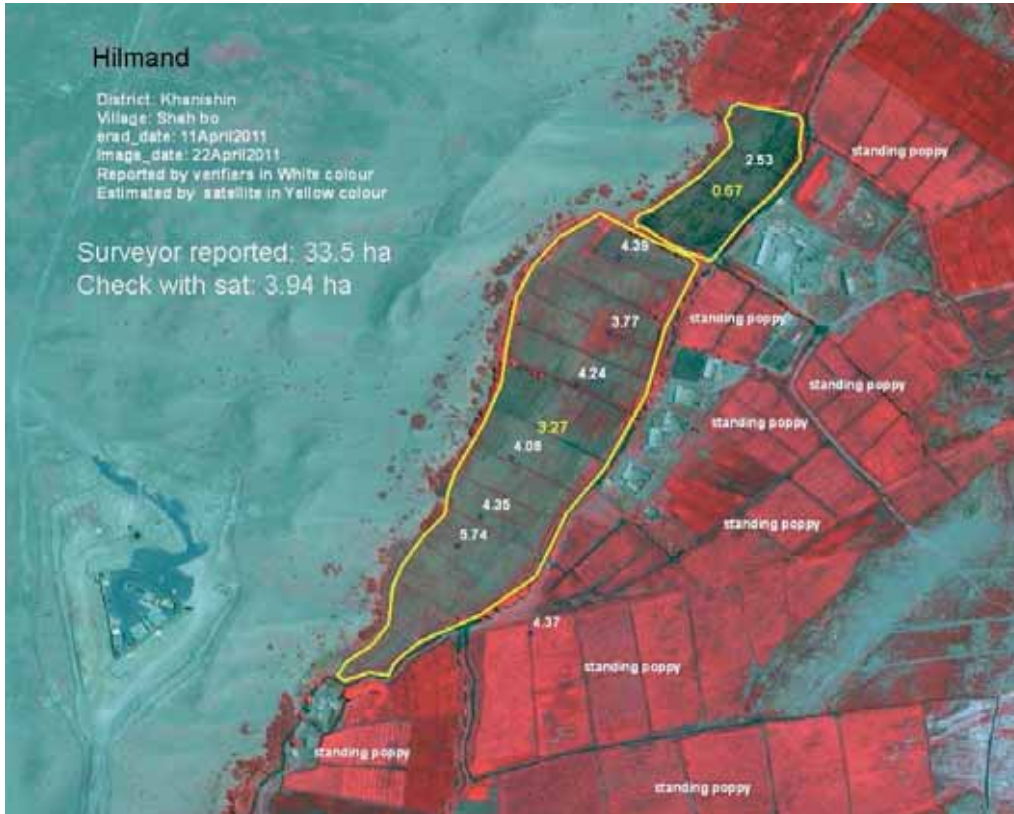
The snapshots showing the over-reporting by the verifiers on satellite images are shown below:



Area of eradication reported by verifiers: 5.8 ha (white text)
 Area of eradication verified by satellite: 1.3 ha (Yellow text)



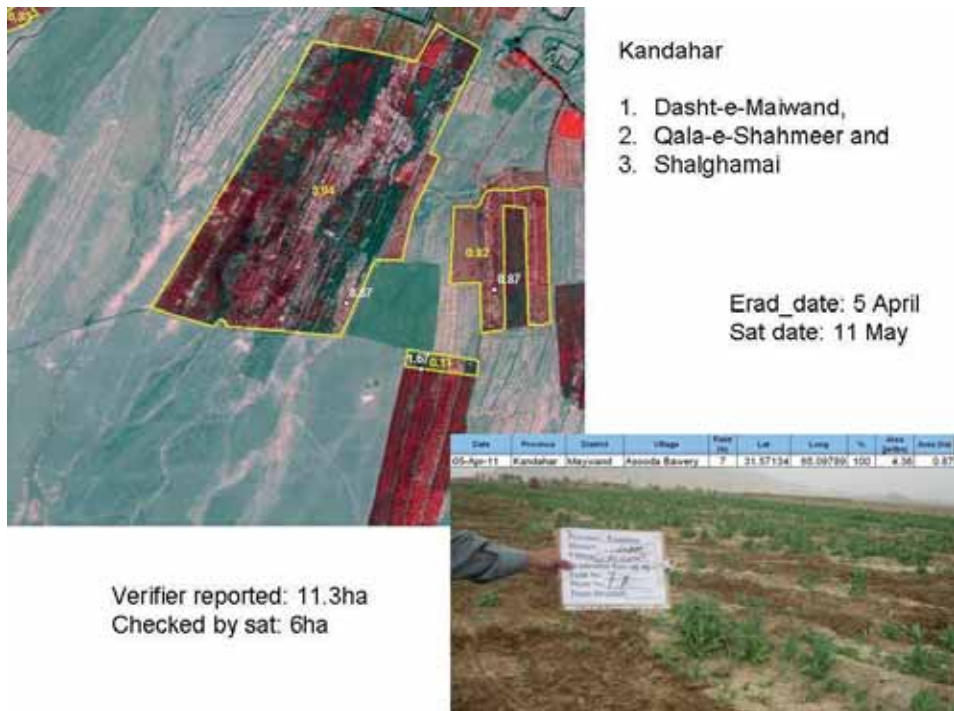
Area of eradication reported by verifiers: 53.9 ha (white text)
 Area of eradication verified by satellite: 47.9 ha (Yellow text)



Kandahar province:

Eradication verification of Kandahar province was checked with satellite images and an over-reporting to the extent of **125 ha** was found out of **412 ha** reported by field verifiers. The final eradication figure in Kandahar province is corrected to **287 ha**. The quality of eradication as seen on satellite images as well as on heli-pictures were observed to be poor at many places in Kandahar province.

The snapshots showing the over-reporting by the verifiers on satellite images are shown below:



Verifier reported: 11.3ha
Checked by sat: 6ha



Kandahar
1. Dasht-e-Maiwand,
2. Qala-e-Shahmeer and
3. Shalghamai

Erad_date: 6 April
Sat_date: 11May
Heli_pict: 8May



Verifier reported: 3.96ha
Checked by sat: 2.02ha



Kandahar
Zahri district
Nadi village

Erad_date: 5 April
Sat_date: 11May
Heli_pict: 8 May

Verifier reported: 1.8ha
Checked by sat: 1.7 ha

Poor quality Eradication





Kandahar

Takhta Pul

Erad_date: 23 April

Sat_date: 25 May

Verifier reported: 7.68ha
Checked by sat: 0.95ha



Date	Province	District	Village	Method	Field No.	Lat	Long	Area (h)	Area (ha)
3-Apr-11	Kandahar	Takhta Pul	Bagh & Landy Bagh	Tractor	18	31.40353	66.08540	08.40	7.88

Uruzgan province:

Eradication verification of Uruzgan province was checked with satellite images and an over-reporting to the extent of **91 ha** was found out of **245 ha** reported by field verifiers. The final eradication figure in Uruzgan province is corrected to **154 ha**.

The snapshots showing the over-reporting by the verifiers on satellite images are shown below:



Uruzgan
Tirinkot district
Samarghab village

Erad_date: 1, 2 and 8 May

Sat date: 10 May

Verifier reported: 46.8ha
Checked by sat: 15ha

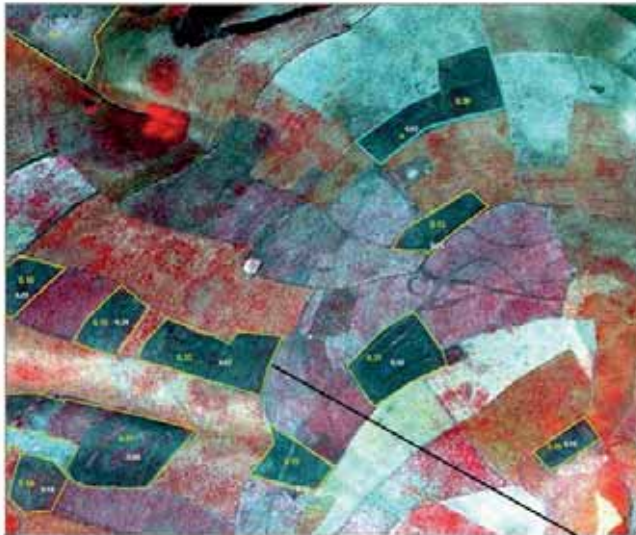


Date	Province	District	Village	Method	Field No.	Lat	Long	Area (h)	Area (ha)
10-May-11	Uruzgan	Tirinkot	Samarghab	Tractor	4	33.67721	68.21027	48	148.23

Badakhshan Province

Eradication verification of Badakhshan province was checked with satellite images and an over-reporting to the extent of **108 ha** was found out of **475 ha** reported by field verifiers. The final eradication figure in Badakhshan province is corrected to **367 ha**.

The snapshots showing the over-reporting by the verifiers on satellite images are shown below:



Badakhshan
Argo district
Barlas-i-Chenar village
Eradication date: 5 June 2011
Satellite date: 2 July 2011

Verifier reported: 4.38 ha
Checked by satellite: 3 ha



Province: Badakhshan
District: Argo
Village: Barlas-i-Chenar
Date: 05-06-11
N: 37.02279
E: 70.24199
Field No: 0
Area: 0



Badakhshan
Argo district
Esha Kete village
Eradication date: 26 May 2011
Satellite date: 2 July 2011

Verifier reported: 3.64 ha
Checked by satellite: 2.2 ha

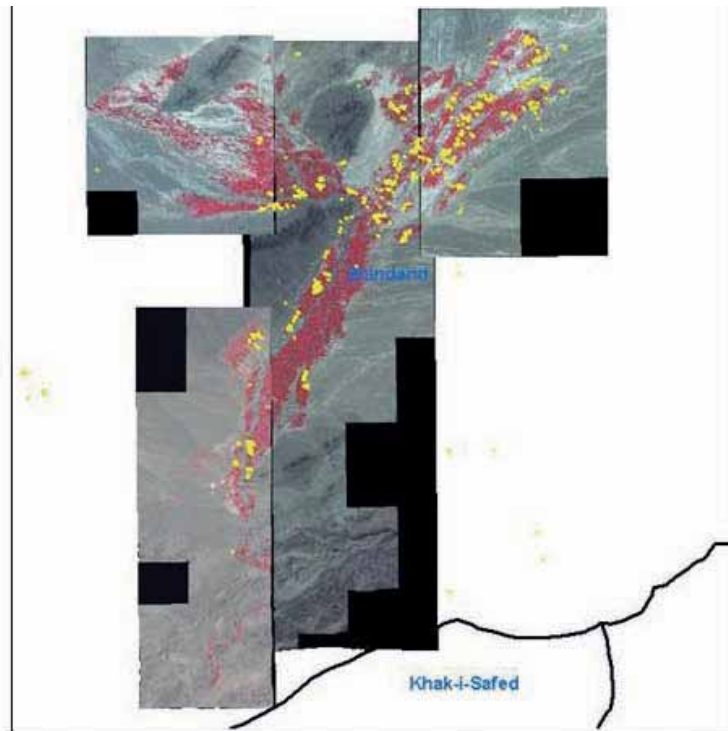


Province: Badakhshan
District: Argo
Village: Esha Kete
Date: 26-05-11
N: 37.02279
E: 70.24199
Field No: 0
Area: 0

Hirat province:

Out of the total of **242 ha** of eradicated poppy fields verified on the ground in Hirat province, **192 ha** have been checked with satellite images. Generally a good match is observed between the eradicated areas calculated from satellite image with that measured on the ground by verifiers. However, there were differences to the extent of **15 ha** at certain locations observed between the satellite images and ground measurements. The quality of eradication observed in Hirat is very good with no re-growth in the eradicated poppy fields.

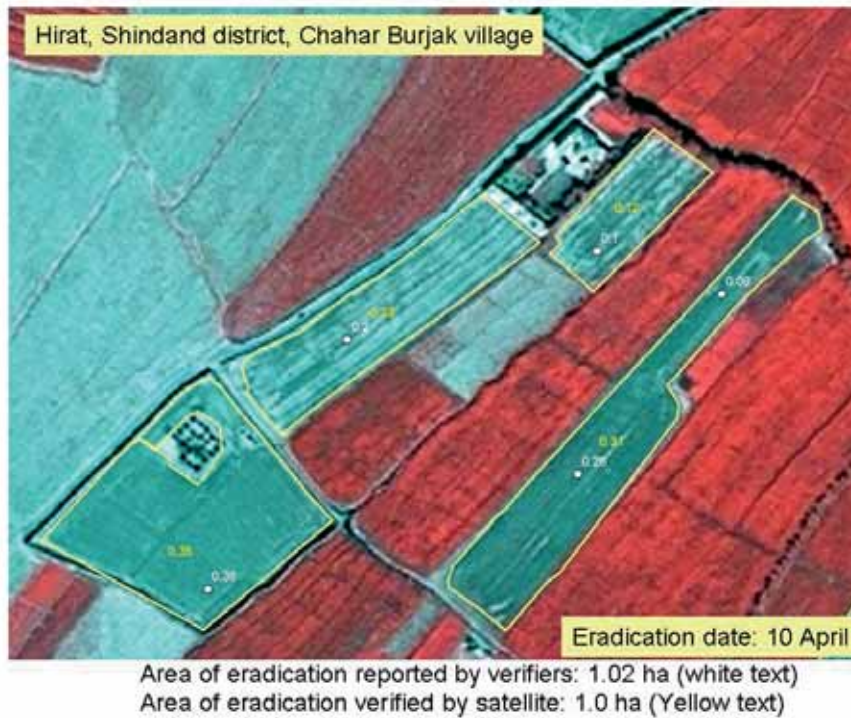
The snapshots of satellite images with eradicated poppy fields are shown below:



Overview of eradication locations checked by satellite image, Shindand district, Hirat



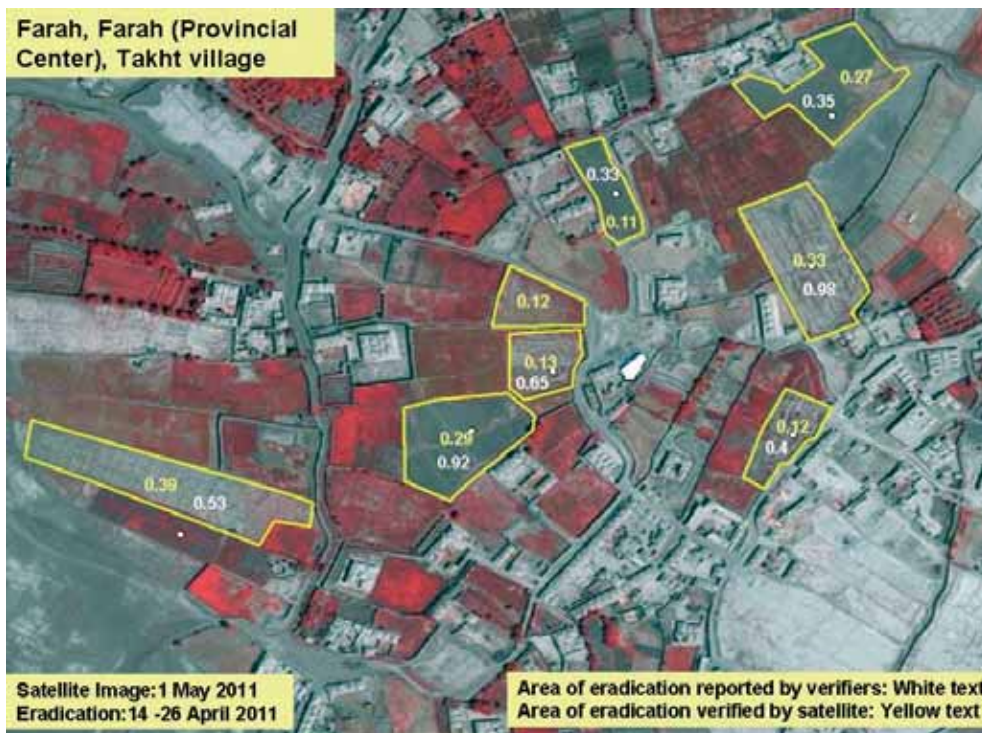
Area of eradication reported by verifiers: 2.3 ha (white text)
Area of eradication verified by satellite: 1.9 ha (Yellow text)



Farah province:

The eradicated area measured on the ground by verifiers in Farah province was checked with satellite images. A difference of **60 ha** was observed between the eradicated areas calculated from satellite image with that measured on the ground by verifiers. The final eradication figure for Farah province was corrected to **212 ha**.

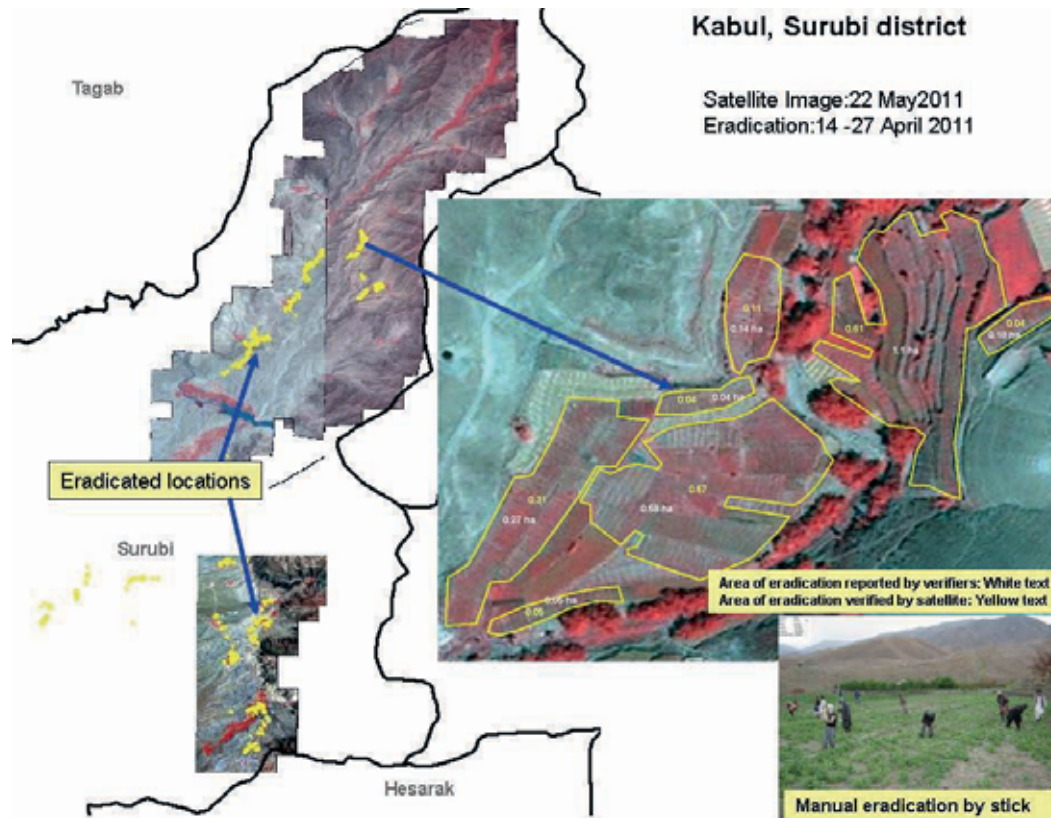
The snapshots of satellite images with eradicated poppy fields are shown below:



Kabul province:

A total of **80 hectares** were checked with satellite images in Surubi district of Kabul province. Generally a good match was observed between the eradicated areas calculated from satellite image with that measured on the ground by verifiers.

The snapshots of satellite images with eradicated poppy fields are shown below:



Regional findings

Eastern region (Kapisa, Kunar, Laghman and Nangarhar):

- *Nangarhar*: A total of **61 ha** of poppy eradication were verified in **22** villages in Achin, Chaparhar, Khugyani, Lalpur, Pachir Wagam and Sher Zad districts.
- *Laghman*: A total of **21 ha** of poppy eradication were verified in **8** villages Alingar and Alishaing districts.
- *Kapisa*: A total of **5 ha** of poppy eradication were verified in **9** villages in Koh Band and Nijrab districts.
- *Kunar*: A total of **1 ha** of poppy eradication was verified in **1** village Sar Kani district.



Governor-led eradication in Pachir Wagam district of Nangarhar province



Governor-led eradication in Alingar district of Laghman province



Governor-led eradication in Surobi district of Kabul province



Governor-led eradication in Koh Band district of Kapisa province

Southern region (Day Kundi, Hilmand, Kandahar, Uruzgan and Zabul):

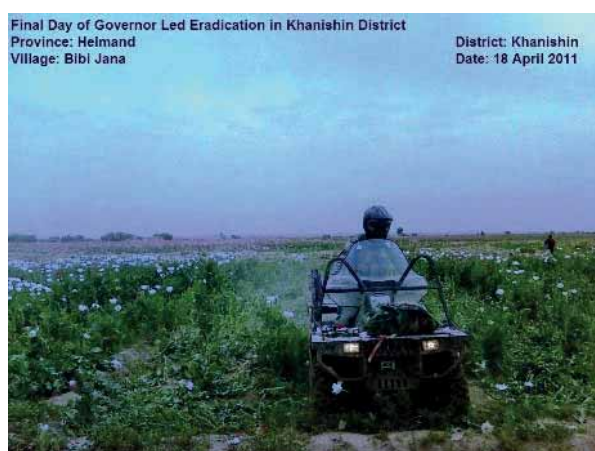
- *Day Kundi*: A total of **235 ha** of poppy eradication were verified in **26** villages in Kejran and Kiti districts.
- *Hilmand*: A total of **1,940 ha** of poppy eradication were verified in **207** villages based on satellite data checks and field verification in Garm Ser, Lashkargah, Musa Qala, Nad Ali, Naher-i-Saraj, Nawa-i-Barukzai, Nawzad, Regi-i-Khan Nishin and Sangin Qala districts.
- *Kandahar*: A total of **287 ha** of poppy eradication were verified in **56** villages based on satellite data checks and field verification in Arghandab, Kandahar, Maiwand, Panjwayee, Shah Wali Kot, Takhta Pul and Zhire districts.
- *Uruzgan*: A total of **154 ha** of poppy eradication were verified in **16** villages based on satellite data checks and field verification in Tirinkot district.
- *Zabul*: A total of **85 ha** of poppy eradication were verified in **15** villages in Arghandab, Qalat and Tarnak Wa Jaldak districts.



Governor-led eradication in Lashkargah district of Helmand province



Governor-led eradication in Maiwand district of Kandahar province



Governor-led eradication in Tirinkot district of Uruzgan province



Western Region (Badghis, Ghor, Hirat, Farah, Nimroz):

- *Badghis*: A total of **36 ha** of poppy eradication were verified in **4** villages in Muqr district.
- *Ghor*: A total of **43 ha** of poppy eradication were verified in **7** villages in Chighcheran, Shahrak and Tulak districts.
- *Farah*: A total of **212 ha** of poppy eradication were verified in **24** villages in Bala Buluk, Farah and Pushtrud districts.
- *Hirat*: A total of **227 ha** of poppy eradication were verified in **69** villages based on satellite data checks and field verification in Gulran, Guzara, Kushk (Rubati-i-Sangi) and Shindand districts.
- *Nimroz*: A total of **20 ha** of poppy eradication were verified in **8** villages in Khashrod district.



Governor-led eradication in Shindand district of Hirat province



Governor-led eradication in Bala Buluk district of Farah province

Northern region (Baghlan, Balkh, Bamyan, Faryab, Jawzjan, Samangan and Sai Pul):

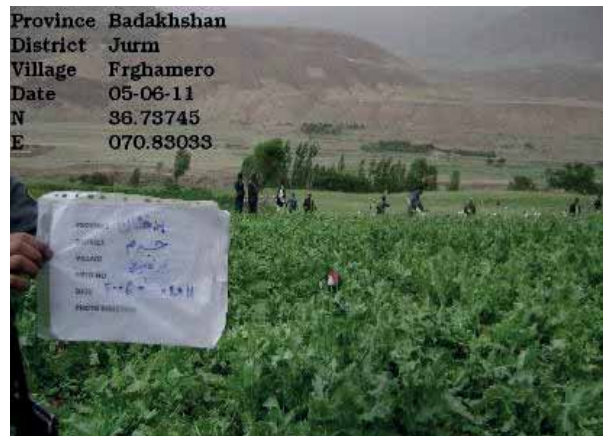
- *Baghlan*: A total of **31 ha** of poppy eradication were verified in **12** villages in Deh Salah and Pul-i-Hisar districts.
- *Faryab*: A total of **2.4 ha** of poppy eradication were verified in **7** villages in Gurziwan and Kohistan districts.
- No eradication took place in other provinces.

