SUPPLY OF OPIATE RAW MATERIALS AND DEMAND FOR OPIATES FOR MEDICAL AND SCIENTIFIC PURPOSES

1. The International Narcotics Control Board (INCB), in fulfilment of the functions assigned to it under the Single Convention on Narcotic Drugs of 1961[1] and the relevant resolutions of the Economic and Social Council and the Commission on Narcotic Drugs, regularly examines issues affecting the supply of and the demand for opiates for licit requirements, and endeavours to ensure a standing balance between that supply and demand. The present section contains an analysis of the current situation based on the data provided by Governments.[2] Taking into account this analysis, INCB has made recommendations intended to ensure the balance between the supply of and demand for opiates; those recommendations are included in chapter II of its annual report.[3]

Introduction

2. The analysis presented below has been prepared by examining the data on opiate raw materials and on opiates manufactured from those raw materials. In the analysis, raw materials rich in morphine and the opiates derived from such materials are, in accordance with the methodology adopted by INCB, considered separately from raw materials rich in thebaine and the opiates derived from them. Global supply of opiate raw materials is measured by the levels of stocks and production. Global demand for opiate raw materials is assessed on the basis of data on total utilization of opiate raw materials for the manufacture of all opiates (see paragraph 19 below). Data concerning total consumption and stocks of opiates are also included, as appropriate.

3. The present analysis complements the comments on the reported statistics shown above for individual opiate raw materials obtained from opium poppy (opium, poppy straw and concentrate of poppy straw) and for the opiates obtained from them; readers are invited to turn to those comments for more in-depth information on long-term developments concerning the individual substances (see pages 71-93 above). The main focus of the analysis is on the present situation, including the last four years for which statistical data are available. For the years 2009 and 2010, the data on production are based on advance statistical information and estimates received from the main producing countries,[4] while the data on the demand for opiate raw materials and the opiates derived from them are INCB projections based on past trends and taking into account relevant estimates furnished by Governments.

4. Finally, in this section INCB examines the trends in global consumption of all opiates and synthetic opioids over the 20-year period from 1989 to 2008. The findings derived from the analysis complement the comments on reported statistics on individual substances and reflect the changes over time of the relative importance of opiates, which are derived from opium poppy, in the global consumption of opioids.

Supply of opiate raw materials

Cultivation of opium poppy for the extraction of alkaloids

5. Table 1 below provides information on the area cultivated with opium poppy (Papaver somniferum) for the extraction of alkaloids in the main producer countries; data on varieties rich in morphine and those rich in thebaine are listed separately, where applicable. For both types of raw materials, the estimated area of cultivation is given for each year. Data on the actual area harvested are given for the years for which such data are available.

6. In 2008 the area harvested of opium poppy rich in morphine declined significantly from the previous year in Hungary and India and showed decreases as well in Australia, Spain and Turkey, owing mainly to adverse weather conditions. In France, a larger area was harvested in 2008 compared with 2007. In India, the only opium-producing country covered in this analysis, the area harvested decreased by more than half from 2007 to 2008. In Hungary, the area harvested declined by more than 30 per cent over the same period. The area harvested of opium poppy rich in thebaine increased significantly in 2008 vis-à-vis 2007 in the two main producing countries: in Australia, the area harvested more than doubled, and in Spain it grew by more than 70 per cent. France experienced a slight decrease.

[1] United Nations, *Treaty Series*, vol. 520, No. 7515.

[2] The analysis excludes data on China and the Democratic Republic of Korea, which produce opiate raw materials solely for domestic use. It also excludes data on the utilization of seized opium that was released in the Islamic Republic of Iran and the demand for opiates derived from such opium.

[3] *Report of the International Narcotics Control Board for 2009* (United Nations publication, Sales No. E.10.XI.1).

[4] Those data have been adjusted, as necessary, to reflect industrially recoverable alkaloid content in the raw materials in question.

Table 1. Area cultivated with opium poppy rich in morphine and opium poppy rich in thebaine, 2005-2010

(Estimated area, as confirmed by the International Narcotics Control Board, and area harvested, in hectares)

	2005	2006	2007	2008	2009[a]	2010[b]
Australia						
Estimated area (rich in morphine)	6 700	4 900	4 982	5 250	*10 506*	*11 970*
Actual area harvested (rich in morphine)	6 599	3 457	4 661	4 108	*4 598*	—
Estimated area (rich in thebaine)	6 500	5 300	3 872	9 700	*11 857*	*11 650*
Actual area harvested (rich in thebaine)	4 633	4 839	3 837	7 807	*8 894*	—
Total estimated area (morphine and thebaine)	**13 200**	**10 200**	**8 854**	**14 950**	***22 363***	***23 620***
Total actual area harvested (morphine and thebaine)	**11 232**	**8 296**	**8 498**	**11 915**	***13 492***	—
France						
Estimated area (rich in morphine)	8 500	9 100	5 150	3 650	*7 500*	*8 000*
Actual area harvested (rich in morphine)	8 841	6 632	3 198	3 683	*6 750*	—
Estimated area (rich in thebaine)	1 100	1 000	1 000	2 650	*2 500*	*5 000*
Actual area harvested (rich in thebaine)	524	1 444	2 707	2 534	*2 990*	—
Total estimated area (morphine and thebaine)	**9 600**	**10 100**	**6 150**	**6 300**	***10 000***	***13 000***
Total actual area harvested (morphine and thebaine)	**9 365**	**8 076**	**5 905**	**6 217**	***9 740***	—
Hungary						
Estimated area (rich in morphine)	14 000	12 000	13 000	12 500	*15 500*	*8 000*
Actual area harvested (rich in morphine)	5 106	4 322	3 269	2 262	*1 114*	—
Estimated area (rich in thebaine)	—	—	—	—	—	*3 000*
Actual area harvested (rich in thebaine)	—	—	—	—	—	—
Estimated area (rich in morphine and thebaine)	**14 000**	**12 000**	**13 000**	**12 500**	***15 500***	***11 000***
Actual area harvested (rich in morphine and thebaine)	**5 106**	**4 322**	**3 269**	**2 262**	***1 114***	—
India						
Estimated area (rich in morphine)	**8 156**	**7 300**	**6 220**	**4 680**	***11 262***	***22 000***
Actual area harvested (rich in morphine)	**7 833**	**6 976**	**5 913**	**2 653**	***8 853***	—
Spain						
Estimated area (rich in morphine)	7 002	6 002	7 600	6 000	*6 590*	*7 000*
Actual area harvested (rich in morphine)	4 802	2 146	5 606	5 507	*6 865*	—
Estimated area (rich in thebaine)	500	1 000	—	2 500	*4 410*	*5 000*
Actual area harvested (rich in thebaine)	490	—	1 482	2 537	*4 925*	—
Total estimated area (morphine and thebaine)	**7 502**	**7 002**	**7 600**	**8 500**	***11 000***	***12 000***
Total actual area harvested (morphine and thebaine)	**5 292**	**2 146**	**7 088**	**8 044**	***11 790***	—
Turkey						
Estimated area (rich in morphine)	**70 000**	**70 000**	**70 000**	**70 000**	***70 000***	***70 000[c]***
Actual area harvested (rich in morphine)	**25 335**	**42 023**	**24 603**	**20 042**	***48 893***	—