North-eastern region (Badakhshan, Kunduz and Takhar):

- *Badakhshan*: A total of **367 ha** of poppy eradication were verified in **72** villages based on satellite data checks and field verification in Argo, Darayim, Jurm, Khash, Kishim and Tashkan districts.
- No eradication took place in Kunduz and Takhar province.



Governor-led eradication in Argo district of Badakhshan province



Governor-led eradication in Jurm district of Badakhshan province

Central region (Kabul):

- *Kabul*: A total of **80 ha** of poppy eradication were verified in **30** villages based on satellite data checks and field verification in Surubi district (Uzbeen valley).

2.3 Potential opium yield¹⁰

In 2009, the potential opium yield (56.1 kg/ha) was comparatively high, while in 2010, major opium cultivation areas were affected by plant diseases, which led to a strong reduction in yield (29.2 kg/ha). In 2011, opium yields were back to “normal” levels of 44.5 kg/ha. In 2011, the estimated potential opium production amounted to 5,800 mt, an increase of 61% over 2010. As opium cultivation remained relatively stable between 2009 and 2011, the differences in opium production in those years were due to changes in per-hectare opium yield.

In 2011, all regions except the Central and Western region experienced rushed harvests because of eradication and labour shortages. In the Southern region, furthermore a heat wave was reported.

UNODC conducted a review of the 2011 yield survey methodology and data quality. Detailed data quality control procedures were applied for the 2011 yield estimates. For further details, please refer to the Methodology section of this report.

Table 20: Opium yield by region (kg/ha), 2010 – 2011

Region	2010 average yield (kg/ha)	2011 average yield (kg/ha)	% change
Northern, Central, Eastern and North-eastern (NCENE)	51.1	NA	NA
Northern, Central and Eastern (NCE)	NA	40.7	NA
North-eastern	NA	23.1	NA
Southern (average)	29.7	48.1	+62%
Southern (disease affected area)	10.1	NA	NA
Southern (other areas)	44.1	NA	NA
Western	24	30.6	+28%
Weighted national average	29.2	44.5	+52%

Due to a low number of yield measurements, the Central, Eastern, North-eastern and Northern regions were grouped into one yield region in 2010. For these regions a direct region-by-region comparison with yields in 2011 is not possible, as this year a separate estimate for the North-Eastern region is available. In 2010 all provinces in the Northern region had less than 100 ha of poppy cultivation and were considered poppy-free, however, some pockets of poppy cultivation continued to exist and contributed to the 2010 yield estimate.

In 2010 due to the widespread occurrence of disease, two separate yield figures were calculated for the Southern region, one for areas not affected by disease (other areas) and one for disease-affected areas.

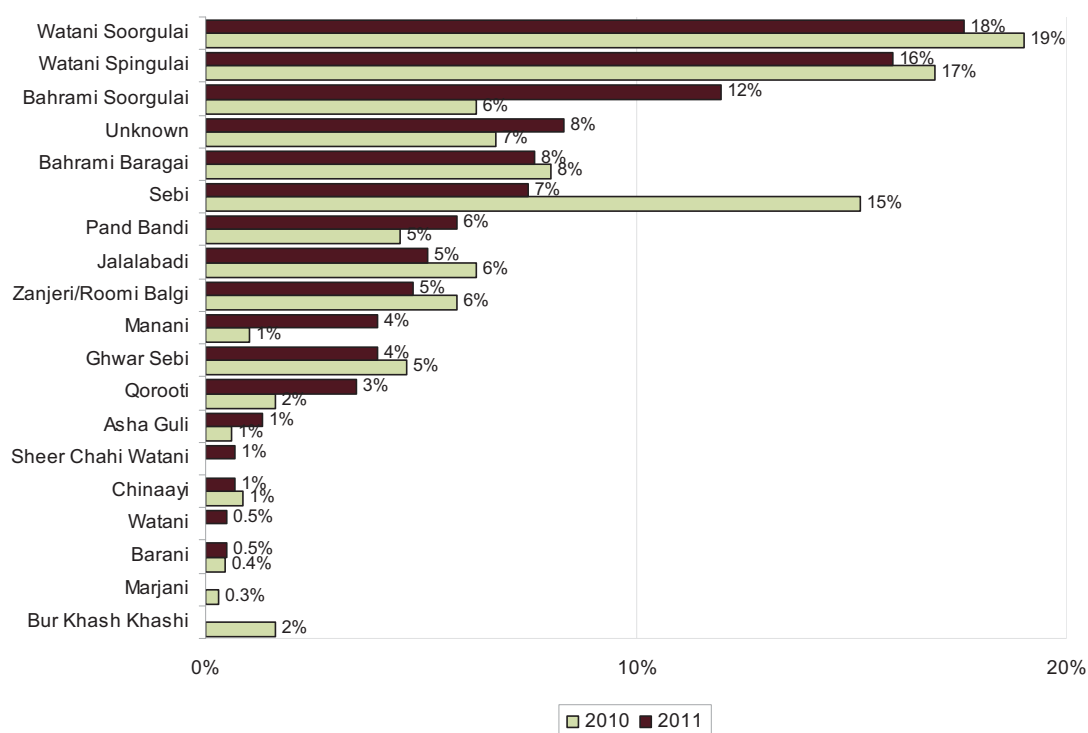
Opium poppy varieties

Farmers usually make a selection of poppy varieties depending on high yielding variety, soil conditions, weather conditions that govern the maturation date, resistance to disease and the need for inputs such as water, fertilizer and labour requirements. As observed during the 2011 yield survey, *Watani Soorgulai* remained the top variety reported by most farmers (18%) and (19%) in 2011 and 2010 respectively. In 2008, *Sebi* was the most common variety reported (31.3%). The second most common variety planted in 2011 and 2010 was *Watani Spingulai* (16%) and (17%) respectively. In 2011 and 2010, *Bahrami Soorgulai* was the third variety reported by farmers (12% and 8%) respectively.¹¹

¹⁰ Yield estimates in this report are based on a concept of potential yield, i.e. the amount of opium farmers can potentially extract from poppy capsules. Depending on local conditions and practices, this may differ from the amount actually harvested.

¹¹ 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.

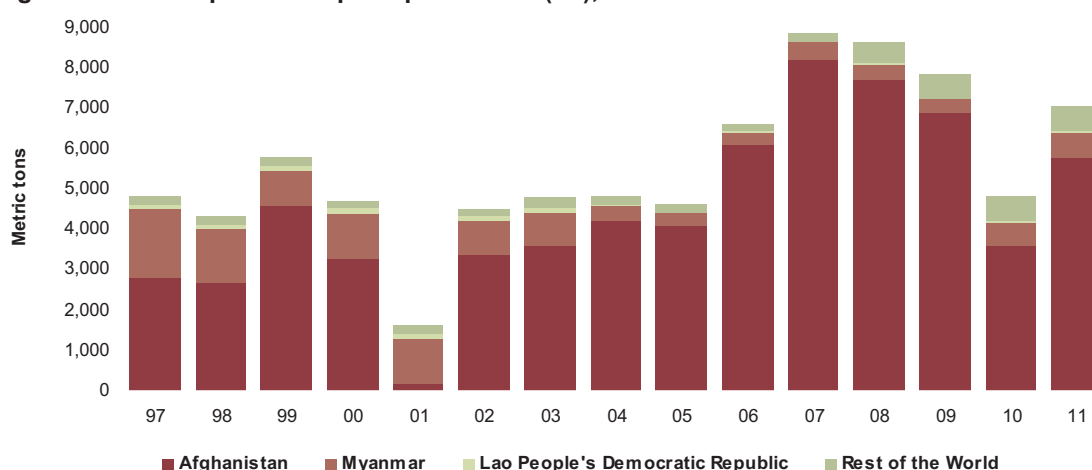
Figure 17: Reported opium poppy varieties by farmers in 2010 and 2011 (as % of farmers' responses)



2.4 Potential opium production¹²

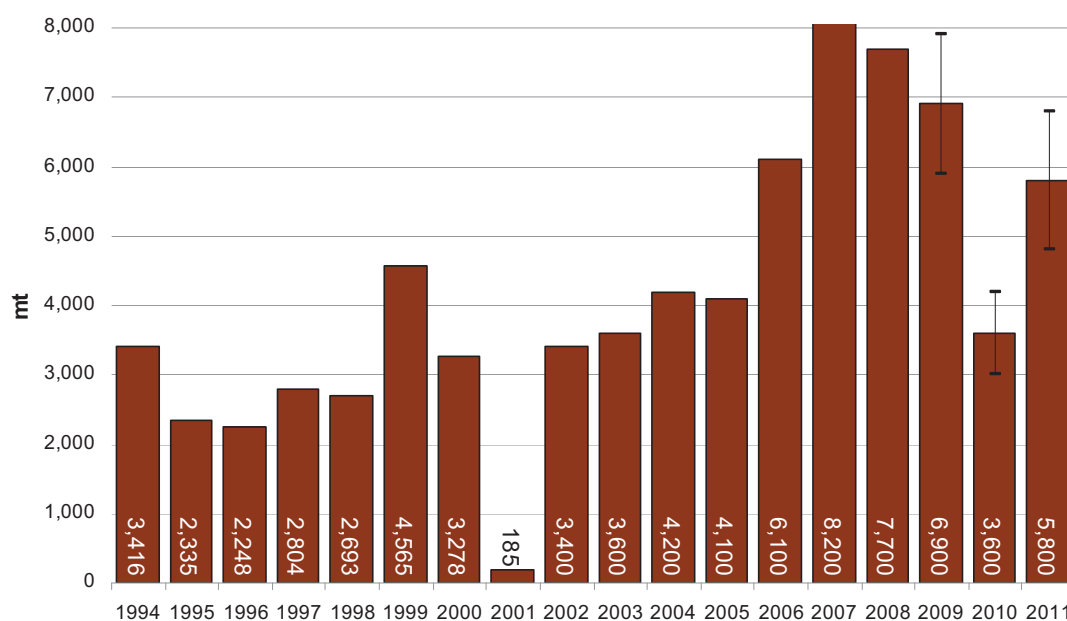
In 2011, the estimated potential opium production amounted to 5,800 mt, an increase of 61% over 2010. As opium cultivation remained relatively stable between 2009 and 2011, the differences in opium production in those years were due to changes in per-hectare opium yield. Based on preliminary results for some countries and regions, in 2011, potential opium production in Afghanistan represented 82% of global potential production.

Figure 18: Global potential opium production (mt), 1997 - 2011



Source: UNODC, World Drug Report 2010. 2010 results for Rest of the World are preliminary. Figures refer to oven-dry opium.

¹² "Potential production" is a hypothetical concept and not an estimate of the actual opium or morphine/heroin production. For more information, see UNODC (2011): World Drug Report 2011, p. 265.

Figure 19: Potential opium production in Afghanistan (mt), 1994 - 2011

Sources: UNODC and UNODC/MCN opium surveys, 1994-2011. The high-low lines represent the upper and lower bounds of the estimate. Figures refer to oven-dry opium.

Within Afghanistan, the Southern region accounted for 85% of the 2011 national opium production followed by the Western region which accounted for (12%) of total opium production in Afghanistan. The rest of the country contributed only 4% of the total opium production.

In 2011, Hilmand province alone produced 52% of all Afghan opium. Four provinces in the south and west of Afghanistan – Hilmand, Kandahar, Uruzgan and Farah – account for 93% of the national opium production.

Table 21: Potential opium production by region with ranges (mt), 2011

Region	Best estimate	Lower bound	Upper bound
Central	9	8	10
Eastern	166	152	179
North-eastern	39	36	43
Northern	12	11	13
Southern	4,924	3,808	6,099
Western	685	322	1,095
National	5,835	4,761	6,805
National (rounded)	5,800	4,800	6,800

Table 22: Main opium producing provinces (% of total production), 2009 - 2011

Province	2009	2010	2011
Hilmand	59%	54%	52%
Kandahar	17%	21%	23%
Uruzgan	8%	6%	9%
Farah	8%	10%	9%

Table 23: Potential opium production by province and region (mt), 2010 – 2011

Province	Production 2009 (mt)	Production 2010 (mt)	Production 2011 (mt)	Change 2010-2011 (mt)	Change 2010-2011 (%)	REGION
Kabul	7	8	9	+1	15%	Central
Khost	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Logar	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Paktya	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Panjshir	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Parwan	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Wardak	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Ghazni	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Paktika	Poppy-free	Poppy-free	Poppy-free	NA	NA	Central
Central Region	7	8	9	+1	15%	
Kapisa	Poppy-free	Poppy-free	7	NA	NA	East
Kunar	6	8	23	+16	199%	East
Laghman	5	12	25	+13	112%	East
Nangarhar	11	37	110	+73	199%	East
Nuristan	Poppy-free	Poppy-free	Poppy-free	NA	NA	East
Eastern Region	21	56	166	+109	194%	
Badakhshan	19	56	39	-17	-30%	North-East
Takhar	Poppy-free	Poppy-free	Poppy-free	NA	NA	North-East
Kunduz	Poppy-free	Poppy-free	Poppy-free	NA	NA	North-East
North-eastern Region	19	56	39	-17	-30%	
Baghlan	Poppy-free	Poppy-free	7	NA	NA	North
Balkh	Poppy-free	Poppy-free	Poppy-free	NA	NA	North
Bamyan	Poppy-free	Poppy-free	Poppy-free	NA	NA	North
Faryab	Poppy-free	Poppy-free	6	NA	NA	North
Jawzjan	Poppy-free	Poppy-free	Poppy-free	NA	NA	North
Samangan	Poppy-free	Poppy-free	Poppy-free	NA	NA	North
Sari Pul	Poppy-free	Poppy-free	Poppy-free	NA	NA	North
Northern Region	Poppy-free	Poppy-free	12	NA	NA	
Hilmand	4,085	1,933	3,044	+1,111	57%	South
Kandahar	1,159	768	1,308	+541	70%	South
Uruzgan	540	218	511	+293	134%	South
Zabul	67	14	13	-2	-12%	South
Day Kundi	176	46	48	2	5%	South
Southern Region	6,026	2,979	4,924	+1945	65%	
Badghis	238	71	61	-10	-14%	West
Farah	545	349	536	+187	54%	West
Ghor	Poppy-free	Poppy-free	Poppy-free	NA	NA	West
Hirat	24	9	11	+3	30%	West
Nimroz	19	49	76	+27	56%	West
Western Region	825	478	685	+207	43%	
Total (rounded)	6,900	3,600	5,800	+2,200	61%	

Potential heroin 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 its raw form in the region and calculating the potential production of heroin requires the knowledge of how much opium is converted into morphine and heroin and how much remains unprocessed. This information can be estimated only on the basis of secondary information and therefore any data on total potential production of heroin should be taken as indicative. Too little is known about how much opium traffickers process and when and where the manufacture of morphine and heroin takes place.

Based on information on the distribution of heroin and opium seizures in Afghanistan and neighbouring countries from 2008-2010, it can be estimated that 42% of the potential opium

production, is converted into morphine or heroin.¹³ The 2011 total potential opium production would be distributed as following: 2,400 mt of opium would be converted into 348 mt of morphine or heroin and 3,400 mt of opium left as unprocessed opium, assuming a 7:1 conversion ratio from opium to morphine/heroin.¹⁴

If the total potential opium production of 2011 (5,800 mt) would be converted, 829 mt of morphine or heroin could potentially be produced.

Table 24: Potential morphine/heroin production (mt), 2011

	If total potential opium production is converted	If 42% of potential opium production is converted
Morphine/heroin	829 mt	348 mt
Unprocessed opium		3,400 mt

2.5 Yield experiments 2010 and 2011

In 2010 and 2011 yield experiments were conducted on a limited number of fields all over Afghanistan. A total of 24 fields was selected in 2011 for acquiring data on capsule volumes, number of yielding capsules and opium yield. In each field the data collection and opium harvests carried out according to a distinct protocol.

Opium harvested in the course of several days was weighted and samples of opium from each field were analyzed in the UNODC Laboratory in Vienna to calculate moisture and morphine content.

The experiments were conducted with the aim to:

- Validate the model currently used by UNODC to estimate dry opium harvested on the basis of capsule volume¹⁵. The model was constructed utilizing data collected in the field on capsule volume and harvested opium in opium producing countries during the years 2000-2003. After many years there was the need to verify the accuracy of the model particularly in relation to capsule volumes above 1,600 cm³/m² for which the model was not calibrated.¹⁶
- Update existing information on the morphine content of opium and provide a wider geographical representation. The information on morphine content is an important element to estimate the potential production of heroin. Currently UNODC uses a conversion ratio of 7:1 (7 kg of opium needed to produce 1 kg of heroin).

Validation of the model to estimate opium production

The experiments conducted in 2010 and 2011 largely confirmed the solidity of the model and the average correlation between capsule volumes and dry harvested opium.

None of the fields in the yield experiment in 2011 had capsule volume above 2,000 cm³/m². The experiments gave indication that capsule volumes above 1,600 cm³/m² are very rare. Capsule volumes exceeding the current upper end of the range may exist but in good quality yield data they seem to be so rare that they would not have an influence on the results. High yields calculated in past years were a result of estimated capsule volumes above 1,600 cm³/m². It remains an

¹³ The same percentage was used to calculate the export value of the Afghan economy after deducting local consumption and seizures (see chapter "Potential value of the opiate economy" in this report).

¹⁴ For more information on the conversion ratio, see Ministry of Counter Narcotics/UNODC (2005): Afghanistan Opium Survey 2005, November 2005, p. 120 (<http://www.unodc.org/unodc/en/crop-monitoring/index.html>).

¹⁵ Every year UNODC conducts a study to estimate the opium yield. Collecting information on capsule volume in a large number of fields is more feasible than to collect information on the quantity of opium extracted by the poppy plants. This because opium is harvested in the course of few days while the volume of capsules can be measured during one field visit.

¹⁶ 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.

uncertainty around these estimates as after improving some field measurements, the high values appeared to be very rare.

Morphine content and ratio opium to heroin

There are two main factors that determine the amount of opium which is needed to produce one kg. of heroin: i) morphine content of opium, and ii) efficiency used by traffickers to extract morphine from opium when processing it into heroin (laboratory efficiency). Based on these two factors, until 2005 UNODC estimated a conversion factor of 10:1 (10 kg of opium needed to produce one kg. of heroin). After 2005 the conversion ratio was changed for Afghan opium¹⁷ from 10:1 to 7:1 on the basis of research made on the morphine content of Afghan opium, key informants and some scientific studies undertaken by third parties.

Research done on 39 samples from 28 fields between 2000-2003 showed an average morphine content of 15.0% (with a 95% confidence interval of 13.7% to 16.3%).¹⁸ A large majority of the samples were taken from Badakhshan and therefore the results were biased towards the North-eastern region. With the new data collected during the 2010 and 2011 yield experiments the total number of opium samples available increased to 123 samples (from 70 fields) and the regional coverage was considerably improved.

The average morphine content calculated considering all samples collected during yield experiments between 2000 and 2011, was 13%, a decrease of 13% from the morphine content calculated on the basis of the experiments undertaken between 2000-2003. On average, the morphine content of fields in the Southern region, where most of the opium production is concentrated, was also 13%. If the decrease in morphine content is confirmed in future experiments, the ratio of 7:1 currently used to calculate potential production of heroin will have to be lowered, assuming that all other factors (laboratory efficiency) remain the same.¹⁹

Table 25: Average morphine content for different years

	2000-2003	2010-2011	2000-2003, 2010-2011
Average	15%	12%	13%

Yearly and regional variations of the morphine content are considerable. Further research in the yearly and regional variations of the morphine content as well as studies on the efficiency of clandestine laboratories are urgently needed to obtain a better understanding of the opium to heroin conversion ratio and the overall potential production of heroin.

¹⁷ UNODC changed the conversion factor only for Afghanistan. For opium coming from other producing countries UNODC still uses the ratio of 10:1.

¹⁸ For a detailed description, see Ministry of Counter Narcotics/UNODC (2005): Afghanistan Opium Survey 2005, November 2005, p. 120 (<http://www.unodc.org/unodc/en/crop-monitoring/index.html>).

¹⁹ The United States Drug Enforcement Administration (DEA) uses a 8:1 ratio for opium produced in Colombia and Mexico (i.e. 8 kg oven-dry opium to manufacture 1 kg of 100% pure heroin under local conditions).

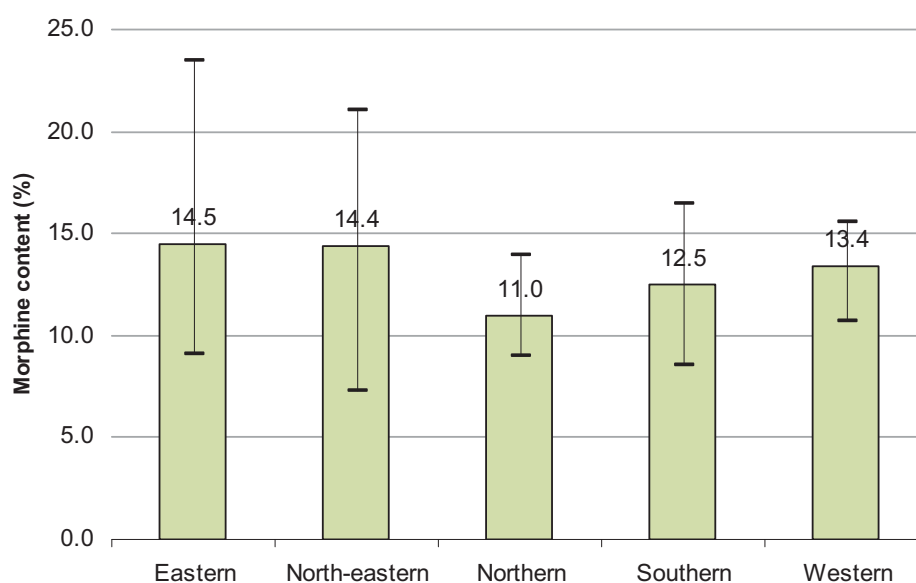
Table 26: Average annual morphine content in yield experiment fields, 2000-2011

Region	2000	2001	2003	2010	2011	Average*
Eastern	16.9		11.2		11.6	14.5
North-eastern	18.0	17.5	11.2	16.9	8.2	14.4
Northern			13.9	10.6	10.2	11.0
Southern	14.2		10.3	11.7 ²⁰	13.7	12.5
Western				14.3	12.8	13.4
Average	16.9	17.5	11.2	13.0	11.6	13.4

Empty cells: region not covered. * Simple average of all field measurements.

Table 27: Number of yield experiment fields, 2000-2011

Region	Number of fields, 2000-2003	Number of fields, 2000-2011
Eastern	7	9
North-eastern	15	24
Northern	1	6
Southern	5	21
Western	0	10
Total	28	70

Figure 20: Average morphine content in oven-dry opium gum in Afghan samples, 2000-2011

The high-low bars represent the lowest and highest field value measured in that region.

²⁰ Average over all fields in the Southern region. Some fields were affected by the 2010 diseases. It is not known whether, and if how, the disease has affected morphine content.

2.6 Security

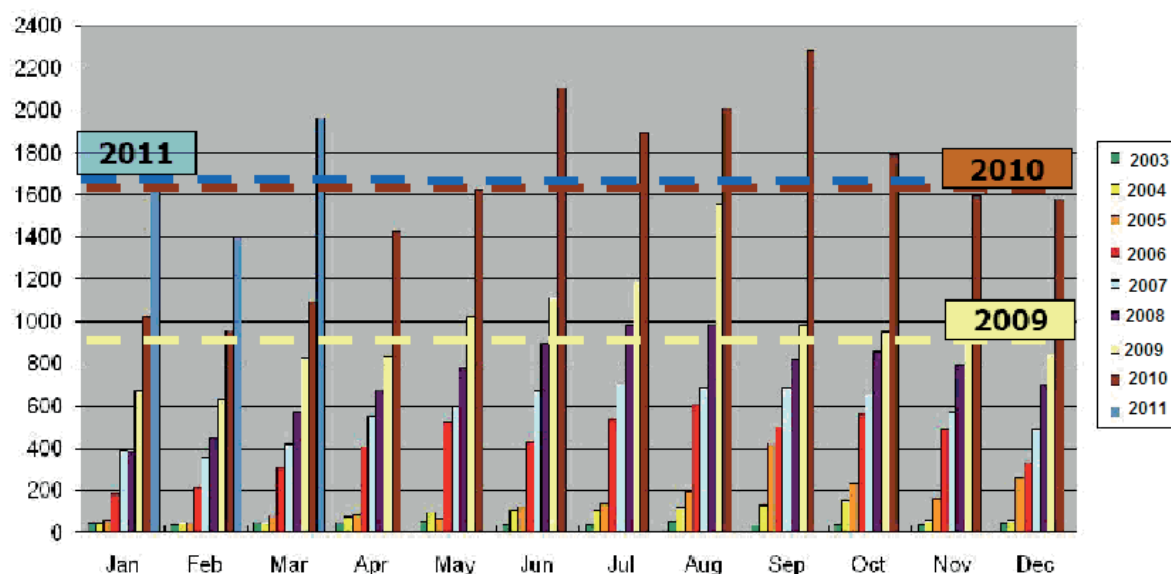
A share of 78% of opium cultivated in 2011 was concentrated in Hilmand, Kandahar, Uruzgan, Day Kundi, and Zabul provinces in the Southern region. Hilmand, Kandahar, Uruzgan and Zabul provinces are the most insecure provinces in the country where security conditions are classified as high or of extreme risk by the United Nations Department of Safety and Security (UNDSS). Most of the districts in this region were inaccessible to the UN and NGOs. Day Kundi is the only province in the South where security is generally good except for two districts, Gizab and Kejran.

Farah, Nimroz and Badghis, which are insecure provinces in the Western region, contributed to 17% of cultivation. The Southern and Western regions cultivate 95% of all opium. Anti-government elements (AGE) as well as drug traders are very active in the Western region. Provinces in the South are the strongholds of AGEs, while provinces in the West (Farah, Badghis and Nimroz) are known to have organized criminal networks. The link between lack of security and opium cultivation was also evident in Nangarhar province (Eastern region), where cultivation was concentrated in districts (Sherzad and Khogyani) classified as having a high or extreme security risk. Also, in Kabul, opium cultivation was concentrated in the Uzbeen valley of Surobi district, an area of extreme security risk. In Kapisa province opium cultivation is concentrated in Tagab district where security is very poor.

Security incidents in Afghanistan have risen every year since 2003, especially in the South and South-western provinces. The number of security incidents increased sharply in 2006, in parallel with the increase in opium cultivation. In 2010, there was a further sharp increase in security incidents. Most security incidents that arose during the eradication verification survey in 2009 were due to insurgency. In 2011, resistance to eradication forces resulted in 20 deaths, mostly of policemen.

The chart below shows security incidents from January 2003 to September 2010, as recorded by the UNDSS. Security incidents increased sharply after 2005, particularly in the South and South-western provinces. Since 2007, levels of opium cultivation were the highest (over 70%) in Hilmand, Kandahar, Uruzgan, Day Kundi, Farah, Nimroz and Badghis provinces where security is very poor. Most of the districts in this region cannot be reached by UN agencies or NGOs due to the activity of anti-government elements and drug traders.

Figure 21: Number of security incidents between January 2003 and March 2011



Source: UNDSS, Afghanistan

2.7 Daily wages for opium lancing

Under normal conditions, three people can harvest 1 jerib (0.2 ha) of opium poppy in 21 days. If all harvesting took place at the same time, a total of 1.8 million people (man-days) would be needed to reap the entire 2011 opium harvest in Afghanistan. Hilmand province alone would require 0.9 million man-days for harvest. The number of skilled persons available in opium poppy-cultivating households was not sufficient to harvest the total of 131,000 ha of crops cultivated. Therefore, extra labour was needed for harvesting, especially in southern Afghanistan. Labourers, attracted by harvesting wages, travelled from all over the country to the Southern region for employment in lancing jobs. In 2011, there was an increase in the daily wages of labour in the country compared to 2010. Average daily lancing wages rose to US\$ 12.6 per day. This is an increase of 35% from US\$ 9.3 per day in 2010. The daily wage of lancing/gum collection was much higher (almost double) than any other daily wage labour in the country. In comparison, the daily lancing wage in 2009 was US\$ 8.7 per day.

Table 28: Daily wage rates for different activities in Afghanistan, 2011

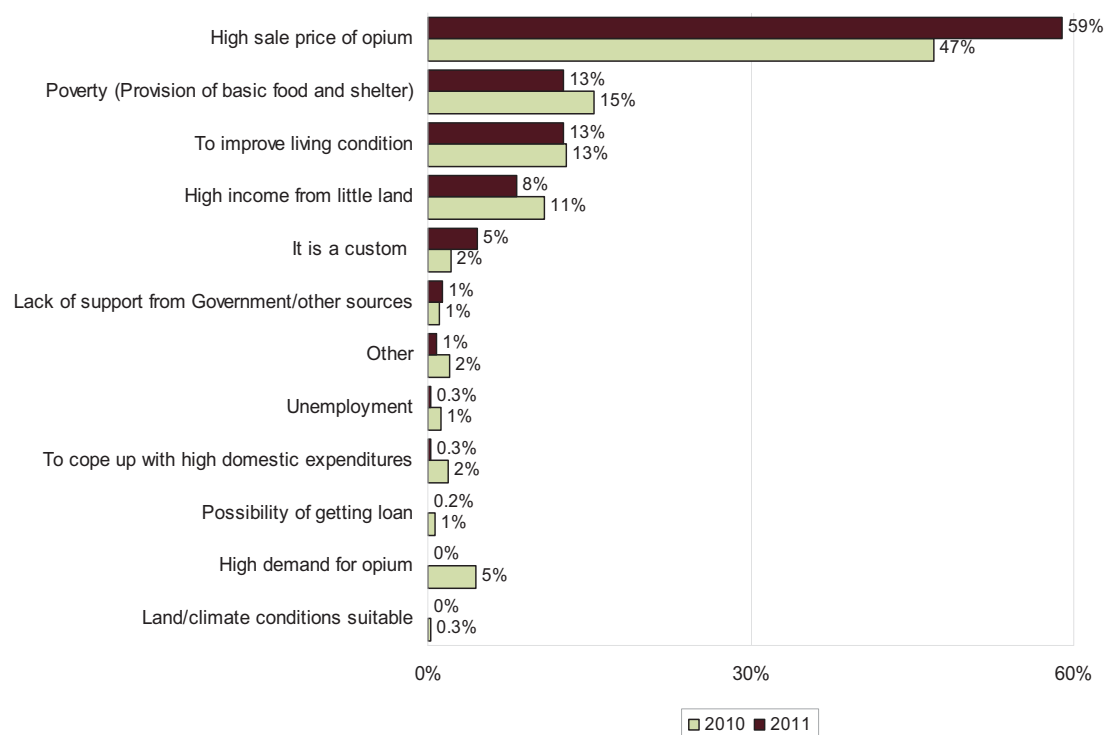
Activity	Daily wage rate (US\$) 2010	Daily wage rate (US\$) 2011	Change on 2010
Labour (Roads, construction, etc.)	4.7	5.6	19%
Lancing / Gum collection	9.3	12.6	35%
Poppy weeding	5.4	6.6	23%
Wheat harvesting	5.4	6.6	23%

2.8 Reasons for opium cultivation

As part of the annual village survey, 4,467 farmers in 1,489 villages across Afghanistan were asked why they cultivated opium or, if applicable, why they had stopped cultivating.

Farmers cited the high sale price as the most important reason (59%) for cultivating opium poppy in 2011. Provision of basic food and shelter for family, improving living conditions and high income from little land were other important reasons given. In 2010, the high sale price was cited as the most important reason (47%) by the farmers. Other important reasons in 2010 were provision of basic food and shelter for the family, improving living conditions and high income from little land.

Figure 22: Reasons for cultivating opium, 2010 - 2011 (n=379 farmers in 2011)



In 2011, farmers who stopped cultivating opium in 2011 or before were asked about their major reasons for doing so. Respondents mentioned the Government ban on opium cultivation most frequently (23%). The second most mentioned reason (15%) was fear of government. Farmers also mentioned (14%) that they stopped opium cultivation because of diseases. About 11% of farmers cited that Islam forbids opium cultivation. In 2010, the low sale price of opium was reported by farmers (7%), a decrease from the 18% cited in 2009. This reflects the fact that farmers made the decision during planting season (November 2009 in the main cultivating areas) when opium prices were still relatively low.

Figure 23: Reasons for stopping opium cultivation in or before 2010 and 2011 (n=1267 farmers in 2011)

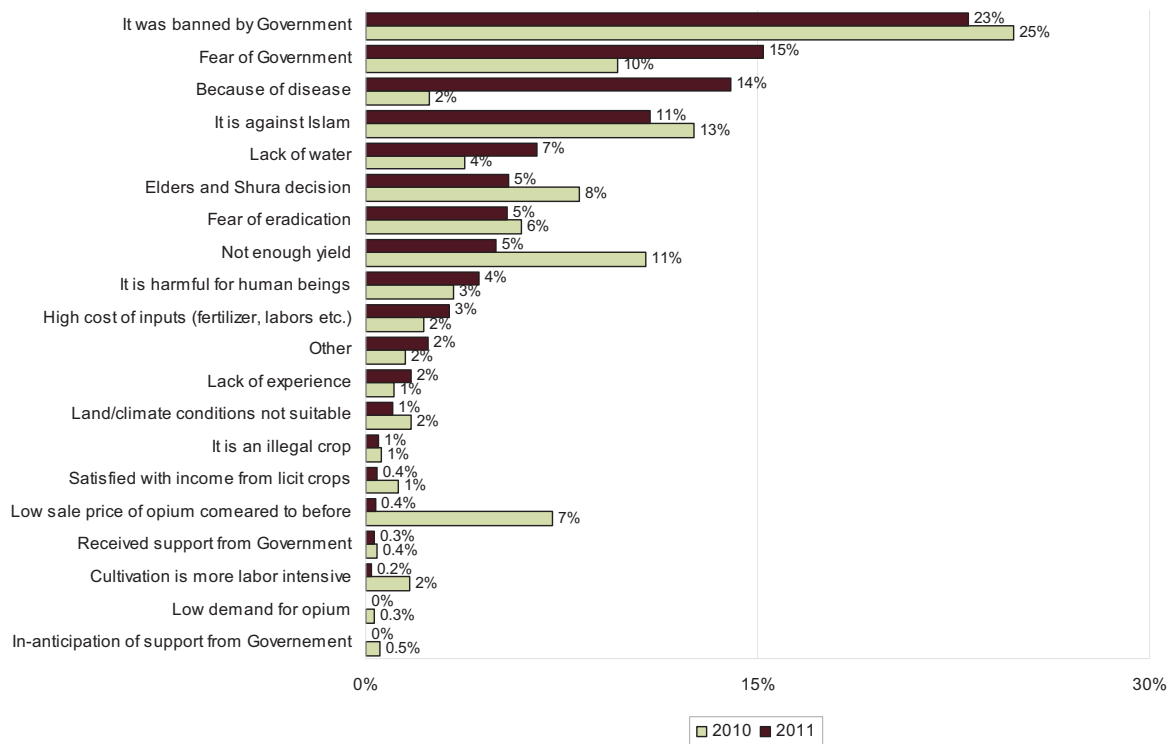
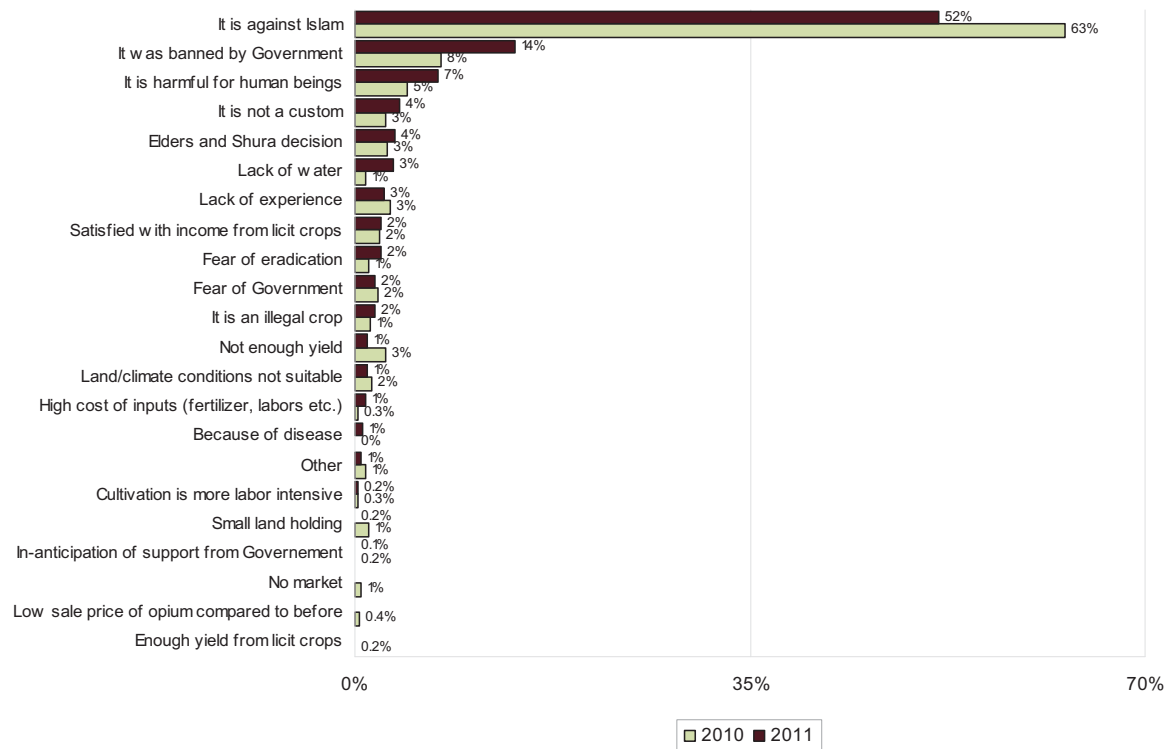
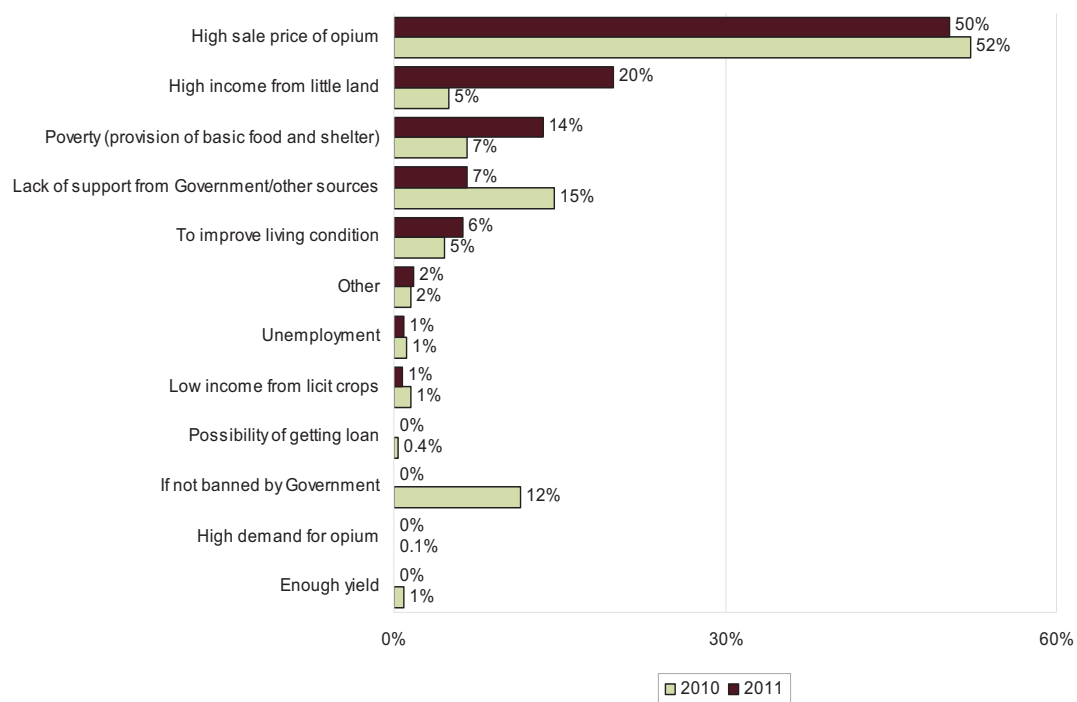


Figure 24: Reasons for never cultivating opium, 2010 - 2011 (n=2821 farmers in 2011)



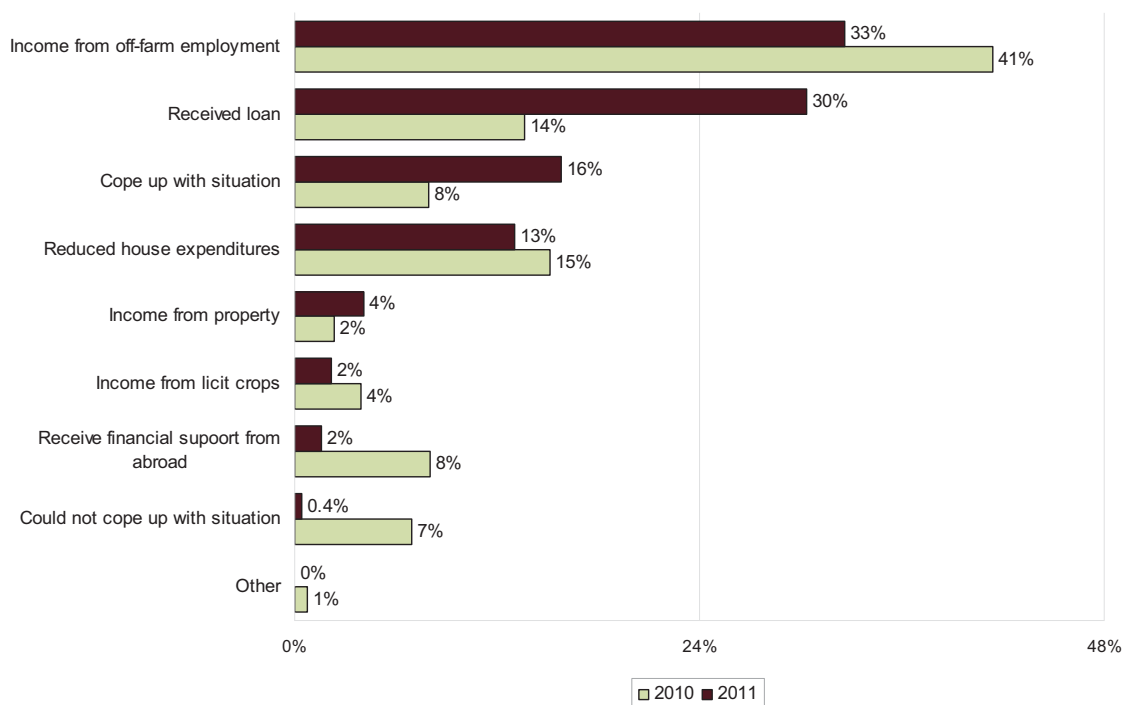
Fifty two per cent of farmers (63% in 2010) who had never grown opium reported that they did not do so because it is forbidden (Haraam) in Islam, making religious belief the most dominant reason. The Government ban on opium cultivation and believing that opium is harmful for human beings were the other main reasons farmers cited for never cultivating opium poppy.

Figure 25: Reasons for returning to opium cultivating (farmers who stopped opium cultivation in or before 2011)



Fifteen per cent of the farmers who stopped opium cultivation in or before 2011, wanted to resume opium cultivation. The high sale price of opium was the most dominant reason cited for returning to opium poppy cultivation. However, 15% of farmers reported a lack of support from Government and other sources for going back to opium cultivation. High income from little land and poverty were other reasons (20% and 14 % respectively) for returning to opium cultivation.

Farmers who stopped opium cultivation in or before 2011 were asked whether their income had increased or decreased. From 1,267 respondents, 60% reported no change, 7% an increase and 33% a decrease in their income. Those who reported a decrease were then asked how they coped with their situation. Thirty-three per cent of those who reported a decrease in income said they coped by earning income from off-farm wage labour. Thirty per cent reported that they received a loan, while 16% reported that they coped with the decrease situation. Thirteen per cent reported that they reduced their house expenditures.

Figure 26: Coping with decreased income after stopping opium cultivation (n=406 farmers)

This question was asked to farmers who stopped opium cultivation in or before 2011.

2.9 Opium cultivation and distance to agricultural markets

In 2010 village headmen were asked for the first time about distance and travel time to the closest agricultural market. This question is important for understanding how difficult it is for farmers to sell cash crops other than opium, especially when those crops are perishable and difficult to transport, e.g. vegetables. Usually, farmers in Afghanistan have to transport their crops to agricultural markets if they want to sell them. It is not common for traders to come to villages to buy crops and then transport them. The exception of course is opium, which is commonly sold at the farm-gate.

The survey did not attempt to verify the distances reported by headmen; the analysis is hence exclusively based on the information reported, which is the subjective assessment of what an agricultural market is and how far it is from the village.

Results from 2010 showed that opium-growing villages were overall significantly farther away from the nearest agricultural market in terms of distance (kilometres). However, no such relationship could be found for the reported travel time to the closest market. There are several possible explanations, including for example that the closest market is not necessarily the market preferred by the village or that the means of transport made a difference.

In 2011 the question was therefore adapted. Headmen were explicitly asked for distance and travel time to the preferred market of the village and for the means of transport used by the villagers. Out of 1,489 headmen interviewed, 884 responded to the question – 686 poppy-free villages and 198 poppy-growing villages (in 2010 it was 704 responses, 585 from poppy-free villages and 119 from poppy-growing villages). From the responses, 80 villages had a market within the villages, 534 preferred the closest market and 302 villages reported a preferred market that was not closest to the village. In 657 (74.3%) of the cases car/bus was an option to go the market; 114 (12.9%) reported the bicycle, 278 (31.4%) donkey and 143 (16.2%) walking. Multiple answers were possible and numbers include villages with a market.

It could be shown that, just like in 2010, there was a significant difference between the mean distances to the markets for poppy-growing villages and poppy-free villages, but no significant

difference between mean travel times. This could have been caused by the differences in the means of transport²¹.

Table 29: Mean distance to the next agricultural market as reported by headmen (km), 2010-2011

	Poppy-growing villages (km)	Non-poppy-growing villages (km)	Mean distance all villages(km)
National (2010)	26	21	22
National (2011)	25	14	16

Source: Opium surveys 2010 and 2011.

2.10 Opium cultivation and cannabis

The 2009 and 2010 surveys showed a clear relationship between growing poppy and growing cannabis. This was as well supported by the cannabis survey 2010, which showed is a clear geographic association between opium and cannabis cultivation at the provincial level. This association existed at a household level, too; almost two thirds of cannabis-growing households (61%) reported as well poppy cultivation in the preceding season.

This relationship is found in this years' village survey, as well, both on the level of the single farmer and on the village level (cannabis cultivation in the village to opium cultivation in the village). On the farmer level a share of 3.6% (165) of all interviewed farmers reported having cultivated cannabis in the preceding season 2010 (this proportion is close to the proportion reported in the 2010 opium survey (4%). These 165 farmers consist of 54% poppy farmers (88), which are only 33% of total farmers, and 46% non-poppy growing farmers which constitute 66% of total farmers. Statistical tests for correlation showed a significant relationship, i.e. poppy growing farmers are more likely to grow cannabis, et vice versa.

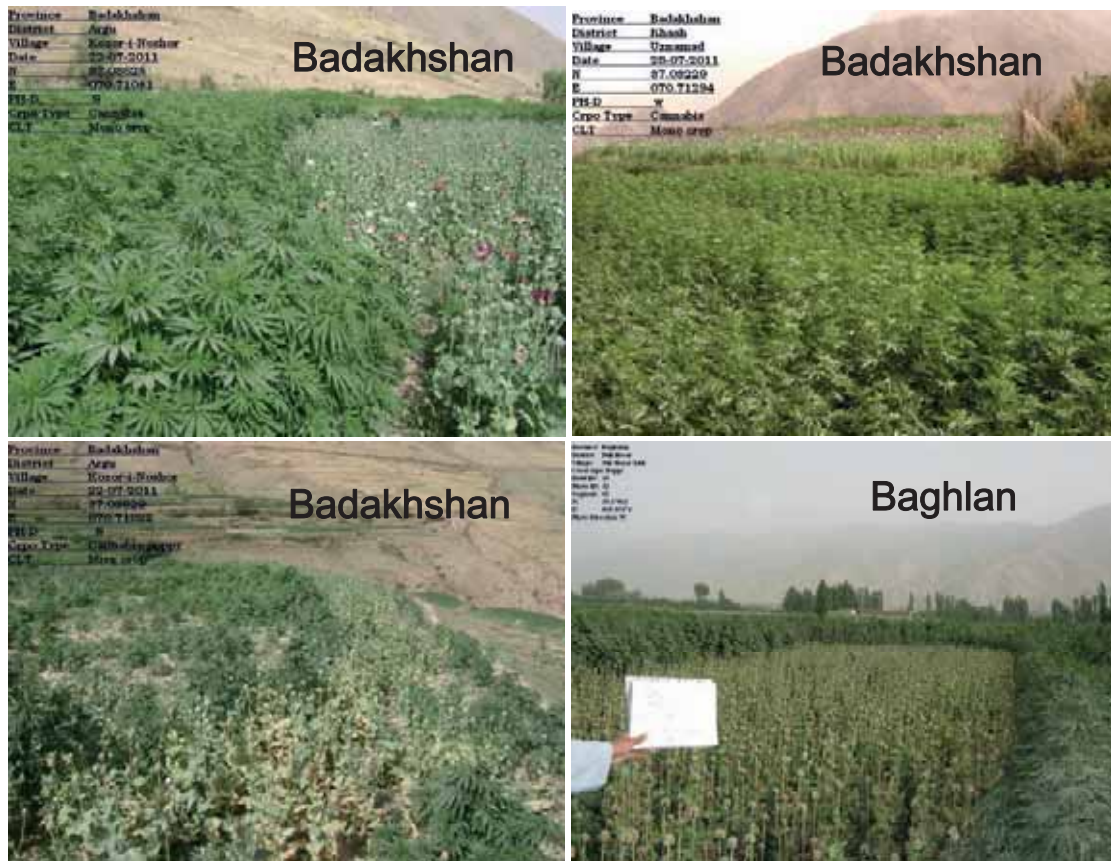
A similar picture is presented on village level. Out of 350 poppy cultivating villages 177 cultivated cannabis, as well (50.6%); out of 1139 villages without poppy only 62 village (5.4%) headmen reported cannabis cultivation, as well. These relationships are statistically significant, as well.

The 2011 opium village survey confirmed the results of previous surveys: there is a strong association of poppy and cannabis farming.

Co-existence of opium poppy and cannabis:

In Badakhshan and Baghlan provinces the opium poppy cultivation was observed along with cannabis cultivation in some areas. In Baghlan province, cannabis was cultivated along the bunds of opium poppy fields.

²¹ The correlation between distance (km) and travel time had correlation coefficient of 0.63.



Opium poppy and cannabis cultivation co-existing in Badakhshan and Baghlan provinces.

2.11 Loans

Outstanding loans

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

Forty-one per cent of farmers reported having outstanding loans. The percentage did not change from last year. However, the average²² amount of outstanding loans per farmer rose by 4% from US\$ 1,046 in 2010 to US\$ 1,085 in 2011. This increase was most pronounced among non-opium growing households (stopped opium growing and never grown households), which reported on average a 4% and 5% higher loan amount respectively than in the year before.

The average loan per farmer did not vary much across farmers who cultivated opium poppy or not.

²²Average amount of loan has been calculated for farmers who currently have loan.

Table 30: Average outstanding loans held by farmers (n=4,467), 2011

	All farmers	Opium-growing farmers	Non-opium-growing farmers	
			Stopped	Never cultivated
Average loan (US\$/household)	1,085	976	1,097	1,097
Percentage of farmers with loan	41%	41%	43%	41%

Table 31: Average outstanding loans held by farmers (n=4,359), 2010

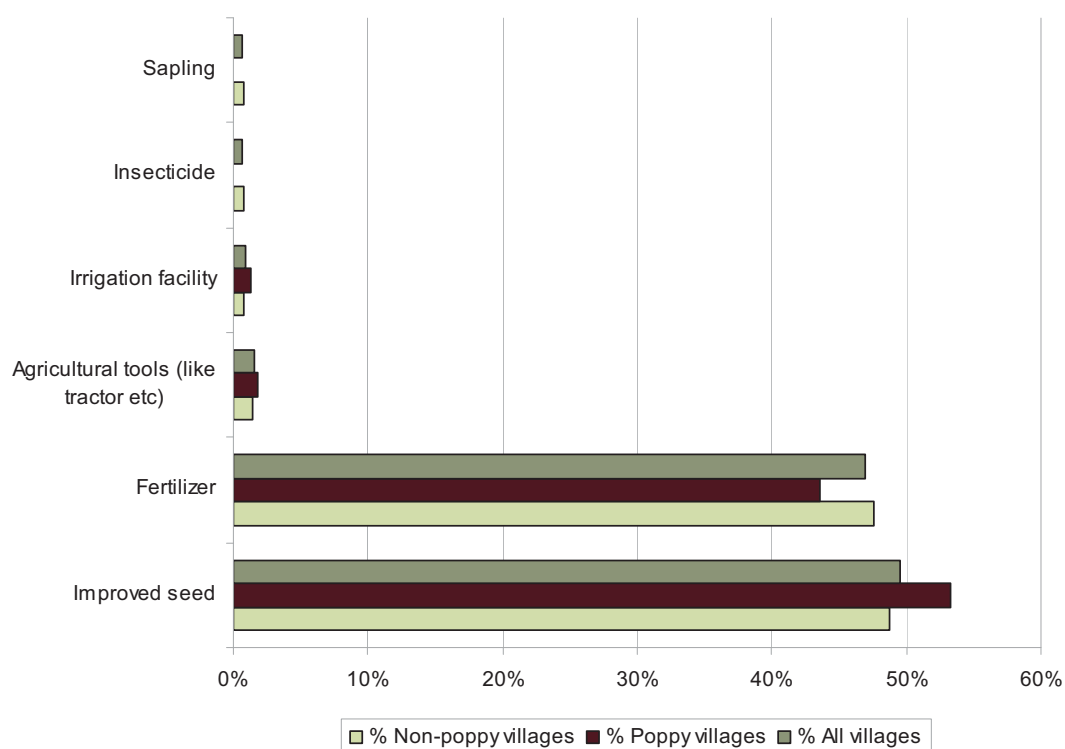
	All farmers	Opium-growing farmers	Non-opium-growing farmers	
			Stopped	Never cultivated
Average loan (US\$/household)	1,046	1,028	1,053	1,043
Percentage of farmers with loan	41%	31%	43%	41%

Table 32: Average outstanding loans held by farmers, by region, 2011

Region	Percentage of farmers with outstanding loans
Central	22%
Eastern	6%
North-eastern	11%
Northern	10%
Southern	30%
Western	21%

2.12 Agricultural assistance

Village headmen were interviewed in each of the 1,489 villages included in the survey. According to the information they provided, 44% of the villages received agricultural assistance. The type of assistance varied and included improved seeds (50% of receiving villages), fertilizers (47% of receiving villages), and irrigation facilities (1% of receiving villages). Only 1% received agricultural tools and another 1% received saplings.

Figure 27: Type of agricultural assistance delivered to villages as reported by headmen

Village headmen were asked if their village had received any agricultural assistance in the past year.

The statistically significant association between growing poppy and not receiving assistance was quite strong and suggests that – at the village level - the provision of agricultural assistance may have influenced whether poppy was grown or not. In 2011, villages that received some kind of agricultural assistance were less likely to grow poppy than villages that did not receive assistance. However, it is reasonable to assume that other factors also played a role, e.g. the security situation which influences whether agricultural assistance can be provided at all. In 2009, only a weak association between agricultural assistance and poppy-growing status of the village was found indicating that last year assistance did not play an important role in influencing the poppy-growing status of villages.

2.13 Income of farming households

In Afghanistan, opium is a cash crop. It is important to understand which other sources of cash income rural household use, in addition to or as an alternative to opium cultivation. Likewise, it is interesting to understand the economic importance of opium at the household level. The opium survey investigates these two issues by looking at differences in 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 and cannot answer how successful or unsuccessful specific patterns are.²³

On average, poppy-growing households have a higher cash income than households that do not grow poppy. Data from the 2011 annual village survey on household income earned in 2010

²³ 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 last 12 months including products used for own consumption such as wheat.

shows that the average annual cash income of opium-growing households in 2010 was 13% higher than households that stopped opium cultivation and 19% higher than households that never grew opium. Differences between those who grew opium and then stopped and those who never grew opium were not pronounced. Comparing the 2009 and 2010 household income, it can be noted that the income gap between households that cultivated and did not cultivate opium poppy narrowed in 2010.

The second interesting aspect is that the table clearly shows the differences in opium income between regions in 2010. In all regions apart from the Southern region income for poppy growing households increased. In the South, however, income has notably decreased. It appears that the increase in household incomes is due to the increase in opium prices. The Southern region was strongly affected by last years' poppy disease, which is reflected in the decrease of income.

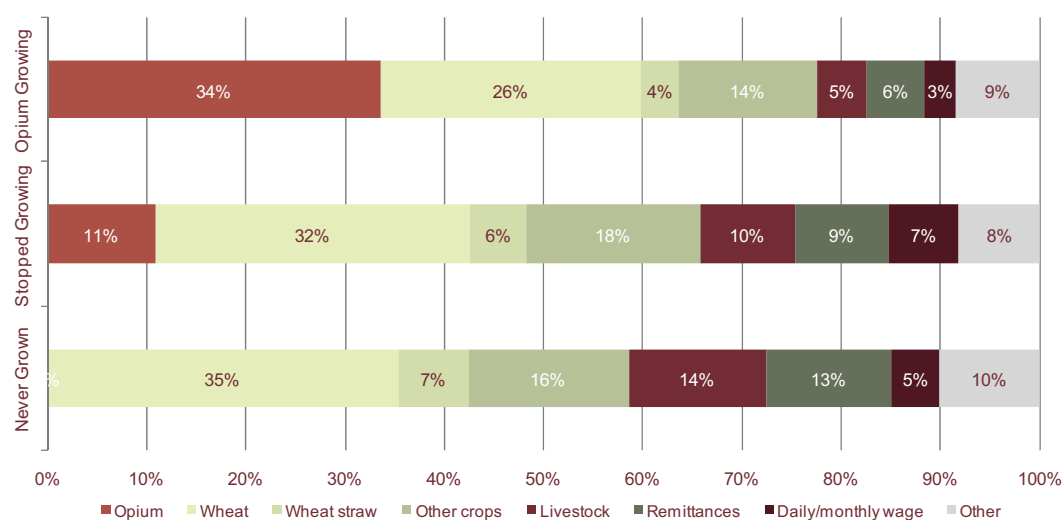
Table 33: Reported average 2009 and 2010 annual household income by region and opium-growing and non-opium-growing status

Region	Average annual household income of opium farmers		Average annual household income of non-opium farmers in 2009 (US\$)		Average annual household income of non-opium farmers in 2010 (US\$)	
	2009 (US\$)	2010 (US\$)	Farmers stopped opium cultivation (US\$)	Farmers never cultivated opium (US\$)	Farmers stopped opium cultivation (US\$)	Farmers never cultivated opium (US\$)
Eastern	2394	3603	2742	2573	2880	2598
Northern	2359	3361	3170	2573	3267	2229
Southern	4225	3060	3633	3691	2464	2249
Western	1913	3543	1795	2242	3164	3195
National	3673	3233	3051	3119	2807	2625

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

Overall, farmers reported about one third of their household income from wheat. This proportion has been relatively stable over the years, indicating a continued importance of wheat, the main staple crop, for rural households. For opium-growing households, the overall higher household income leads to a relatively smaller proportion of income from wheat (26% in 2010) while for farmers other than opium growing, wheat is leading to a higher income (32%) farmers who stopped opium cultivation and (35%) farmers who never grown opium.

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 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: the labour-intensive opium cultivation may already absorb considerable man-power which then would no longer be available for wage labour.

Figure 28: Contributions to 2010 income by type of farmer (data collected in 2011)

The relatively high importance of remittances for households that stopped opium cultivation (9%) and an even higher one for those who never grew (13%) is striking. It could indicate that suitable alternative cash income sources are still not sufficiently available within the country let alone close to the farmer's village. Still, most farmers who stopped opium cultivation reported off-farm employment as a coping strategy (33%, see chapter titled Reasons for Opium Cultivation) and remittances were ranked only 2%. A possible explanation would be that farmers are looking for off-farm employment and wage labour as an alternative cash income source but cannot get enough income from these sources. Thus, they still have to rely heavily on remittances from family members abroad.

Table 34: Sources of 2010 income for all farmers, by region (reported in 2011)

Region	Daily/monthly wage	Livestock	Other	Other crops	Opium	Re-mittances	Renting	Wheat	Wheat straw
Central	6%	19%	10%	14%	0%	15%	3%	23%	10%
Eastern	20%	16%	8%	15%	5%	10%	1%	19%	6%
North-eastern	2%	13%	9%	17%	1%	8%	1%	44%	5%
Northern	10%	12%	3%	20%	1%	10%	1%	35%	7%
Southern	1%	5%	11%	16%	17%	9%	0%	36%	5%
Western	4%	11%	4%	18%	5%	12%	1%	41%	4%
National	5%	12%	8%	16%	7%	11%	1%	33%	6%

2.14 Opium prices

In 2011, opium prices reached high levels as a result of the unusually low opium production in 2010 when major cultivation areas were affected by plant diseases.

Results from the 2009 opium survey indicated that the low opium price level in that year discouraged farmers from planting opium. However, since then, opium prices have tripled. The high sale price of opium in combination with lower wheat prices may have encouraged farmers to resume opium cultivation. The high level of opium prices in 2011 continues to provide a strong incentive to plant opium in the upcoming poppy season. While farmers' decision-making on whether or not to grow opium poppy is complex, it is obvious that high opium prices in 2010 could have been one of the factors behind a resurgence of poppy cultivation in the Northern and Eastern regions.

In 2009, 2010 and 2011 prices at harvest time for all regions with the exception of the Central region²⁴ were derived from the opium price monitoring system²⁵ and refer to the month when opium harvest actually took place in the different regions of the country.

Dry opium prices as reported by farmers significantly increased in all regions. Prices rose by 123% in the Eastern region, 140% in the North-eastern region, 129% in the Northern region, 28% in the Southern region and 174% in the Western region. The highest dry opium prices were observed in the East, West, Central and North regions (US\$ 290/kg, US\$ 296/kg, US\$ 255/kg and US\$ 238/kg, respectively). Overall, there was a 43% increase in the price of dry opium at harvest time compared to 2010. In general, prices in the Northern-east and Southern regions were lower than in other regions.

Table 35: Regional farm-gate prices of dry opium at harvest time collected from farmers through the price monitoring system (US\$/kg), 2010-2011

Region	Average Dry Opium Price (US\$/kg) 2010	Average Dry Opium Price (US\$/kg) 2011	Change on 2010
Central	133	255	+92%
Eastern	130	290	+123%
North-eastern	91	218	+140%
Northern	104	238	+129%
Southern	181	232	+28%
Western	108	296	+174%
National average weighted by production	169	241	+43%

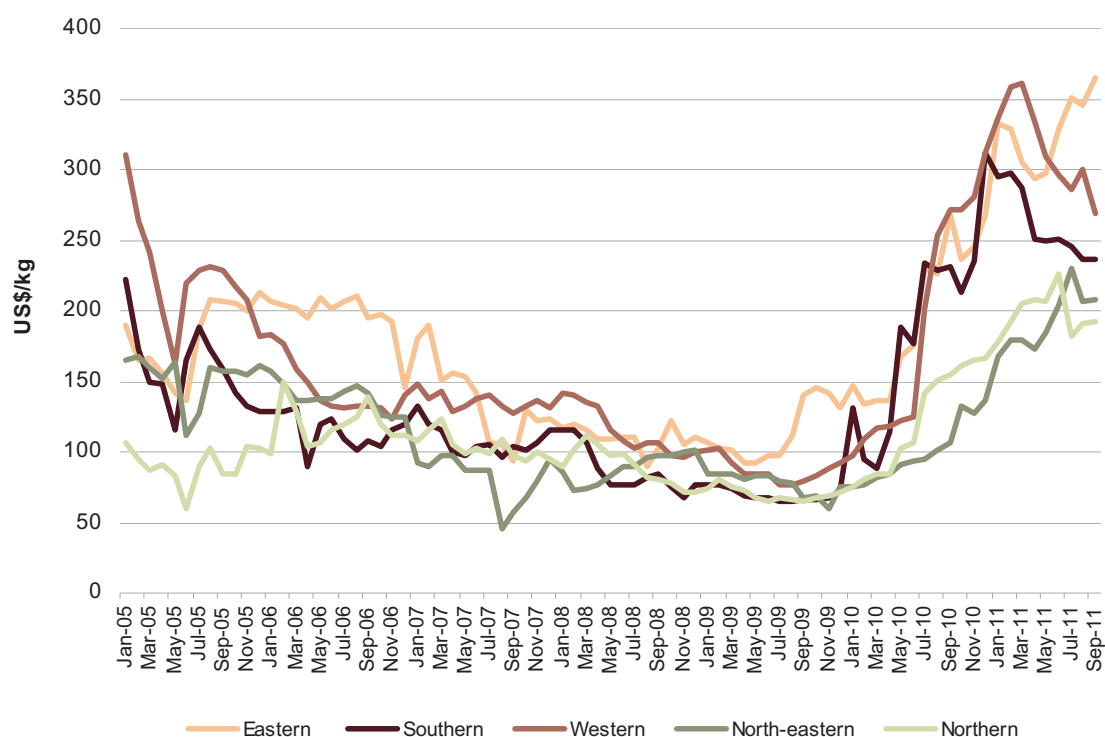
Prices for the Central region were taken from the village survey as there is no monthly opium price monitoring in that region.

Dry opium prices reported by traders showed the same trend with an overall increase of 16% between September 2010 and September 2011. A breakdown by region except South shows a general increasing trend in opium prices compared to September 2010. The price level was high in all regions and may provide a strong incentive to farmers to restart or expand opium poppy cultivation.

²⁴ Prices for the Central region were collected in the village survey and included in the national average.

²⁵ Monthly opium prices have been collected regularly by UNODC since 1997 in selected parts of Nangarhar (Eastern region) and Kandahar (Southern region) as part of the opium survey in Afghanistan. In recent years, prices also have been collected monthly in Badakhshan, Takhar, Farah, Nimroz, Badghis, Ghor, Hirat, Hilmand, Laghman, Kunar, Balkh, Faryab and Kunduz provinces, both from opium farmers and from local opium traders. Opium prices are currently collected in 15 provinces.

Figure 29: Regional average price of dry opium collected from traders (US\$/kg), January 2005 – September 2011

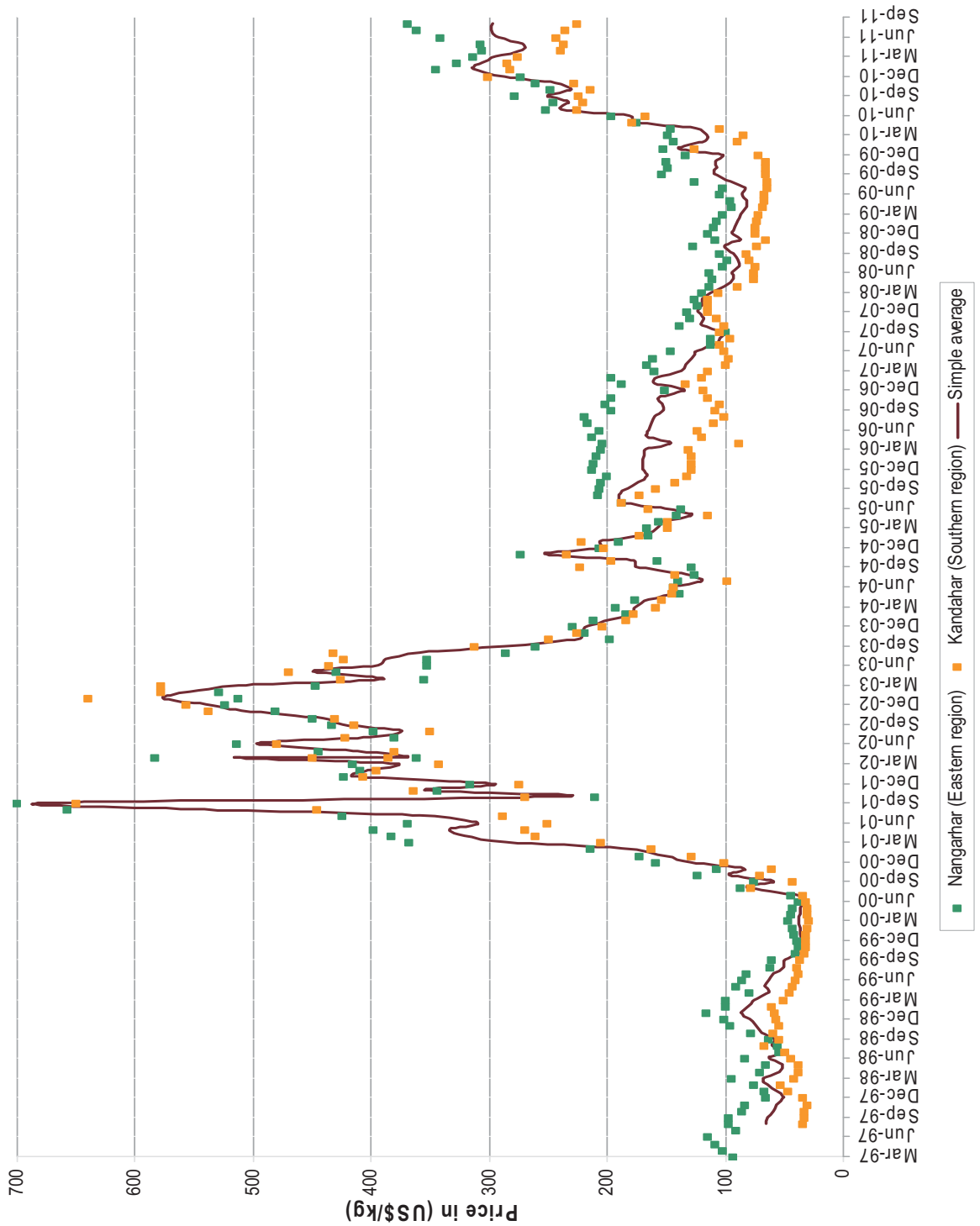


Source: MCN/UNODC Monthly Price Monitoring System

Table 36: Prices of dry opium as reported by traders by region (US\$/kg), September 2010 – September 2011

Region	Regional average price (US\$/kg) September 2010	Regional average price (US\$/kg) September 2011	Change on 2010
	Trader	Trader	
Eastern region (Kunar, Laghman, Nangarhar)	267	365	+37%
Southern region (Hilmand, Kandahar)	231	237	+3%
Western region (Badghis, Farah, Ghor, Hirat, Nimroz)	272	269	-1%
North-eastern region (Badakhshan, Takhar)	106	208	+96%
Northern region (Balkh, Faryab, Kunduz)	155	192	+24%
Average	226	262	+16%

Figure 30: Monthly prices of dry opium in Kandahar and Nangarhar province as collected from traders (US\$/kg), March 1997 – September 2011



Source: MCN/UNODC Monthly Price Monitoring System

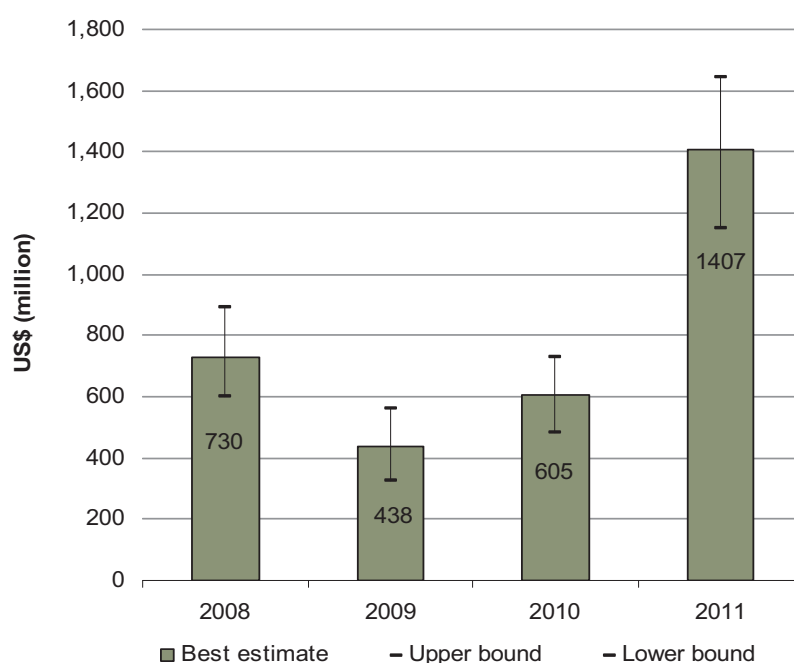
2.15 Farm-gate value of opium production and income from opium

Based on potential opium production and reported opium prices, the farm-gate value of the 2011 opium harvest amounted to US\$ 1,407 million (range US\$ 1,148 – US\$ 1,641 million), an increase of 133% from 2010.²⁶ The farm-gate value of opium production more than doubled compared to 2010. This is equivalent to about 9% of the 2011 GDP. While the farm-gate value was expected to be higher than in 2010 when opium production was down due to plant diseases, the 2011 farm-gate value exceeded levels reached in years with similar or even higher opium production due to higher prices.

Similarly, in 2011, the per-hectare income from opium cultivation (US\$ 10,700) reached levels not observed since 2003.

Farmers in Hilmand, the largest opium-producing province, earned around US\$ 734 million, equivalent to 52% of the total farm-gate value of opium in Afghanistan in 2011. The total Afghanistan's estimated licit 2011 GDP amounted to 16.34 billion.²⁷

Figure 31: Farm-gate value of the opium production in Afghanistan (US\$), 2008-2011



Per hectare income from opium

The expenditure per hectare of poppy reported by farmers corresponds to 13% of reported gross income, a much lower proportion than calculated in previous years. The lower proportion is a result of very high gross income from opium poppy in 2011. If this proportion was used to estimate the net income from the gross income of US\$10,700/ha, an estimate derived from the total farm-gate value of opium divided by the total area of opium poppy cultivation, the net income per hectare of poppy would be US\$ 9,300. However, if the net income is estimated based on the proportion reported by survey coordinators from the fields (40%), the net income per hectare would be US\$ 6,400.

Some caveats have to be made. The average production cost for opium of around 40% of opium farm-gate prices do not necessarily apply to small-scale farmers who typically cultivate 1 jerib (=

²⁶ Due to the availability of more detailed information, this figure was updated from the figure published in the Summary Findings in September 2010.

²⁷ Nominal GDP. Source: Gov. of Afghanistan, Central Statistical Office.

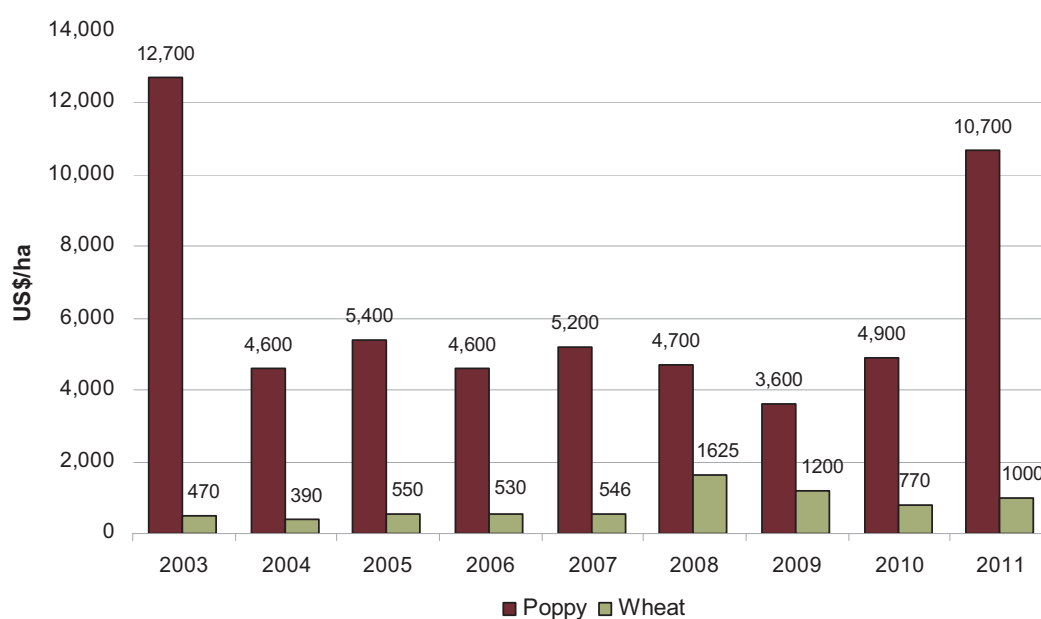
0.2 ha) or less in Afghanistan. They can make use of – *de-facto* – ‘free labour’ of their household members for ploughing and weeding the fields and for lancing and collecting opium. In some provinces, notably those with a strong influence of insurgents, some or all farmers reported paying a 10% tax called ‘ushr’ on opium but also on other agricultural products. This further reduces their net income. Ushr was not considered in this calculation as it does not apply to all poppy farmers.

Comparison of income from opium and wheat

Comparing the per hectare income of wheat and opium poppy can provide an indication of the attractiveness of cultivating poppy, as in Afghanistan opium poppy and wheat are planted during the same season. As most of the poppy is grown on irrigated land, wheat yield on irrigated land is used for the comparison. In 2011, the ratio between gross income from wheat and opium was 1:11, the highest ratio calculated since 2008. The price of wheat slightly increased while the price of opium increased significantly since 2009. This ratio is still much lower than in the years before 2008. In 2003, for example, farmers earned 27 times more gross income per hectare of opium than per hectare of wheat.

The estimated per hectare income from wheat was based on information from the village headman on yield and price of wheat. The wheat price reported reflects the price level and expectations at the time of the survey (April – May 2010). The average reported yield was 2,823 kg/ha on irrigated land. Farmers had an estimated gross income of US\$ 1,000/ha from wheat.

Figure 32: Gross income per hectare from opium and wheat (US\$/ha), 2003-2011



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

The difference between net income from opium and wheat is smaller as poppy cultivation is more cost intensive. Based on information from UNODC survey coordinators, costs for wheat were estimated to be 20% of the gross per hectare income of US\$ 1,000.

The ratio between the net income from opium (US\$ 6,400/ha) and wheat (US\$ 800/ha) was 1:8, while the ratio of the gross income was 1:11. The income comparison presented here does not take into account income from other 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, which would lead to a smaller discrepancy between opium and wheat income per hectare.

2.16 Potential value of the opiate economy

The production and the export of opium and heroin/morphine constitute a notable income to the Afghan economy. By far the largest part of this 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 for the “end-consumer” value of the opium produced in Afghanistan in 2011. When compared to the farm-gate value, the “end-consumer” value includes all income generated after the opium left the farm, as well. Income is generated whenever opium is traded or modified in some way. It includes for example the values of all opiates consumed domestically, and the value of the opiates at the border when leaving Afghanistan.

When estimating the value of exported opiates, only the value of opiates at the border of Afghanistan is considered. All income generated during onward trafficking beyond the Afghan borders, for example to Europe or various other locations, is neglected. Indeed, Afghan traffickers seem to be heavily involved in shipping opiates across borders, notably to Iran and Pakistan, but not so much involved in subsequent trafficking. Thus, the far larger funds generated on international trafficking routes do not accrue to Afghan traffickers or the Afghan economy.

It has to be stressed that despite ongoing attempts to improve the estimates on the opiate economy by additional information-gathering activities, these calculations remain far less robust than the 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.

This section is structured as follows: first, the estimated amount of opium produced is identified by its destination, e.g. which amounts are destined for the domestic market, which might be exported, seized, and so on; second, by using price data the *gross values* of these amounts is estimated, followed by the *net value*, which is the gross value minus the value of all imports needed from abroad; and third, upper and lower bounds of the estimates are provided.

The opium production

In each year all opium produced in Afghanistan is exported as opium or heroin/morphine, consumed domestically in various forms, seized, stocked or lost (e.g. due to mould, disposal to avoid seizures, etc). Hence, the critical amounts needed for calculating the value are the shares of the opium produced destined for export, for the domestic market, the shares seized, lost and the remainders (if there are any) which do not enter the market in the year of interest.

There is a clear understanding on the approximate amount of opium produced. The share opium destined for the domestic market is estimated based on a recent drug use survey²⁸, where a certain transformation ratio of opium to morphine/heroin is used to determine the necessary amount of opium. The Methodology section of this report provides a detailed description of this estimation process. Seizure data from 2010 is used as proxy for the amounts seized 2011. The remaining amount of the opium production is therefore either exported, lost, or kept as inventory (if anything is left).

As there is not enough information available for providing direct estimates of losses or export amounts²⁹, the following break down is the most detailed that can be provided.

²⁸ 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>)

²⁹ For 2009 UNODC (2011) estimated the amount exported as approximately 4000 mt opium in form of either opium or heroin/morphine; UNODC (2011): “The Global Afghan Opium Trade”, Vienna, http://www.unodc.org/documents/data-and-analysis/Studies/Global_Afghan_Opium_Trade_2011-web.pdf

Table 37: Opium in Afghanistan by destination 2011

	Opium (range)	Heroin and morphine (range)	Percentage of opium production ³⁰
Potential opium production in 2011	5,800 (4,800 - 6,800)		100%
Consumption in Afgh. (mt, in opium equivalent)	175 (162 - 200)	83 (76 - 97)	4%
Seizures in Afgh. in 2010 (mt, in opium equivalent)	42	185	4%
Remainder – for the most part exports (mt, in opium equivalent) ³¹	5,315 (4,276 - 6,335)		92%

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 2010 reported by the Government of Afghanistan to UNODC are taken as a proxy for 2011 since the total amount of drugs seized in the current year is not yet known. In the absence of a comprehensive seizure recording system that would include all counter-narcotics operations of national and international forces, the actual amount may be different.

In 2011, Afghanistan produced an estimated 5,800 mt of opium. Local consumption makes up for about 4% of the opium production (258 mt); approximately 4% of all opium was seized (total of 227 mt) as opium or heroin/morphine. After deduction from total production this leaves a remainder of about 92% of all opium. These 92% include besides exports 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 (if negative after subtracting losses).

It has to be noted, that the conversion ratio of opium to heroin considers pure heroin. With seizures, for example, the purity of the heroin is not known; therefore the ratio used might overestimate the actual amount of opium needed for heroin production. Likewise, purity of domestically consumed heroin might differ.

Potential gross and net value of the opium production 2011

The gross value of the opium production at end-consumer level and at the borders is calculated by the amounts consumed and traded times their respective prices. The *net value* of the opiate production is the gross value minus all expenditures for imports from abroad and results in the net gain for the Afghanistan economy. It is considered to be more suitable for comparison with the gross domestic product (GDP).

In our calculations seizures do not get a value, as the value of the seized products is lost. The value of the domestic market at end-consumer level is calculated by amounts consumed times the street-level price for heroin/morphine and opium, respectively. For calculating the value of the remainder of the opium production the cross-border price was attached to all of it, where seizure data has been used to estimate the proportions exported as opium respectively heroin/morphine. This is a simplification as this value might not be what is actually accrued by the Afghanistan economy. However, it provides an estimate of the magnitude of the total potential income gained by the opiate economy.

Based on seizure statistics, it was estimated that in 2011, 42% of opium remaining after local consumption and seizures was exported as morphine or heroin. The gross export value of opium plus heroin/morphine exports was US\$ 2.6 billion. The gross value of the domestic market for heroin and opium is much smaller. In 2011, an estimated amount of opiates worth US\$ 0.17 billion was consumed in Afghanistan.

³⁰ Percentage refers to best estimate for opium production.

³¹ Upper and lower bound are calculated with upper and lower estimates for production and use.

Table 38: Estimated gross and net values (US\$), 2011

	Gross value US\$ (rounded)	Net value US\$ (rounded)	In relation to GPD
Export value opiates	2.6 billion	2.4 billion	15%
Farm-gate value of opium	1.4 billion	1.4 billion	9%
Value of the domestic market	0.17 billion	0.16 billion	1%
Export value of one kg opium	400	400	
Export value of one kg heroin	4,500	3,800	

The gross value for one kilogramme of opium exported at wholesale level was approximately US\$ 400 and for one kilogramme of heroin US\$ 4,500. For the exported opium no significant import costs are considered; hence, in these estimations the gross value equals the net value. After subtracting the import costs for main precursors from the gross value, which were in 2011 about US\$ 660 per kilogram of heroin, the net value of one kilogramme of heroin/morphine reduces to US\$ 3,800. When multiplying these prices with the respective amounts, the net export value of opiates is US\$ 2.4 billion as opposed to US\$ 2.6 billion gross.

In the domestic market the gross value of one kilogramme of heroin is about US\$ 6,400. This number refers to retail prices and is therefore larger than the wholesale export value. Subtracting the precursor costs leaves a net value of about US\$ 5,800 for one kilogramme of heroin/morphine, and a net value of US\$ 0.16 billion of the domestic market for opiates.

Please note that wholesale and retail prices for opiates are approximates and not purity adjusted. There are large differences in the reported prices, which might stem to a great extent from differences in the quality of the opiates purchased. Indeed, calculating the value of the exported heroin is limited by the fact that the drug products leaving the laboratories in Afghanistan may undergo further processing, e.g. adulterations, before reaching the assumed points of sale in neighbouring countries. There is evidence that heroin is mixed with cutting agents already in Afghanistan. This is done to increase profitability but can also have other reasons such as tailoring the drug product for specific usages. These factors cannot be estimated at the moment but it is reasonable to assume that the use of cutting agents increases the profitability of exporting heroin/morphine. Not taking them into account could thus lead to an underestimation of the export value of the opium economy.

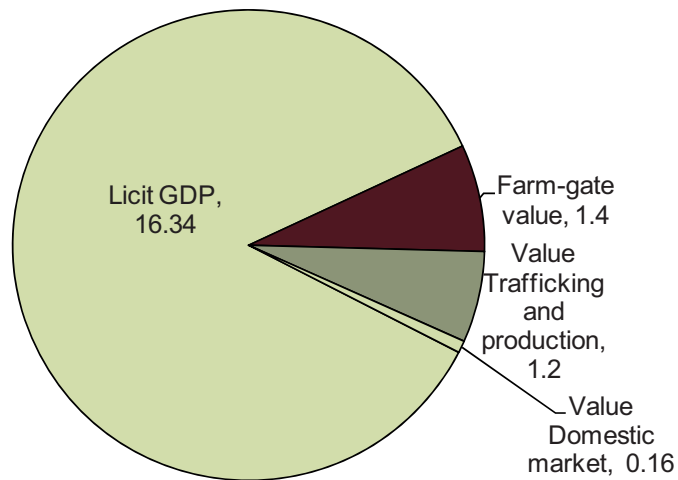
When comparing these numbers with the licit 2011 Afghan GDP, which is US\$ 16.34 billion³², the magnitude of the financial resources added by the opium economy becomes apparent. In 2011, the net exports were worth about 15% of the licit GDP. The farm-gate value of the opium needed for producing these exports alone is worth 9% of the licit GDP. The net value of the domestic market for opiates is small when compared to these numbers, but still worth approximately of the licit 1% GDP.

To find out which part of the value added stems from opium production and which from opium processing and trading, one has to look at the difference between farm-gate value of opium and the value of opiates at end-consumer level. The sum of the net values of the domestic market and the export value of the remaining opium is US\$ 2.6 billion. When subtracting the farm-gate value of US\$ 1.4 billion an amount of US\$ 1.2 billion remains, which is the value added between farm-gate and borders respectively domestic end-consumer. This value represents income made in the processing, the trading and trafficking of opiates across the borders.

In 2010, the gross potential export value of all opium produced less domestic consumption and domestic seizures was estimated to be worth US\$ 1.4 billion; the amount available for export was equivalent to 3,214 mt opium (in 2011 it was 5,315 mt).

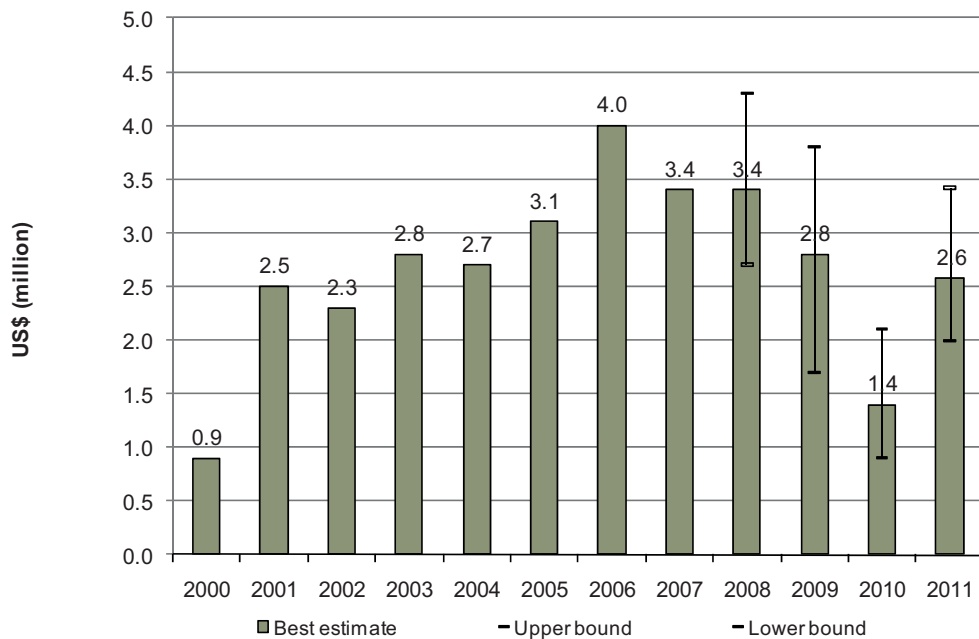
³² Nominal GDP. Source: Gov. of Afghanistan, Central Statistical Office.

Figure 33: GDP and opiate industry in Afghanistan (in US\$ billion), 2011



Note: Farm-gate value refers to the farm-gate value of the opium needed for producing the exports. "Trafficking and production" represents the value generated by the opium between farm-gate and borders minus costs for imported precursors. Domestic market is the net value of the domestic opiates market which is gross value less costs for imported precursors. Sources: Afghanistan Central Statistical Office and MCN/UNODC 2011

Figure 34: Potential gross export value of opiate production (US\$), 2000-2011



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.

Calculation of the net value

The net export value (and the net value of the domestic market) accounts for costs of imports associated with the production of morphine and heroin. It hence provides a proxy for the net amount of financial resources entering Afghanistan due to opiate exports.

The import costs are, as far as they are known, deducted from the gross export value of opiates. However, since many import cost factors are not well understood or known the net value considers only costs of imported precursor substances. Here, the prices and amounts necessary for morphine or heroin production are known. These costs constitute an important cost element of the morphine and heroin production.

The main (imported) precursors in terms of costs are:

- Ammonium chloride used for extracting morphine from opium
- Acetic anhydride, which converts the morphine base into brown heroin base

Acetic anhydride is a controlled substance. There is no known licit use of acetic anhydride in Afghanistan and no known production of the substance. The high price level of this precursor in Afghanistan indicates its scarcity. Ammonium chloride is not a controlled substance. It is easily available and has a wide range of licit uses, which is reflected by a much lower price. The information from the drug flow survey indicates that ammonium chloride used for heroin processing is imported.

Using these two precursors the net export value is calculated by:

- Multiplying the main precursors' cost per 1 kg of heroin with the total amount of exported heroin;
- Subtracting the total costs of two main precursors from the gross export value. Other import costs were neglected.

Table 39: Prices (rounded) and approximate amounts of main precursors needed for the production of 1 kg of heroin, 2011

Precursors	Price (US\$/unit)	Amount needed/kg heroin	Costs per kg of heroin (US\$)
Ammonium chloride (kg)	4 (3.37- 5.72)	2.5 kg (2.0-3.0) kg	10 (8.4 - 14.3)
Acetic anhydride (litre)	431 (401.01- 465.13)	1.5 l ³³ (0.77-4.0)	647 (601 - 679)
Total			657

In terms of cross-border prices for opium a sharp increase was noted. The average cross border price for one kilogramme opium in 2009 was US\$ 280, in 2010 it was US\$ 360 and in 2011 it was US\$ 400. So, in the last few years, the cross-border prices have increased, but not as much as the farm-gate prices for dry opium. As already noted the prices might not be exactly comparable. However, it seems that the sharp increases in farm-gate prices are compensated along trafficking lines to the border.

For heroin the situation is slightly different, as there are more costs to be considered for production. Average cross-border prices for one kilogramme of heroin/morphine show a different development than opium prices. In 2009 and 2010 the prices were around US\$ 3,200 (slightly higher in 2010); prices in 2011 reached US\$ 4,500 which is an increase of approximately 30%.

One question arising here is in how far the recent price developments, which would lead to a growth of the opiate economy in monetary terms even if production and exports were constant, affect the revenue made by Afghan drug producers and traffickers. In other words, did the net value of the opiate economy measured from the farm-gate to the borders change? The following table presents considerations pertaining to this question.

³³ 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 40: Overview over different values/gains for 1 kg of opium/heroin

	2009	2010	2011
Export price per kilogramme heroin in US\$	3,200	3,300	4,500
Export price per kilogramme opium in US\$	280	360	400
Farm-gate price per kilogramme opium in US\$	60	170	240
Costs per kilogramme heroin in US\$ (precursor and dry opium)	1,100	1,600	2,400
Revenue for 1 kilogramme opium in US\$	220	190	160
Revenue for 1 kilogramme heroin/morphine in US\$	2,100	1,600	2,100
Revenue for 7 kilogramme opium in US\$ (rounded)	1,500	1,300	1,100
Gain for exporting heroin instead of opium	600	300	1,000

The first two lines present the export prices at the borders for opium and heroin, respectively. The third line presents the average price per kilogramme of opium at farm-gate; the fourth line presents the precursor costs and opium costs for producing 1 kg of heroin by using the amounts presented before. The last lines give then an extended net gain per unit exported. Seven kilogrammes are used to make the numbers comparable, since this is the conversion ratio used for converting opium to heroin.

Two very interesting points can be made here. First, given that the revenue for heroin is not revenue for traffickers but rather the value generated per kilogramme of heroin along production and trafficking lines starting from farm-gate, the two numbers for trafficking opium in its pure form and heroin/morphine do not differ a lot. In 2009, exporting 7 kg of opium would bring US\$ 1,500, exporting the same 7 kg as heroin would bring US\$ 2,100. However, out of the difference - US\$ 600 - all production costs apart from precursor substances would have to be financed. This includes laboratories, labour, trader mark-ups, and so on. Second, in 2011 the income made from opium fell sharply due to high farm-gate prices – which made exporting heroin more attractive.

The mechanisms driving these prices are not well understood. There are many questions regarding the number of intermediate traders, production costs for heroin/morphine apart from imported precursor substances, and, most important, the quality of the heroin exported. As these estimates are based on pure heroin one explanation for the attractiveness of exporting heroin is that the heroin exported is of low quality.

Calculating an upper and lower estimate for the value of the opiate economy

To assess the potential value of the opiate economy it is sensible to calculate an *upper* and *lower bound* of income generated. This is in particular informative when there are many uncertainties involved.

Here, a maximum is estimated that is based on different shares of opium converted to heroin for the export. For the upper bound it is assumed that all opium is exported in form of heroin, since the value of one kilogramme of heroin is higher than the value of 7 kilogramme of opium. For the lower bound it is assumed that only opium is exported and no heroin. The resulting figures do not intend to provide a confidence interval or any other statistical measure; it is a what-if analysis that offers results on the basis of different assumptions.

Thus, if all remaining opium after deduction of seizures and consumption - about 5,300 mt - was transformed into heroin/morphine, the amount exported of these substances would equal about 760 mt of heroin/morphine. These 760 tonnes would have an export value of gross US\$ 3.4 billion and net US\$ 2.9 billion. This represents 21% and 18% respectively of the licit 2011 GDP. If all

remaining opium was exported without transformation the export value would be US\$ 2.1 billion, which is the lower bound of both the gross and net value.

3 METHODOLOGY

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

3.1 Opium cultivation

Remote sensing methodologies have been used by UNODC since 2002 to monitor the extent of opium cultivation in Afghanistan. The latest major changes in the location of opium poppy cultivation and the increased security difficulties involved in accessing the area under scrutiny required a reassessment of the sampling design applied up to now.³⁴

In recent years, the distribution of opium cultivation in Afghanistan became more and more concentrated in the South and West of the country, while large areas in the North and West became poppy-free or had only small pockets of opium cultivation. A decision was taken to use a sampling approach to cover those provinces where most of the poppy is found and a targeted approach in provinces with a low level of opium cultivation. In 2011 and 2010, out of 34 provinces in Afghanistan, 8 were covered with a sampling approach and 9 (11 in 2010) with a targeted approach. The remaining 17 provinces were considered poppy-free based on the Winter Assessment 2010 and additional information from the field. These provinces were not covered by the remote sensing survey³⁵; however, they were covered by the village survey.

Table 41: Target provinces 2011

Region	Province
Central	Kabul
Eastern	Kapisa, Kunar, Laghman, Nangarhar
North-eastern	Badakhshan
Northern	Baghlan, Faryab
Western	Hirat

Sampling approach

The area available for agriculture was updated based on Landsat 7 ETM images and DMC images. The total estimated agricultural area in Afghanistan in 2011 amounted to 74,213.6 km². The sampling frame was established by extracting the area of land potentially available for opium cultivation in 8 provinces. The arable land in the sampling frame covers irrigated and rain-fed areas. The total area of arable land in the 8 provinces was 16,659 km², which is equivalent to 22.4% of all potential agricultural land in Afghanistan. The potential land is referred to as all land available for cultivation and includes land that is currently fallow.

Opium fields were identified by interpreting high-resolution (10 by 10 km) IKONOS, QUICKBIRD, WORLD-VIEW2 and GEO-EYE images.

In 2011, high-resolution satellite images were acquired for 118 sample locations covering 8 provinces in Afghanistan. This given 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.

Opium poppy fields were identified by interpreting the high-resolution (10 by 10 km) in the 118 IKONOS, QUICKBIRD, WORLD-VIEW2 and GEO-EYE images. Locations for these images

³⁴ The revision of methodologies for the remote sensing and village survey was based on recommendations made by Graham Kalton in December 2008.

³⁵ Note that more than the remainder of 17 provinces turned out to be poppy-free as 3 provinces covered by the survey had less than 100 ha of opium cultivation.

were randomly selected from a 10 by 10 km grid that was overlaid on the map of arable land. The final sampling frame consisted of 1,498 cells in 8 provinces.

In the 2011 survey, the images that cut across provincial boundaries, and the part falling in respective provinces were considered in that province.

Also, as was the case in the 2008 survey, cells with less than 1% of potential agricultural land were excluded from the 2009, 2010 and 2011 sampling frame in order to optimize the sample. The criterion was re-formulated as to be less than 1 square kilometre of potential agricultural land as some cells cut across the boundary of a sample and non-sampled province and the boundary of a sampled province and the national border. In total, the exclusions represented less than 2% of the total potential agricultural land in all but two of the sampled provinces (Farah and Ghor).

For the 2011 sampling design, the images which were sampled in 2010 were kept. The sampled images were divided between provinces approximately in proportion to the square root of their amounts 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 8 sample cells was set.

Table 42: Agricultural land sampled, by province, 2011

Province	Total arable land (km ²)	Total	Selected	% of selected cells over total cells	Arable land in selected cells (km ²)	Sample size (% of arable land in selected cells)
		# cells	# cells			
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	3,247	178	30	17%	818	25%
Kandahar	2,556	214	20	9%	519	20%
Nimroz	463	44	8	18%	106	23%
Uruzgan	741	84	12	14%	159	21%
Zabul	808	145	8	6%	93	12%
Total	16,659	1,498	118	8%	2,883	17%

Satellite image acquisition

The acquisition of satellite images at the appropriate growth stage of the opium poppy is key to the successful identification of opium poppy fields on satellite images. Satellite data is collected at two stages, namely the pre-harvest (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. This is useful in deciding on appropriate dates for satellite data acquisition. First-dated images of the Southern, Eastern and Western regions are collected during March and April due to early cultivation and maturity of crops in those regions. The crop growth cycle begins later as one goes northward. Images of the North and North-eastern region are acquired during May, June and July. Second-dated satellite images are collected approximately two months after the first images are collected.

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

The figure below illustrates the spectral characteristics (Normalized Difference Vegetation Index (NDVI)) of opium poppy and other crops between February and June. Wheat and opium poppy have the same growth cycle between March and June, as illustrated. The spectral differences between these two crops are more pronounced in February, which marks the beginning of the

capsule stage of the crop in this example. Poppy fields are ploughed immediately after the harvest, whereas wheat fields are not. This is why two-dated images – pre-harvest and post-harvest – are collected for the same location.

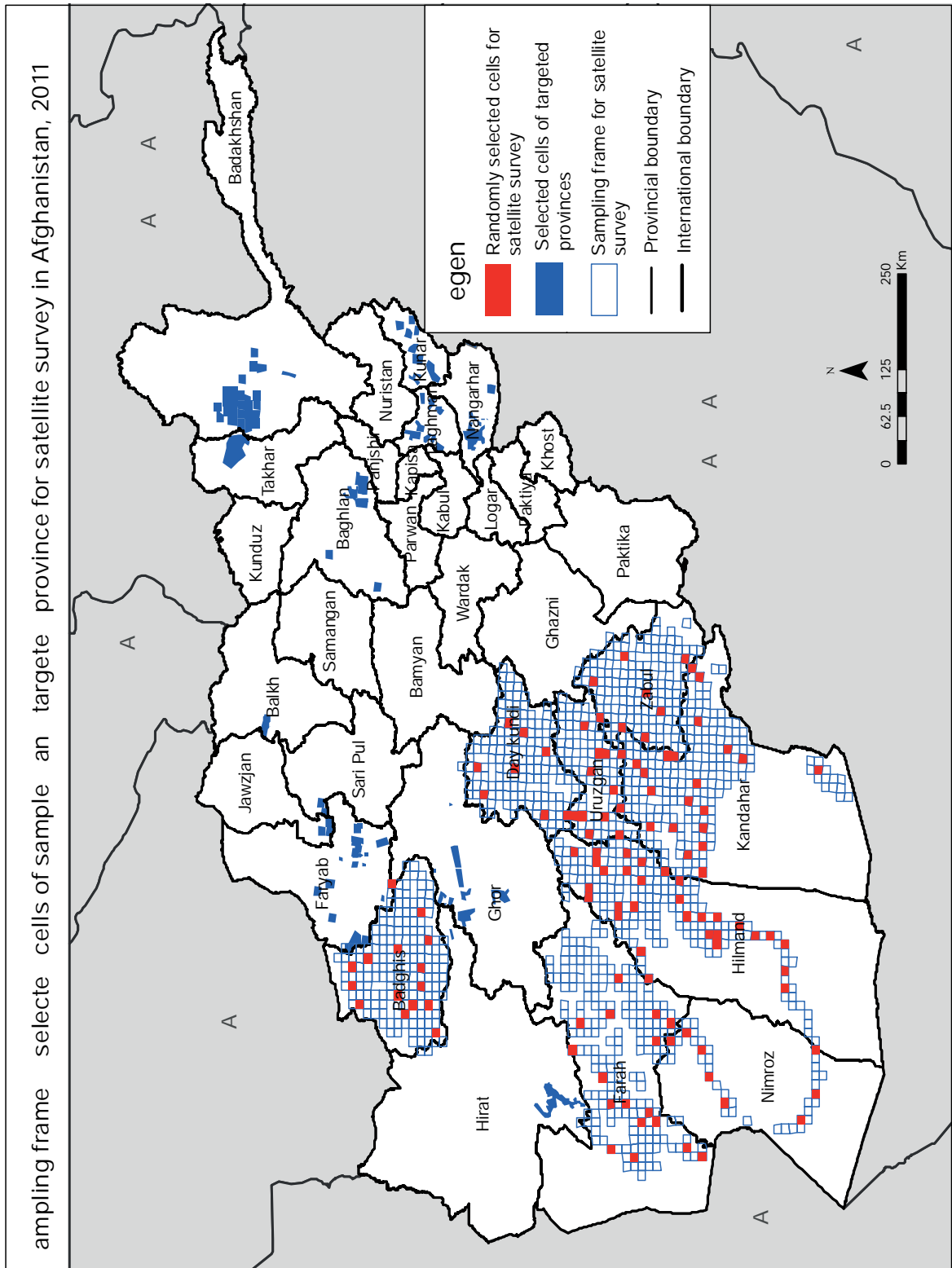
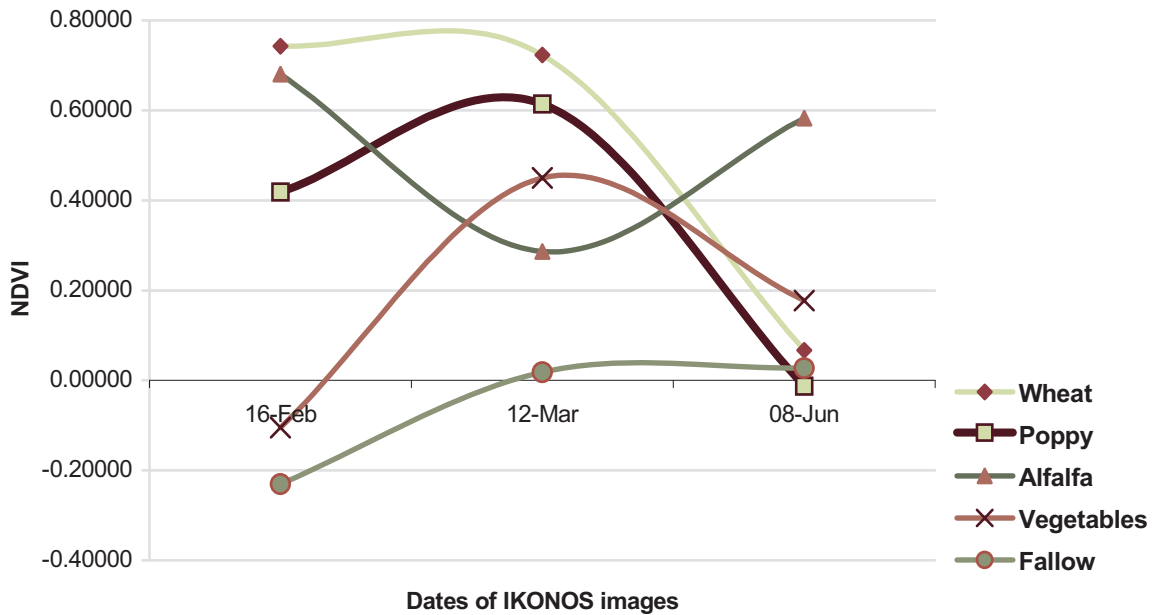


Figure 35: Illustrations of opium poppy, wheat and clover growth cycles

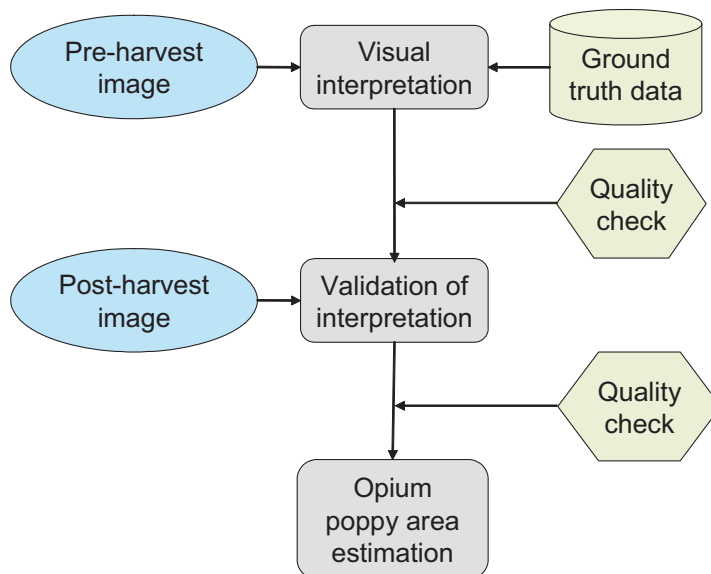
 February 21, Poppy, Emergent Stage	 February 21, Wheat, Emergent Stage	 February 21, Clover, Emergent Stage
 March 13, Poppy, Cabbage Stage	 March 13, Wheat, Cabbage Stage	 March 13, Clover, Cabbage Stage
 April 7, Poppy, Steam Elongation	 April 7, Wheat, Steam Elongation	 April 7, Clover, Steam Elongation
 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, Maturity Stage
 June 06, Poppy Field ploughed	 June 06, Wheat Harvest Completed	 June 06, Clover, Harvested

Figure 36: 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 37: Image classification methodology for estimating opium cultivation area



Interpretation of opium cultivation from satellite images

First-dated images were acquired during the flowering or capsule stage and second-dated images after the opium 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 show in tones of pink. While there can be some confusion between opium poppy and wheat in the first-dated images, the acquisition of second-dated images makes it possible to distinguish opium poppy from other crops, because the opium poppy crop has been harvested and the fields appear in grey/green.

Visual interpretation technique has been used to delineate opium poppy fields by interpreting IKONOS images covering a 10x10 km area. Ortho-rectified IKONOS, QUICKBIRD, WORLDVIEW2 and GEO-EYE images of 1 m resolution and half 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 eradication season as well as in Kabul, Kapisa, Kunar, Laghman and Nangarhar provinces during flowering and capsules stages. These photographs were tagged with latitude and longitude and facilitated to locate the poppy areas on satellite images. These aerial photographs were very helpful in confirming the poppy areas on the satellite images. This year poppy field boundaries were delineated by an on-screen digitization method.

Band combination for opium poppy identification

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

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

Ground reference information

Ground reference data were collected in the form of GPS points locations, field photographs and aerial photographs. Around 3,500 GPS points of the poppy fields supported with pictures were collected from the provinces of Badakhshan, Baghlan, Faryab, Ghor, Hirat, Kunar, Kabul, Kapisa, Nangarhar, Laghman and Takhar.

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



Satellite image (infra-red)



Field photograph (natural colour)

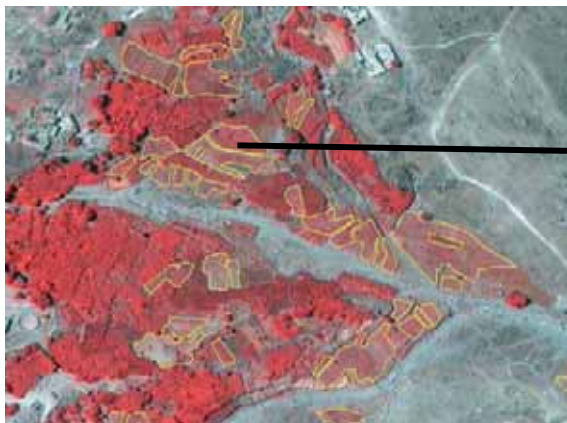


Satellite image (infra-red)



Field photograph (natural colour)

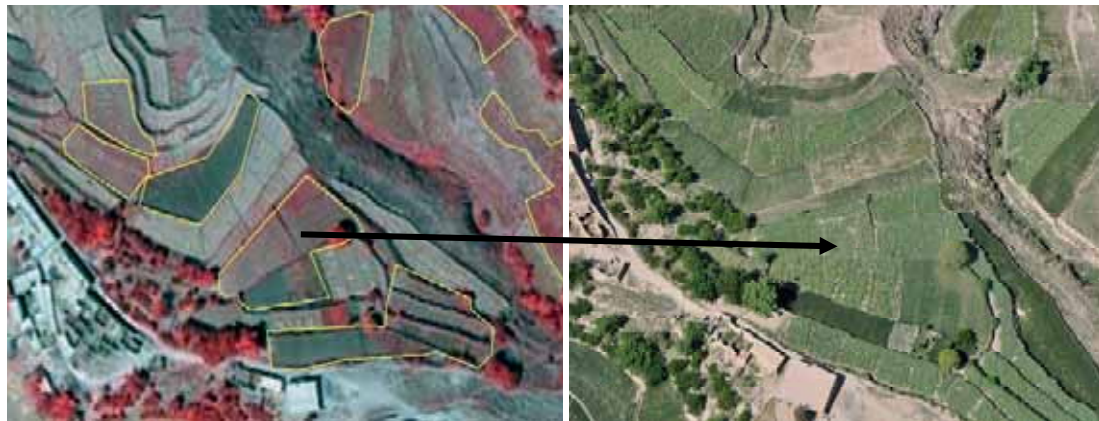
Natural colour aerial photographs acquired from helicopters were co-related with the satellite images to identify poppy from other crops as shown below.



Satellite image (infra-red)



Aerial photograph (natural colour)



Satellite image (infra-red)

Aerial photograph (natural colour)

Advantage of two-dated images

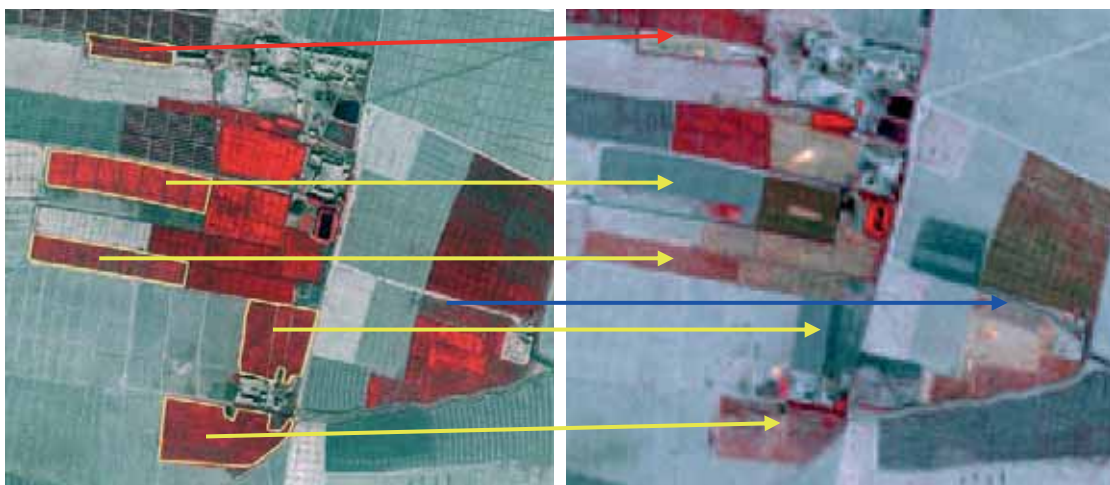
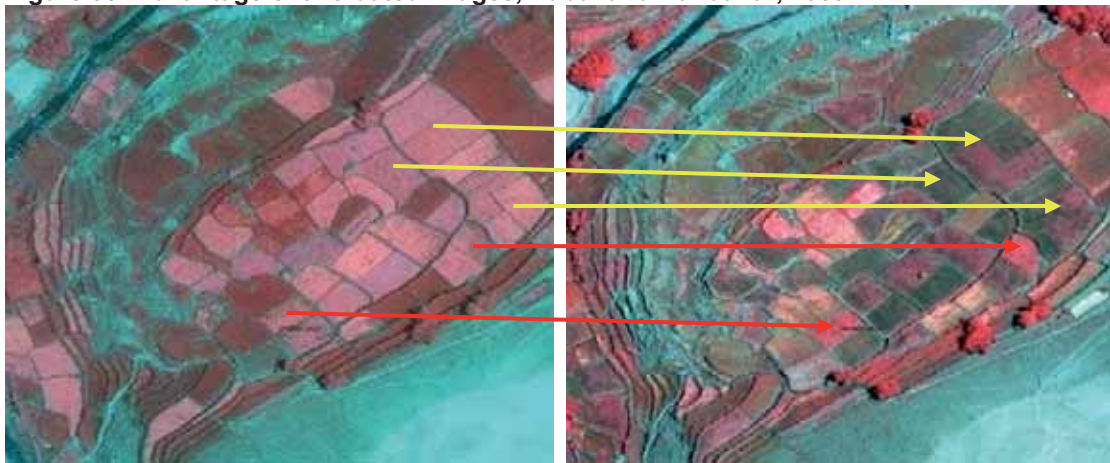
Visual interpretation of single-dated very high resolution images was a relatively easy task in Hilmand, Kandahar, Uruzgan and Nimroz provinces. This was due to larger field sizes, and timely acquisition of the images. Interpretation in target provinces, namely Nangarhar, Laghman, Kunar, Kabul, Kapisa, Hirat, Ghor, Baghlan, Faryab and Badakhshan, was easy with the help of GPS points and aerial photographs. Interpretation of images in Badghis, Farah, 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-date images were acquired late during 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.

Quality control

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

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

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



Pre-harvest image

Post-harvest image

→ **Non-poppy field
identified as poppy**

→ **Poppy field missed in
First date image**

→ **Poppy fields confirmed with second date image**

Area estimation in sampled provinces

The estimation of the extent of opium poppy cultivation is a ratio estimate for each of the provinces, using the province’s total potential agricultural land as 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 .

Confidence intervals were calculated using the bootstrap method with 50,000 iterations. Bootstrapping consists of re-sampling with replacement from the original sample. After each iteration the area under cultivation is estimated. After 50,000 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.

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 the 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 3.

Uncertainty (national level)

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 ha (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.

Uncertainty (provincial level)

The uncertainty around the estimates of the area under opium cultivation varies across provinces. 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.

The upper and lower limits of the 95% confidence intervals of sampled provinces were calculated using the bootstrap method, a re-sampling approach, using 50,000 iterations.

Table 43: Area estimates of sample provinces with 95% confidence interval, 2011

	Point estimate (ha)	Lower bound (ha)	Upper bound (ha)
Badghis	1,990	506	4,055
Day Kundi	1,003	149	2,408
Farah	17,499	7,403	28,834
Hilmand	63,307	48,392	78,915
Kandahar	27,213	15,024	40,056
Nimroz	2,493	684	4,360
Uruzgan	10,620	5,999	15,647
Zabul	262	100	464
Target provinces	6,785		
National	131,172		
National (rounded)	131,000	109,000	155,000

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 used also 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.

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.

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 with dates, in many cases additional satellite imagery and photos taken during eradication. The gross cultivation areas would be the net cultivation plus eradication.

In provinces where the poppy area is estimated with a sampling approach, first, the gross poppy cultivation area is calculated. Then, the total area eradicated in those provinces is 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 interpreted 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 target approach (census), eradication activities that happened before the date of the image acquisition are already reflected as these fields do no longer appear as poppy on the image. Fields which were eradicated after the date of the images acquisition are simply deleted.

3.2 Village survey methodology

Village survey activities (such as training, deployment and data collection) were carried out from March to July 2011 by 135 local field surveyors across all provinces. These activities were supervised jointly by MCN and UNODC. The surveyors were selected on the basis of their experience in opium poppy surveys, knowledge of local customs and their acceptance by local communities. Security was generally problematic for the surveyors, but selection of the surveyors from their respective regions helped to reduce security risks.

Sampling framework

In 2011, a total of 1,573 villages with a 4% sampling ratio were sampled. Out of the total sampled villages, 1,489 (1,453 in 2010) villages in 352 districts were surveyed across all provinces. In 2009, the sampling frame for the village survey data was comprised of an updated list of 41,419 villages in Afghanistan based on information from the Central Statistical Office and UN databases (AIMS). In addition to the sample villages, the surveyors, using their knowledge of the local situation, visited other areas in the province to complement their assessment of opium cultivation trends and the security situation throughout the province.

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

The surveyors conducted structured interviews with 1,489 headmen and 4,467 farmers (three farmers per village – one opium-growing and two non-opium-growing (one who stopped opium cultivation and one who has never grown opium)).

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 135 surveyors and 9 survey coordinators were trained in the use of the survey form and techniques by local UNODC staff in all regions. Surveyor training began in March 2008 and was conducted by the national staff of UNODC. MCN also participated in all training sessions. The training included practical (use of GPS, area calculation, etc.) and theoretical aspects (interviewing and dialogue with village headmen and farmers).

Data collection

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

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

Debriefing

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

3.3 Opium yield and production

The relationship between poppy capsule volume per square metre and dry opium yield is used to estimate opium production.³⁶ 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

³⁶ 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.

Y = Dry opium gum yield (kg/ha)

VC = Mature capsule volume (cm³/m²)

Table 44: Yield survey, 2011

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

For the yield survey, the procedure established in the UNODC “Guidelines for Yield Assessment” was followed. An imaginary transect was drawn, along which three one-metre square plots were selected. From each plot, the number of flower buds, flowers, immature capsules and mature capsules that were expected to yield opium were counted, and the diameter and height of 10 to 15 opium-yielding capsules were measured with a calliper. With these data, the capsule volume per square metre was calculated and entered into 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 45: Regional opium yield values with 95% confidence intervals (kg/ha), 2011

Region	Best estimate	Lower bound	Upper bound
North, Central and East (NCE)	40.7	37.4	43.9
North-east	23.1	21.0	25.1
South	48.1	43.9	52.2
West	30.6	27.3	34.0
National weighted by opium cultivation	44.5	-	-

Due to a low number of observations in some regions, the Northern, Eastern and Central regions were collapsed into one yield region.

Data quality concerns

As there have been doubts about the data quality from previous yield surveys, UNODC has sought expert advice. In an extensive work these experts applied several statistical tests on the data provided, and found for almost all surveyors issues which question the reliability of the reported capsule measurements and / or the reported number of yielding capsules per plot. The statistical tests were applied to the capsule measurements, i.e. to the values reported on height, diameter, and thus the resulting capsule volumes. Regarding the number of capsules contributing to yield per plot, no tests could be applied.

UNODC has taken these doubts seriously. Consequently, a set of criteria was applied to the data with the aim to separate high quality data from data that was problematic. The criteria applied followed closely the expert advice but with modifications. The main difference was that UNODC included or excluded villages based on the test results, whereas the experts suggested to include or exclude data on the surveyor level. As one surveyor might cover many villages, this distinction made a difference in the amount of data used.

Out of 232 surveyed villages the measurements of 50 villages were considered as reliable. These 50 villages covered all regions in Afghanistan but not with a representative data basis. Besides excluding capsule measurements from the yield calculations the maximum number of yielding capsules per plot was set to 50, i.e. if a surveyor reported more than 50 capsules this number was reduced to 50.

It must be stressed here that both the UNODC and the MCN worked very hard on training the surveyors and on ensuring high data quality. However, due to the complicated circumstances in many provinces and due to long chains of report, a throughout sufficiently high quality could not be reached.

When excluding data from the analysis it is of high importance to assess how far this process alters the results. The following tables present the three yield results; the first presents the numbers published here; the second gives the result if all data was used; the third one is the result when following the expert advice.

Table 46: UNODC estimate. Data from 50 out of 232 fields were used for calculating the average yields with potential capsule numbers limited to 50 per square meter. Northern, Central and Eastern region were combined to NCE.

Region	Yield kg/ha	Average Capsule Volume	Number of fields	Production (mt)
NCE	40.7	30.74 (std 17.99) N=940	25	187
NE	23.1	27.47 (std 13.90) N=468	22	39
S	48.1	52.78 (std 24.16) N=1,067	32	4,909
W	30.6	32.99 (std 16.01) N=1,551	62	685
Weighted average	44.5	37.07 (std 21.05) N=4,026	141	5,800

Table 47: All data is used. Northern, Central and Eastern region were combined to NCE.

Region	Yield kg/ha	Average Capsule Volume	Number of fields	Production (mt)
NCE	44.2	40.74 (std 19.33) N=3,713	118	204
NE	22.6	26.98 (std 14.14) N=734	34	39
S	49.1	46.42 (std 20.07) N=11,425	345	5,012
W	33.3	34.57 (std 16.42) N=4,896	188	743
Weighted average	45.8	41.92 (std 19.77) N=20,768	685	6,000

Table 48: Expert advice; using a fixed capsule volume of 32.96 cm³ and limiting the potential capsule numbers to 50 per square meter. Northern, Central and Eastern region were combined to NCE.

Region	Yield kg/ha	Average Capsule Volume	Number of fields	Production (mt)
NCE	43.9	32.96	118	202
NE	26.8	32.96	34	46
S	41.0	32.96	345	4,186
W	33.4	32.96	188	746
Weighted average	39.7	32.96	685	5,200

Regarding the results from following the expert advice, it has to be noted that the fixed capsule volume of 32.96 cm³ stems from data of three surveyors from Badakhshan, Baghlan, and

Nangarhar; therefore the scope of any regional projection is limited. The UNODC estimate uses data from all regions, which better reflects variations in capsule sizes between regions. However, some of the data may be of limited quality and the data used is not statistically representative.

To further improve data quality several measures are in discussion. They include, for example, a reduction in the number of fields surveyed and/or using pairs of surveyors rather than single persons.

Opium production

The opium production was calculated with the estimated regional area under opium cultivation 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 have 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, Δp , resulting from uncertainty in the estimates for cultivation area and yield.

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



Yield survey training in Badakshan province, 2011



Yield survey training in Hirat province, 2011



Yield survey training in Nangarhar province, 2011

3.4 Eradication verification methodology

Verification of eradication led by provincial governors (GLE)

Since 2010 UNODC/MCN improved the field-based verification activities by enhancing the control mechanism. The areas verified by the eradication verifiers were randomly checked by the team leader and UNODC/MCN Survey Coordinators for validation of the reported figures. A total of 106 eradication verifiers were trained on eradication verification techniques and deployed in a phased manner to provinces where eradication activities were envisaged. The eradication verifiers were part of the eradication teams led by the respective provincial governor. Verifiers reported to the office of Provincial Governors beginning in February 1, 2011.

Verification methodology for GLE:

- Eradication verifiers were part of the Governor-led eradication teams.
- The verifiers took measurements of each eradicated field, collected its GPS coordinates and took photographs.
- The verifiers drew sketch maps of each field as a reference for area calculations.
- The verification-reporting officers in Kabul obtained the provisional data from the verifiers through telephone (mobile/satellite phones) and updated the database on a daily basis.

- The verifiers filled in hardcopy survey forms and submitted them to UNODC regional offices. The forms were then sent to the Kabul office for data entry. Quality control was undertaken by MCN/UNODC survey coordinators 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.
- 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.

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

As of 2009, farm-gate prices at harvest time were 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. This is thought to better reflect the 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.

Table 49: Regional farm-gate prices of dry opium at harvest time (US\$/kg), 2011

Region	Average Dry Opium Price (US\$/kg)
Central	255*
Eastern	290
North-eastern	218
Northern	238
Southern	232
Western	296
National average price weighted by production	241

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

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

3.6 Per hectare income from opium

The gross per-hectare income from opium is estimated by dividing the farm-gate value by the area. This gross income refers only to opium gum and does not take into account the potential income from by-products such as poppy seeds or stalks. According to field observations, these by-products do not play a major role.

Total expenditure related to cultivating one hectare of poppy according to farmers' responses was US\$ 1,390/ha, slightly higher than the expenditure reported in 2010 (US\$ 1,270/ha). The main reduction in reported costs came from lower expenditures on fertilizer but also from expenditures for lancing and irrigation. Possibly, farmers invested less in fertilizer and irrigation than in previous years, which contributed to a lower yield and thus reduced lancing costs. Reported expenditures correspond to 13% of reported gross income.

This ratio is applied to the estimated gross income per hectare calculated from farm-gate value and number of opium-growing households to obtain the net income from opium per hectare.

3.7 Estimating the value of the Afghan opiate economy

Changes to previous years

Three changes were made in the calculation of the opium economy in Afghanistan:

- The amount of the precursor substance Acetic Anhydride needed for the production of one kilogramme heroin were updated. Instead of 2.5 litres, here 1.5 litres were used in the calculations. Hence, lower amounts of precursor substances were needed. With the number from the previous year, the net value of the opium economy would have been slightly lower.
- The calculation of opiates consumed within Afghanistan was updated with the drug use estimates from the 2009 Drug Use Survey implemented by the Government of Afghanistan and UNODC and more recent price data. As opposed to the estimates from the previous years, the average amount of opiates typically consumed per day decreased from 0.5 grammes heroin per day to 0.35 grammes per day, whereas the amount of opium consumed increased from 1.6 grammes per day to 3.1 grammes per day.

Assumptions

The calculations are based on the following assumptions:

- For the purposes of this model, in most estimation steps, Central Asian countries are treated as one region.
- Only exports to Afghanistan's direct neighbours are considered in the model, i.e. to I. R. of Iran, Pakistan and Central Asia. There are indications of direct drug exports to China and India as well as to other countries by air or land. However, the amounts trafficked through these routes are thought to be comparatively small and are not considered in this model. Shipments trafficked via transit countries are not considered in this estimation.
- Afghan drug traffickers control drug trafficking from Afghanistan to neighbouring countries, where the merchandise is then handed over to other traffickers. The total gross value of the exported Afghan opium can be estimated by multiplying wholesale prices for opium and heroin in border regions of neighbouring countries with estimated amounts of drugs trafficked.
- The value of the exported opium (partly transformed into morphine/heroin) was based on its value at border areas of neighbouring countries. Opiates are usually trafficked by Afghan traders to neighbouring countries. In general, Afghan traffickers are involved in shipping the opiates across the borders, from where traffickers from neighbouring countries take over the consignments.
- For the conversion of opium into morphine, a factor of 7:1 is used. For the conversion of morphine into heroin a factor of 1:1 is used. Morphine seizures in Pakistan and Iran bear evidence of morphine exports from Afghanistan to these countries. For the estimation no difference is made between morphine and heroin as the proportion of opiates exported as morphine is not known.

Components of the estimation

The estimation process of the opium economy 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 form of opium or heroin/morphine, after deducting seizures and domestic consumption. The respective value is calculated by multiplying quantities with 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 the domestically consumed opiates and the gross export value of remaining opiates;
- Therefore, up-to-date cross-border and end-consumer market prices are needed, as well as prices for the main precursor substances;
- Furthermore, for estimating the amount of opium needed for each of these markets a conversion factor from opium into morphine and heroin is needed;

Contribution of the opiate economy to GDP

By definition, the gross domestic product or GDP refers to the market value of all final goods and services produced within a country in a given period. Since all income is derived from production (of goods and services), it should equal the gross domestic income, i.e. all income generated within a country.

When considering the contribution of the opiate industry in Afghanistan to the domestic income, one has to calculate the value of all final goods produced from opium in Afghanistan. Final goods are goods that are not used to produce other goods but have reached their final destination at end-consumer level. In the case of opiates, final goods are opiates that are exported, since the income generated from further trade does not contribute to Afghanistan's economy; opiates that are consumed domestically; and increases in opiate inventories in a given year (if there are any), since goods held in inventories are counted for the year produced, not the year sold.

From the value of all final goods the value of imports has to be subtracted since this is income lost to other countries. There are many necessary imports needed for opiate production; here, however, only imports of the two main precursor substances for heroin/morphine production are considered.

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, where the amount of heroin/morphine and opium seized in 2010 is a proxy for the seizures in 2011.

Table 50: Proportions of opiate seizures in Afghanistan and neighbouring countries (%)

Distribution	2008	2009	2010	Average 2008-2010
% opium	62%	63%	47%	58%
% heroin/morphine	38%	37%	53%	42%

The difference between 2009 and 2010 was caused by a strong increase in heroin seizures in Afghanistan and a decrease of opium seizures in Iran. It has to be noted, that these changes should be interpreted with caution, as seizures are often driven by pure chance and seizure data has some inherent uncertainties. 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.³⁷

This is rather typical for seizures and not specific only to Afghanistan. The present level of information does not allow to correct the official seizure figures for purity.

³⁷ 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

Furthermore, since January 2009, ISAF has been engaged in counter narcotics operations in Afghanistan in cooperation with Afghan forces and has intensified seizure activities. Due to the involvement of many different actors in seizure operations and the absence of an integrated seizure reporting system, it is possible that some seizures are not included in official records or that some degree of double reporting occurs.

Export value of the opium economy

The calculation of the value of the opium economy is limited by the fact that the drug products leaving the laboratories in Afghanistan may undergo further processing, e.g. adulterations, before reaching the 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 have other reasons such as tailoring the drug product for specific usages.³⁸ This not only alters the volume of the drug exported but also influences costs. These factors cannot be estimated at the moment. However, 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.

Prices

For Pakistan, the simple average of the monthly opium wholesale prices in Peshawar between February and September 2011 was used as the typical price. Heroin prices were calculated similarly from the monthly wholesale prices of heroin in Peshawar between January and September 2011, where the (higher) price for heroin of injection quality was used to account for adulterations and other profit increasing methods. These prices were collected by UNODC in the framework of its monthly drug price monitoring.

For Central Asia, wholesale price ranges of opium and mid- and high-quality heroin in October 2011 were available for the Tajik border provinces of Khatlon and Gorno-Badakhshan (GBO) from the Tajikistan Drug Control Agency. The prices used for estimating the value of the exported opiates is the average of the prices for Pakistan and Central Asia. There is no weighting included, so it is not accounted for the different amounts going to each of these destinations. It should be noted that price information obtained from all three countries has strong limitations and should be improved in order to enhance the reliability of the estimate.

The heroin prices for Iran were not comparable to the prices reported from Central Asia and Pakistan. They did not enter the calculations. For opium the last available price from 2009 was used.

The prices used in the calculations were simple averages of the prices listed here.

Table 51: Opium and heroin/morphine prices in countries neighbouring Afghanistan in US\$

US\$/kg	Opium	Heroin/ Morphine batan quality	Lowest heroin price	Highest heroin price	Average of ordinary heroin (saada)	Average of heroin injection quality
Pakistan	304 (261-437)	4,586	4,160	4,882	1,291	4,865
Central Asia	400	4,000	NA	NA	NA	NA
Iran	483	NA	NA	NA	NA	NA

For the calculation of the gross export value, the potential volumes of opium and heroin exported to the neighbouring countries were multiplied with the corresponding, averaged prices.

³⁸ See UNODC (2009): World Drug Report 2009, p. 61, where evidence from the forensic laboratory of CNPA is presented confirming the use of various cutting agents in Afghanistan in 2008.

The total gross export value is the combined gross export value of opium and heroin exports. As indicated above, morphine exports are not considered separately here. As well, all processed opium exports are assumed to be in the form of heroin.

Estimation of domestic consumption

In 2009, the Ministries of Health and Counter Narcotics in collaboration with the UNODC implemented a national drug use survey in Afghanistan³⁹. In this extensive drug use survey, the number of opium and heroin users in Afghanistan was estimated to be 230,000 (210,000 – 260,000) and 120,000 (110,000 – 140,000) respectively. These numbers account for polydrug 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 both groups consume. 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 within Afghanistan in a given year, here for 2009. 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 was used which was the price average of October 2010. The price for 1 kg heroin was reported to be US\$ 6,300 and for 1 kg opium to be US\$ 530. Combining this with the other estimates yields the results shown in the following table.

Table 52: Domestic opiate market, 2009

	Days Consumed, 2009*	Total Expenditure (US\$), 2009	Total Consumption (mt)	Average daily consumption (g)
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.

When multiplying these quantities consumed with current end-consumer level prices, the value of the domestic opiate market can be calculated. The important underlying assumption is that the amount used has not changed since 2009. This might be a simplification, because recent strong increases in price levels may have led to a reduction of use (elasticity of demand) either by reducing the number of users and/or the quantities used.

Conversion of opium into morphine and heroin

The opium production figure refers to oven-dry opium, meaning opium dried under laboratory conditions to remove any moisture contained in the gum as opposed to air-dry opium, often simply called “dry opium” or fresh opium.⁴⁰ The analysis of information from various sources over the past years indicated that about 7 kg of opium are needed to produce 1 kg of morphine (base) or brown heroin (base).⁴¹ By and large, this 7:1 ratio has been confirmed in various key informant surveys in recent years and is also used for this estimation. Theoretically, it would be possible to extract from 7 kg of opium gum (with about 14% morphine) all its morphine content and produce 1 kg of 100% pure heroin, assuming a 1:1 conversion ratios from morphine to heroin. Considering local conditions, however, the conversion of 7:1 applies more realistically to a lower quality

³⁹ Ministry of Counter Narcotics/Ministry of Health/UNODC: *Drug Use in Afghanistan: 2009 Survey*. (in print)

⁴⁰ The moisture content of fresh opium ranges between 30% and 50%. Opium after storage typically has a moisture content of 10% to 15%. Although usually referred to as ‘dry’ opium, opium after the natural drying process still contains residual water. Cf. 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.

⁴¹ For a detailed discussion of the 7:1 ratio see UNODC/Ministry of Counter Narcotics (2008): *Afghanistan Opium Survey 2008*. November 2008. Vienna, p. 151-154.

heroin. Thus, the heroin figures calculated here refer to brown heroin base. Information on heroin purity in Afghanistan indicates a wide range of purity. It is difficult to assess the typical laboratory purity of Afghan heroin as the seizures of heroin vary by location, trading level and sometimes may already contain adulterants added to better commercialize the drug. Typical laboratory efficiencies can be assumed to be in the range of 50% to 80%⁴²

For the production of 1 kg of high quality white heroin (HCl), more than 7 kg of opium is needed. However, export of such high-quality white heroin from Afghanistan appears to be very limited as compared to 'brown heroin'. Therefore, production and exports of white heroin were not considered in this estimation. None of the factors in the estimation chain fresh opium, oven dry opium, morphine content, morphine extraction efficiency or morphine to heroin conversion efficiency is well researched. To gather more information on these issues, two experiments were conducted (see Section "Yield Experiments 2010 and 2011").

⁴² The simulation exercise conducted by the German Bundeskriminalamt found purities within that range (see Bulletin on Narcotics, vol. LVII, No. 1 and 2, 2005, p. 11-31). Out of 8 heroin base samples analysed by DEA in 2007 and 2008, 6 had purities between 54.9% and 79.6%. Two samples from 2008 had very low purities of 2.64% and 10.76% (the samples are not representative for heroin in Afghanistan) (communication from DEA, May 2009).

ANNEX I: OPIUM POPPY CULTIVATION PER PROVINCE (HA), 2002-2011

PROVINCE	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Change 2010-2011 (ha)	Change 2010-2011 (%)
Badakhshan	8,250	12,756	15,067	7,370	13,056	3,642	200	557	1,100	1,705	+605	+55%
Badghis	26	170	614	2,967	3,205	4,219	587	5,411	2,958	1,990	-968	-33%
Baghlan	152	597	2,444	2,563	2,742	671	475	Poppy-free	Poppy-free	161	NA	NA
Balkh	217	1,108	2,495	10,837	7,232	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Bamyan	-	610	803	126	17	-	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	-544	-35%
Farah	500	1,700	2,288	10,240	7,694	14,865	15,010	12,405	14,552	17,499	+2947	+20%
Faryab	28	766	3,249	2,665	3,040	2,866	291	Poppy-free	Poppy-free	145	NA	NA
Ghazni	-	-	62	9	-	-	Poppy-free	Poppy-free	Poppy-free	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	NA	NA
Hilmand	29,950	15,371	29,353	26,500	69,324	102,770	103,590	69,833	65,045	63,307	-1738	-3%
Hirat	50	134	2,531	1,924	2,287	1,525	266	556	360	366	+6	+2%
Jawzjan	137	888	1,673	1,748	2,024	1,085	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kabul	58	237	282	-	80	500	310	132	152	220	+68	+45%
Kandahar	3,970	3,055	4,959	12,989	12,619	16,615	14,623	19,811	25,835	27,213	+1378	+5%
Kapisa	207	326	522	115	282	835	436	Poppy-free	Poppy-free	181	NA	NA
Khost	-	375	838	2	133	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Kunar	972	2,025	4,366	1,059	932	446	290	164	154	578	+424	+275%
Kunduz	16	49	224	275	102	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Laghman	950	1,907	2,756	274	710	561	425	135	234	624	+390	+166%
Logar	-	-	0	-	-	-	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	+1981	+276%
Nimroz	300	26	115	1,690	1,955	6,507	6,203	428	2,039	2,493	+454	+22%
Nuristan	-	648	764	1,554	1,516	0	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktika	-	-	-	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Paktya	38	721	1,200	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Panjshir	-	-	-	-	-	-	Poppy-free	Poppy-free	Poppy-free	Poppy-free	NA	NA
Parwan	-	-	1,310	-	124	-	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	NA	NA
Sari Pul	57	1,428	1,974	3,227	2,252	260	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	NA	NA
Uruzgan	5,100	4,698	7,365	2,024	9,703	9,204	9,939	9224	7,337	10,620	+3283	+45%
Wardak	-	2,735	1,017	106	-	-	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	-221	-46%
Total (rounded)	74,000	80,000	131,000	104,000	165,000	193,000	157,000	123,000	123,000	131,000	8,000	6.5%

ANNEX II: INDICATIVE DISTRICT LEVEL ESTIMATES OF OPIUM CULTIVATION, 2001 - 2011 (HA⁴³)

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

⁴³ The survey is designed to produce province level estimates. District estimates are derived by a combination of different approaches. They are indicative, only, and suggest a possible distribution of the estimated provincial poppy area among the districts of a province.

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Bamyan	Bamyan (Provincial Center)			20	93	19	17	0	0	0	0	0
Bamyan	Panjab			250	31		0	0	0	0	0	0
Bamyan	Saighan							0	0	0	0	0
Bamyan	Shebar			36	492	107	0	0	0	0	0	0
Bamyan	Waras			191	64		0	0	0	0	0	0
Bamyan	Yakawlang			112	123		0	0	0	0	0	0
Bamyan Total				610	803	126	17	p-f	p-f	p-f	p-f	p-f
Day Kundi	Day Kundi *	0	-	836	1,996		1,948			0	0	0
Day Kundi	Gizab	0	-	776	1,109		1,243	1,054	665	810	722	621
Day Kundi	Ishtarlay							535	214	239	9	9
Day Kundi	Kajran	0	-	418	189		1,633	366	357	704	622	153
Day Kundi	Khedir							531	289	160	5	8
Day Kundi	Kiti							282	168	284	134	151
Day Kundi	Mir Amor							512	281	703	19	22
Day Kundi	Nili (Provincial Center)							0	214	5	5	9
Day Kundi	Sang-i-Takht							2	1	68	10	15
Day Kundi	Shahrstan	1	-	415	421		2,220	64	85	29	21	13
Day Kundi Total		1	0	2,445	3,715	2,581	7,044	3,346	2,273	3,002	1,547	1,003
Farah	Anar Darah				91	1,828	143	16	239	79	1	9
Farah	Balkwah				39	390	1,093	3,458	3,090	3,570	1936	800
Farah	Bala Bukh			513	336	1,665	1,669	5,312	1,509	2,705	2,586	3,157
Farah	Delaram									3,011	4,404	4,263
Farah	Farah (Provincial Center)				87	729	905	1,328	1,013	1,142	51	0
Farah	Gulistan			1,187	447	163	202	1,132	4,756	1,355	2,661	4,565
Farah	Khaki-Safed				84	432	537	99	609	232	645	1,103
Farah	Lash-i-Juwayn				41	1,568	215	233	109	45	3	6
Farah	Pur Chaman				409	293	363	1,549	1,046	96	2,175	3,512
Farah	PushtRod				554	2,482	1,709	1,314	1,588	46	61	46
Farah	Qala-i-Kah				189	407	506	337	888	47	11	39
Farah	Shib Koh				12	283	352	87	163	77	18	0
Farah Total		0	500	1,700	2,289	10,240	7,694	14,865	15,010	12,405	14,552	17,499
Faryab	Almar				239	57	338	213	0	0	0	0
Faryab	Andkhoy				15	13	31	0	0	0	0	0
Faryab	Bil Chiragh		26	232	24		322	620	102	0	0	0
Faryab	Dowlat abad				78	133	27	0	0	0	0	0
Faryab	Gurziwan							101	0	0	0	75
Faryab	Khami ChaharBagh				205	6	490	0	0	0	0	0
Faryab	Khwajah Sabz Posh Wali				129	451	375	238	0	0	0	0
Faryab	Kohistan				640	50	84	152	10	0	0	49
Faryab	Maimanah				248		218	66	10	0	0	0
Faryab	Pashtun Kot		1	281	429	97	60	249	0	0	0	9
Faryab	Qaram Qul				55	138	43	0	0	0	0	0
Faryab	Qaisar		150	1,050	579	880	303	168	0	0	0	13
Faryab	Qurghan							0	0	0	0	0
Faryab	Shirin Tagab			103	137	1,141	172	924	0	0	0	0
Faryab Total		0	28	766	3,249	2,665	3,040	2,866	291	p-f	p-f	146
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	88	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	Jaghuri						0	0	0	0	0	0
Ghazni	Khwajah 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 Klugyani						0	0	0	0	0	0
Ghazni	Zanakhan						0	0	0	0	0	0
Ghazni Total		0	0	0	62	9	0	p-f	p-f	p-f	p-f	p-f
Ghor	Chaghcharan (Provincial Center)		700	1,189	872	1,149	1,233	910	0	0	0	0
Ghor	Chahar Sadah							41	0	0	0	0
Ghor	Dowlatyar							132	0	0	0	0
Ghor	Do Lainah							131	0	0	0	0
Ghor	Lal Wa Sarjangal				1,055	718	771	200	0	0	0	0
Ghor	Pasaband		700	805	175	48	241	17	0	0	0	0
Ghor	Saghar		300	256	340	120	283	18	0	0	0	0
Ghor	Shahrak			640	902	18	1,398	0	0	0	0	0
Ghor	Taywara		500	808	649	240	608	39	0	0	0	0
Ghor	Tulak			84	990	396	145	16	0	0	0	0
Ghor Total			2,200	3,782	4,983	2,689	4,679	1,503	p-f	p-f	p-f	p-f

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Hilmand	Baghran		1,800	2,309	2,232	2,507	2,890	4,287	4,279	3343	4049	6739
Hilmand	Dishu		-		369	911	851	1,160	688	475	119	481
Hilmand	Garm Ser		2,020	462	1,922	1,912	6,168	6,523	8,000	5789	6333	4342
Hilmand	Kajaki		2,640	1,392	1,676	1,639	6,760	5,807	6,240	3696	3299	6435
Hilmand	Lashkargah (Provincial Center)		1,140	605	1,380	1,332	4,008	6,320	7,857	4379	2014	649
Hilmand	Musa Qala		3,690	2,455	2,404	1,664	6,371	8,854	12,687	8603	8415	10340
Hilmand	Nad Ali		5,880	870	4,177	2,356	11,652	20,045	20,824	17063	18646	5413
Hilmand	Marja										0	2629
Hilmand	Naher-i-Saraj		1,850	1,575	6,486	3,548	10,386	22,769	13,270	9598	11517	12638
Hilmand	Nowzad		2,650	3,096	1,051	3,737	2,707	6,192	3,863	6473	2845	4694
Hilmand	Nawa-i-Barukzai		2,730	1,240	3,506	2,552	10,168	6,314	13,978	4416	1328	1610
Hilmand	Reg-i-Khan Nishin		1,940		1,893	2,772	3,765	8,484	4,720	2056	2292	2120
Hilmand	Sangin Qala		2,810	777	1,365	1,184	2,862	5,150	5,532	2754	2631	2941
Hilmand	Washer		800	590	892	386	735	865	1,653	1188	1555	2275
Hilmand Total		0	29,950	15,371	29,353	26,500	69,323	102,770	103,590	69,833	65,045	63,307
Hirat	Adraskan				133	9	99	196	22	1	0	0
Hirat	Chūisht-i-Sharif				166	42	42	0	0	0	0	0
Hirat	Fersi			134	28	110	111	0	0	0	0	0
Hirat	Ghoryan				60	238	204	302	0	0	0	0
Hirat	Gulran				240	33	32	0	0	0	0	0
Hirat	Guzara				88	231	233	0	0	0	0	0
Hirat	Hirat				0	16	16	0	0	0	0	0
Hirat	Enjil				41	394	382	0	0	0	0	0
Hirat	Karukh				265	124	121	0	0	0	0	0
Hirat	Kohsan				4	72	73	146	0	0	0	0
Hirat	Kushk (Rabat-i-Sangi)				73	64	50	367	43	0	0	0
Hirat	Kusk-i-Kohnah				3	15	15	0	0	0	0	0
Hirat	Obe				842	144	131	0	0	0	0	0
Hirat	Pashtun Zarghun				154	249	242	0	0	0	0	0
Hirat	Shindand				427	54	408	516	201	555	360	366
Hirat	Zendah Jan				7	128	129	0	0	0	0	0
Hirat Total		0	50	134	2,531	1,924	2,288	1,526	266	556	360	366
Jawzjan	Aqchah		47	171	247	631	30	0	0	0	0	0
Jawzjan	Darzab				625	272	16	803	0	0	0	0
Jawzjan	Faizabad		24	280	218	112	473	21	0	0	0	0
Jawzjan	Khamyab		30	51	40	68	2	0	0	0	0	0
Jawzjan	Khanaqa							0	0	0	0	0
Jawzjan	Khwajah DuKoh				19	15	271	0	0	0	0	0
Jawzjan	Mardyan		4	228	174	21	348	62	0	0	0	0
Jawzjan	Mingajik		7	64	101	77	38	0	0	0	0	0
Jawzjan	Qarqin		24	58	151	43	17	0	0	0	0	0
Jawzjan	Qush Tepah							43	0	0	0	0
Jawzjan	Sheberghan (Provincial Center)		1	36	98	508	828	156	0	0	0	0
Jawzjan Total		0	137	888	1,673	1,748	2,023	1,086	p-f	p-f	p-f	p-f
Kabul	Bagrami						0	0	0	0	0	0
Kabul	Chahar Asyab						0	0	0	0	0	0
Kabul	DehSabz						0	0	0	0	0	0
Kabul	Farzah							0	0	0	0	0
Kabul	Gulara						0	0	0	0	0	0
Kabul	Estalef						0	0	0	0	0	0
Kabul	Kabul						0	0	0	0	0	0
Kabul	Kalakan						0	0	0	0	0	0
Kabul	Khak-i-Jabar						0	0	0	0	0	0
Kabul	Mir Bacha Kot						0	0	0	0	0	0
Kabul	Musahi						0	0	0	0	0	0
Kabul	Paghman						0	0	0	0	0	0
Kabul	Qara Bagh						0	0	0	0	0	0
Kabul	Shakar Dara						0	0	0	0	0	0
Kabul	Surubi		29	58	237	282	80	500	310	132	152	220
Kabul Total		29	58	237	282	0	80	500	310	132	152	220
Kandahar	Arghandab		330	139	261	287	735	1,016	57	158	22	84
Kandahar	Arghistan		80	14	651	2,449	784	310	28	43	7	42
Kandahar	Daman		190	357	895	775	183	375	19	119	0	0
Kandahar	Ghorak		380	166	241	233	336	1,445	232	628	1466	1165
Kandahar	Kandahar (Provincial Center)		640	293		0	1,367	1,220	590	425	108	262
Kandahar	Khakrez		560	312	145	185	217	132	1,224	1474	1215	1190
Kandahar	Manuf		-	63	117	150	464	914	182	36	33	31
Kandahar	Maivand		1,090	353	514	1,281	1,362	2,878	3,375	6524	9966	10114
Kandahar	Miya Neshin							322	1,603	158	44	45
Kandahar	Nesh							432	3,284	1717	2842	2096
Kandahar	Panjwayee		150	482	864	4,687	4,714			1564	2982	4914
Kandahar	Reg				0	327		4	0	0	0	0
Kandahar	Shah Wali Kot		260	489	923	2,379	1,593	1,258	560	911	813	615
Kandahar	Shorabak			111	45	19	409	308	4	0	0	0
Kandahar	Spin Boldak		290	277	303	218	454	768	541	650	1359	1368
Kandahar	Zhire							5,232	2,923	5405	4978	5288
Kandahar Total		0	3,970	3,055	4,959	12,990	12,618	16,615	14,623	19,811	25,835	27,213

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Kapisa	AlaSai				77	82	0	367	0	0	0	3
Kapisa	Hisah-i-Awal Kohistan							0	0	0	0	0
Kapisa	Hisah-i-Duwumu Kohistan							0	0	0	0	0
Kapisa	Koh Band				111	33	0	0	0	0	0	9
Kapisa	Kohistan *				116		0		0	0	0	0
Kapisa	Mahmood-i-Raqi (Provincial Center)				10		0	0	0	0	0	0
Kapisa	Nijrab				92		0	0	0	0	0	14
Kapisa	Tagab	0	207	326	116		282	468	436	0	0	155
Kapisa Total		0	207	326	522	115	282	835	436	p-f	p-f	181
Khost	Bak				0		14	0	0	0	0	0
Khost	Gurbuz				47		10	0	0	0	0	0
Khost	Jaji Maidan				8		16	0	0	0	0	0
Khost	Khost Matun (Provincial Center)				0		0	0	0	0	0	0
Khost	Manduzay (Ismyel Khel)				125		0	0	0	0	0	0
Khost	Musa Khel (Mangal)				86		0	0	0	0	0	0
Khost	NadirShah Kot				75		0	0	0	0	0	0
Khost	Qalandar				39		0	0	0	0	0	0
Khost	Sabari (Yaqubi)				0		0	0	0	0	0	0
Khost	Shamul (Dzadran)							0	0	0	0	0
Khost	Spera			118	0		5	0	0	0	0	0
Khost	Tanay	6		257	458	2	88	0	0	0	0	0
Khost	Terayzai (Ali Sher)				0		0	0	0	0	0	0
Khost Total		6	0	375	838	2	133	p-f	p-f	p-f	p-f	p-f
Kunar	Asad Abad (Provincial center)	1	140	396	841	270	356	42	252	4	0	0
Kunar	Bar Kunar (Asmar)	31	40	163	52	14	10	111	7	9	7	18
Kunar	Chapa Dara				535	147	23	0	0	0	12	42
Kunar	Dangam	4	49		44	22	9	90	0	9	0	43
Kunar	Dara-i-Pech	11	263	310	585	76	183	0	0	1	5	170
Kunar	Ghazi Abad							5	0	0	4	13
Kunar	Khas Kunar		70		298	41	18	8	1	0	0	0
Kunar	Mara warah			345	170	22	33	6	0	84	0	2
Kunar	Narang wa Badil	10	100	173	425	55	25	57	0	4	1	1
Kunar	Nari	1	-	60	0	19	0	80	15	1	0	0
Kunar	Noor Gal	9	70	353	460	58	88	7	0	4	20	20
Kunar	Sar Kani	8	100	141	385	50	75	11	6	1	0	0
Kunar	Shigal wa Sheltan							5	0	36	73	102
Kunar	Sawkai	8	140	83	571	284	111	19	9	4	33	30
Kunar	Watapoor							3	0	6	0	137
Kunar Total		74	832	1,942	3,795	775	820	446	290	164	155	578
Kunduz	Ali Abad		3	5	41		0	0	0	0	0	0
Kunduz	Dashti-i-Archi				9		102	0	0	0	0	0
Kunduz	Chahar Darah		6	15	37		0	0	0	0	0	0
Kunduz	Hazrati Imam Sahib				28		0	0	0	0	0	0
Kunduz	Khanabad			11	70		0	0	0	0	0	0
Kunduz	Kunduz (Provincial Center)		3	9	32		0	0	0	0	0	0
Kunduz	Qala-i-Zal		5	8	7	275	0	0	0	0	0	0
Kunduz Total		0	16	49	224	275	102	p-f	p-f	p-f	p-f	p-f
Laghman	Alingar	3	146	354	593	107	259	23	13	1	48	343
Laghman	Alisheng	0	104	148	597	69	192	237	370	1	65	124
Laghman	Dowlat Shah	12	-	571	233	44	118	124	3	0	31	52
Laghman	Mehterlam (Provincial Center)		240	366	580	25	0	0	16	43	90	104
Laghman	Qarghayee	0	460	468	753	30	140	177	23	90	0	0
Laghman Total		15	950	1,907	2,756	274	709	561	425	135	234	624
Logar	Azra							0	0	0	0	0
Logar	Baraki Barak							0	0	0	0	0
Logar	Charkh							0	0	0	0	0
Logar	Kharwar							0	0	0	0	0
Logar	Khoshi							0	0	0	0	0
Logar	Muhammad Aghah							0	0	0	0	0
Logar	Pul-i-Alam							0	0	0	0	0
Logar Total		0	0	0	0	0	0	p-f	p-f	p-f	p-f	p-f
Nangarhar	Achun	1	940	2,131	1,907	198	1,274	1,797	0	14	10	254
Nangarhar	Bati Kot		2,390	1,994	4,683	166	550	1,774	0	0	0	0
Nangarhar	Behsud							0	0	0	0	0
Nangarhar	Chaparhar	2	990	1,169	1,818	20	209	878	0	0	0	12
Nangarhar	Darah-i-Noor		380	24	472	2	0	322	0	0	0	0
Nangarhar	Deh Bala	11	650	927	358	17	68	1,075	0	0	0	0
Nangarhar	Dur Baba		40	31	99	5	19	36	0	0	0	0
Nangarhar	Goshita	99	150	13	217	10	41	109	0	0	0	0
Nangarhar	Hesarak	2	620	1,016	1,392	64	283	295	0	18	5	178
Nangarhar	Jalalabad		90	4	1,658	77	0	0	0	0	0	0
Nangarhar	Kama		1,120	558	1,898	82	0	0	0	0	0	0
Nangarhar	Khogyani	3	2,640	2,986	2,269	117	750	3,253	0	108	131	557
Nangarhar	Kot							0	0	0	0	0
Nangarhar	Kuzkunar		500	102	801	37	151	153	0	0	0	0
Nangarhar	Lalpoor	95	250	1	362	17	68	356	0	5	59	185
Nangarhar	Mohmand Dara		720	19	1,170	54	221	995	0	0	1	1
Nangarhar	Nazyan		150	98	168	8	160	266	0	1	0	0
Nangarhar	Pachir wagam	3	420	1,142	1,091	35	143	594	0	0	0	3
Nangarhar	Rodat		2,760	3,313	3,633	50	0	3,755	0	0	0	0
Nangarhar	Sherzad	2	1,470	1,641	1,229	57	430	864	0	148	513	1510
Nangarhar	Shimwar		2,060	1,616	1,759	79	504	2,218	0	0	0	0
Nangarhar	Surkh Rud	0	1,440	118	1,229	0	0	0	0	0	0	0
Nangarhar Total		218	19,780	18,904	28,213	1,093	4,871	18,739	0	294	719	2,700
Nimroz	Chahar Burjak				65	526	1,119	87	4	84	144	181
Nimroz	Asl-i-Chakhansur				0		0	0	1	0	183	855
Nimroz	Kang				0		40	0	0	0	10	31
Nimroz	Khash Rod		26	50	1164	661	6,421	6,197	326	1621	1323	
Nimroz	Zaranj (Provincial Center)						135	0	0	17	81	102
Nimroz Total		0	300	26	115	1,690	1,955	6,507	6,203	428	2,039	2,493

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Nuristan	Barg-i-Matal				2	535	522	0	0	0	0	0
Nuristan	Du Ab							0	0	0	0	0
Nuristan	Kamdesh			210	307	269	262	0	0	0	0	0
Nuristan	Mandol				0	731	713	0	0	0	0	0
Nuristan	Noor Gram							0	0	0	0	0
Nuristan	Nuristan Paroon (Provincial Center)			438	185	19	19	0	0	0	0	0
Nuristan	Wama				66		0	0	0	0	0	0
Nuristan	Waygal				205			0	0	0	0	0
Nuristan Total				648	765	1,554	1,516	p-f	p-f	p-f	p-f	p-f
Paktika	Barmal							0	0	0	0	0
Paktika	Dilah wa Khwoshmand							0	0	0	0	0
Paktika	Giyani							0	0	0	0	0
Paktika	Gomal							0	0	0	0	0
Paktika	Jani Khel							0	0	0	0	0
Paktika	Mata Khan							0	0	0	0	0
Paktika	Nika							0	0	0	0	0
Paktika	Omna							0	0	0	0	0
Paktika	Sar Rowza							0	0	0	0	0
Paktika	Sharan (Provincial Center)							0	0	0	0	0
Paktika	Sunbi							0	0	0	0	0
Paktika	Turwo							0	0	0	0	0
Paktika	Urgun							0	0	0	0	0
Paktika	Wazakhwah							0	0	0	0	0
Paktika	Wor Mamay							0	0	0	0	0
Paktika	Yahya Khel							0	0	0	0	0
Paktika	Yosuf Khel							0	0	0	0	0
Paktika	Zarghun Shahr							0	0	0	0	0
Paktika	Ziruk							0	0	0	0	0
Paktika Total		0	0	0	0	0	0	p-f	p-f	p-f	p-f	p-f
Paktya	Azra *	1	38	419	603			0	0	0	0	0
Paktya	Ahmadabad *									0	0	0
Paktya	Samkani	0	-	76	275			0	0	0	0	0
Paktya	Dand Patan				175			0	0	0	0	0
Paktya	Gardez (Provincial Center)							0	0	0	0	0
Paktya	Woza Jadran				0			0	0	0	0	0
Paktya	Jaji	0	-	185	11			0	0	0	0	0
Paktya	Jani Khel				18			0	0	0	0	0
Paktya	Laja Ahmad Khel									0	0	0
Paktya	Lija Mangal	0	-		118			0	0	0	0	0
Paktya	Sayyid Karam	0	-	41	0			0	0	0	0	0
Paktya	Shamul *				0			0	0	0	0	0
Paktya	Shwak				0			0	0	0	0	0
Paktya	Zurmat				0			0	0	0	0	0
Paktya Total		1	38	721	1,200	0	0	p-f	p-f	p-f	p-f	p-f
Panjshir	Bazarak (Provincial Center)							0	0	0	0	0
Panjshir	Darah							0	0	0	0	0
Panjshir	Hissa-i-Awal(Khuj)				0			0	0	0	0	0
Panjshir	Hisa-i-Duwumi				0			0	0	0	0	0
Panjshir	Panjshir				0			0	0	0	0	0
Panjshir	Paryan							0	0	0	0	0
Panjshir	Rukhah							0	0	0	0	0
Panjshir	Shutul							0	0	0	0	0
Panjshir	Unaba							0	0	0	0	0
Panjshir Total					0		0	p-f	p-f	p-f	p-f	p-f
Parwan	Bagram				274			0	0	0	0	0
Parwan	Charikar (Provincial Center)				181			0	0	0	0	0
Parwan	Syahgird (Ghorband)				141			0	0	0	0	0
Parwan	Jabahussaraj				21			0	0	0	0	0
Parwan	Koh-i-Saffi				41		124	0	0	0	0	0
Parwan	Salang				0			0	0	0	0	0
Parwan	Sayyid Khel							0	0	0	0	0
Parwan	Shaykh Ali				263			0	0	0	0	0
Parwan	Shimwari				389			0	0	0	0	0
Parwan	Surkh-i-Parsa				0			0	0	0	0	0
Parwan Total		0	0	0	1,310	0	124	p-f	p-f	p-f	p-f	p-f
Samangan	Aybak (Provincial Center)			14	27	0	0	0	0	0	0	0
Samangan	Darah-i-Sooof-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
Samangan	Fayroz Nakhcheer									0	0	0
Samangan	Hazrat-i-Sultan			29	85	280	90	0	0	0	0	0
Samangan	Khmrang wa Sar Bagh	0		24	238	307	99	0	0	0	0	0
Samangan	Roi-Do-Ab				605	1,833	589	0	0	0	0	0
Samangan Total		614	100	101	1,151	3,874	1,960	p-f	p-f	p-f	p-f	p-f
Sari Pul	Balkhab			453	204	95	188	0	0	0	0	0
Sari Pul	Gosfandi							0	0	0	0	0
Sari Pul	Kohistanat				471	1,424	377	0	0	0	0	0
Sari Pul	Sangcharak				687	441	1,122	16	0	0	0	0
Sari Pul	Sari Pul (Provincial Center)			595	476	959	415	203	0	0	0	0
Sari Pul	Sayyad				23	52	25	41	0	0	0	0
Sari Pul	Sozma Qala	0	57	380	113	256	124	0	0	0	0	0
Sari Pul Total		0	57	1,428	1,974	3,227	2,251	260	p-f	p-f	p-f	p-f

Province	District	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Takhar	Baharak							0	0	0	0	0
Takhar	Bangi	0		20	13		0	79	0	0	0	0
Takhar	Chahab	19		4	27		70	0	0	0	0	0
Takhar	Chal	20			30		15	9	0	0	0	0
Takhar	Darqad				15		0	0	0	0	0	0
Takhar	DashtiQala							0	0	0	0	0
Takhar	Farkhar	26		43	27	43	118	32	0	0	0	0
Takhar	Hazar Sumuch							32	0	0	0	0
Takhar	Eshkamush	19		77	40		2	47	0	0	0	0
Takhar	Kalafgan	27		77	69		609	318	0	0	0	0
Takhar	Khwaja Bahauddin							0	0	0	0	0
Takhar	Khwaja Ghar	32		26	35		109	0	0	0	0	0
Takhar	Namak Ab							0	0	0	0	0
Takhar	Rustaq	24		34	194	1,321	816	118	0	0	0	0
Takhar	Taloqan (Provincial Center)	16		14	115		77	577	0	0	0	0
Takhar	Warsaj	10		14	66		46	0	0	0	0	0
Takhar	Yangi Qala	20		71	131		317	0	0	0	0	0
Takhar Total		211	788	380	762	1,364	2,179	1,211	p-f	p-f	p-f	p-f
Uruzgan	Chorah	0	1,330	975	1,402	259	2,024	71	316	306	221	301
Uruzgan	Dihrawud	0	1,340	1,282	2,523	209	1,704	3,538	2,849	2038	145	3438
Uruzgan	Khas Uruzgan	0	-	580	358	338	886	173	304	407	230	384
Uruzgan	Nesh *	0	490	59	426	352	614			0	0	0
Uruzgan	Shahidi Hasas	0	1,190	1,333	782	646	1,127	3,109	4,403	2445	3635	3601
Uruzgan	Tirin Kot (Provincial Center)	0	750	469	1,874	221	3,348	2,312	2,067	4028	3106	2895
Uruzgan Total		0	5,100	4,698	7,365	2,025	9,703	9,203	9,939	9,224	7,337	10,620
Wardak	Chak-i-Wardak			211	284		0	0	0	0	0	0
Wardak	Daimirdad			0	90	106	0	0	0	0	0	0
Wardak	Hisah-i-Awal Behsud			22	0		0	0	0	0	0	0
Wardak	Jaghata									0	0	0
Wardak	Jalbez			531	78		0	0	0	0	0	0
Wardak	Markaz-i- Behsud			472	0		0	0	0	0	0	0
Wardak	Maidan Shahr (Provincial Center)			527	102		0	0	0	0	0	0
Wardak	Nerkh			780	215		0	0	0	0	0	0
Wardak	Sayyidabad			192	248		0	0	0	0	0	0
Wardak Total				2,735	1,017	106	0	p-f	p-f	p-f	p-f	p-f
Zabul	Arghandab	0		302	526	205	346	79	55	103	91	47
Zabul	Atghar			188	32	86	36	16	3	2	16	1
Zabul	Daychopan	0		646	431	1,016	742	389	422	147	122	26
Zabul	Kakar Kak-e Afghan							104	110	219	44	40
Zabul	Mizan	0		309	251	56	123	129	289	309	140	74
Zabul	Naw Bahar							63	44	33	4	2
Zabul	Qalat (Provincial Center)	0		689	317	188	657	78	310	19	20	56
Zabul	Shah Joi	0		178	679	240	538	320	237	175	20	11
Zabul	Shemel Zayi			65	44	16	35	159	153	46	15	1
Zabul	Shirkai			164	287	102	228	139	105	87	0	0
Zabul	Tarnak wa Jaldak	1			410	145	506	136	608	5	10	5
Zabul Total		1	200	2,541	2,977	2,053	3,211	1,611	2,335	1,144	482	262
TOTAL		7,598	73,905	80,399	126,328	103,635	164,858	192,981	157,253	123,095	122,515	131,065
Rounded Total		8,000	74,000	80,000	131,000	104,000	165,000	193,000	157,000	123,000	123,000	131,000

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

ANNEX III: ERADICATION FIGURES BY DISTRICT (2011)

Province	District	Eradication (ha) verified	No. of fields eradication reported	No. of villages eradication reported
Badakhshan	Argo	293	1208	44
	Darayim	1	4	2
	Jurm	13	79	8
	Khash	5	48	3
	Kishim	2	14	1
	Tashkan	52	302	14
Badakhshan total		367	1655	72
Badghis	Muqur	36	69	4
Badghis total		36	69	4
Baghlan	Deh Salah	21	35	9
	Pul-i-Hisar	10	20	3
Baghlan total		31	55	12
Day Kundi	Kejran	198	514	22
	Kiti	36	91	4
Day Kundi total		235	605	26
Farah	Bala Buluk	143	313	13
	Farah (Provincial Center)	64	110	9
	Pushtrud	5	17	2
Farah total		212	440	24
Faryab	Gurziwan	1.2	21	6
	Kohistan	1.2	3	1
Faryab total		2	24	7
Ghor	Chighcheran (Provincial Center)	15	42	4
	Shahrak	2	5	1
	Tulak	25	35	2
Ghor total		43	82	7
Hilmand	Garm Ser	171	274	22
	Lashkargah (Provincial Center)	899	2024	42
	Musa Qala	39	43	5
	Nad Ali (Marja)	339	870	55
	Naher-i- Saraj	206	336	24
	Nawa-i- Barukzai	190	672	33
	Nawzad	45	110	11
	Regi-i-Khan Nishin	49	79	12
Sangiin Qala	1	27	3	
Hilmand total		1,940	4,435	207

Province	District	Eradication (ha) verified	No. of fields eradication reported	No. of villages eradication reported
Hirat	Gulran	7	44	2
	Guzara	7	56	2
	Kushk (Rubat-i-Sangi)	11	68	5
	Shindand	203	920	60
Hirat total		227	1,088	69
Kabul	Surubi	80	757	30
Kabul total		80	757	30
Kandahar	Arghandab	35	85	13
	Kandahar (Provincial Center)	6	13	1
	Maiwand	59	75	7
	Panjwayee	6	17	2
	Shah Wali Kot	25	50	11
	Takhta Pul	33	86	6
	Zhire	122	194	16
Kandahar total		287	520	56
Kapisa	Koh Band	1	39	5
	Nijrab	4	48	4
Kapisa total		5	87	9
Kunar	Sar Kani	1	4	1
Kunar total		1	4	1
Laghman	Alingar	17	130	6
	Alishing	4	18	2
Laghman total		21	148	8
Nangarhar	Achin (Speen Ghar)	46	201	7
	Chaparhar	1	9	2
	Khugyani	7	44	2
	Lalpoor	1	3	1
	Pachir Wagam	5	17	5
	Sher Zad	1	21	5
Nangarhar total		61	295	22
Nimroz	Khashrod	20	44	8
Nimroz total		20	44	8
Uruzgan	Tirinkot (Provincial Center)	154	421	16
Uruzgan total		154	421	16
Zabul	Arghandab	42	18	5
	Qalat (Provincial Center)	26	14	6
	Tarnak Wa Jaldak	17	13	4
Zabul total		85	45	15
Grand Total		3,810	10,774	593