Note: A red field signifies that the corresponding estimate has been exceeded.

[a]Figures for 2009 are based on advance data submitted by Governments to the International Narcotics Control Board.

[b]Figures for 2010 are based on estimates submitted by Governments to the International Narcotics Control Board.

[c]Estimate referring to the maximum area expected to be harvested.

English

Table 2. Opiate raw materials rich in morphine: production, demand, balance between the two[a] and stocks, in tons of morphine equivalent, 2005-2010

	2005	2006	2007	2008	2009[b]	2010[c]
Australia						
Production	130	70	58	35	*80*	*183*
France						
Production	96	56	20	36	*84*	*105*
Hungary						
Production	15	17	14	10	*10*	*43*
India						
Production	37	38	30	15	*43*	*108*
Spain						
Production	36	17	75	68	*94*	*75*
Turkey						
Production	64	106	30	48	*110*	*70*
Other countries						
Production	13	12	25	21	*30[d]*	*30[d]*
(1) Total production	**391**	**316**	**252**	**233**	***451***	***614***
Demand						
Opium	68	68	70	61	*70*	*70*
Poppy straw and Concentrate of poppy straw	314	332	334	311	*320*	*340*
(2) Total demand for opiate raw materials	**382**	**400**	**404**	**372**	***390***	***410***
(3) Total demand for opiates for medical and scientific purposes[e]	**309**	**299**	**330**	**322**	***350***	***365***
Balance (1) minus (2)	9	–84	–152	–139	*61*	*204*
Balance (1) minus (3)	82	17	–78	–89	*101*	*249*
Stocks						
Opium	209	178	124	77	. .	. .
Poppy straw	444	370	297	233	. .	. .
Concentrate of poppy straw	185	177	112	69	. .	. .
Total stocks of opiate raw materials	**838**	**725**	**533**	**379**	***440***	***644***
Total stocks of all opiates	**259**	**283**	**337**	**360**	. .	. .

Note: Two dots (. .) indicate that data are not available.

[a]For the balance between supply (stocks and production) of and demand for opiate raw materials rich in morphine, see paragraph 24 below.

[b]Figures for 2009 are based on advance data submitted by Governments to the International Narcotics Control Board.

[c]Figures for 2010 are based on estimates submitted by Governments to the International Narcotics Control Board.

[d]Estimated by the secretariat of the International Narcotics Control Board.

[e]Excluding demand for substances not covered by the 1961 Convention as amended by the 1972 Protocol.

7. The advance data for 2009 show a rise in the cultivation of opium poppy rich in morphine, with the area harvested increasing in all main producer countries except Hungary. The area harvested presents increases of more than threefold in India, more than 140 per cent in Turkey, more than 80 per cent in France and 25 per cent in Spain. The cultivation of opium poppy rich in thebaine shows an upward trend in all three major producing countries for 2009.

8. For 2010, the cultivation of opium poppy rich in morphine is, depending on the producer country, anticipated to increase (Australia, France, India and Spain) or remain unchanged (Turkey). With regard to the cultivation of opium poppy rich in thebaine, France and Spain estimate an increase while Australia expects its level to remain almost unchanged. Hungary, for the first time, has furnished a significant estimate for the cultivation of thebaine-rich opium poppy for 2010.

Production of opiate raw materials

9. Tables 2 and 3 below provide an overview of global production of morphine-rich and thebaine-rich opiate raw materials for the period 2005-2010. The total

Table 3. Opiate raw materials rich in thebaine: production, demand, balance between the two[a] and stocks, in tons of thebaine equivalent, 2005-2010

	2005	2006	2007	2008	2009[b]	2010[c]
Australia						
Production	60	58	70	113	*176*	*210*
France[d]						
Production	4	11	13	17	*32*	*50*
Hungary						
Production	1	1	1	1	*1*	*7*
Spain[d]						
Production	14	2	22	45	*62*	*71*
India						
Thebaine extracted from opium	4	4	3	1	*4*	*11*
Other countries						
Thebaine extracted from poppy straw (M)	1	1	1	1	*3*[e]	*3*[e]
(1) Total production	**84**	**77**	**110**	**178**	***278***	***352***
Demand for						
Opium	7	7	7	6	*7*	*7*
Poppy straw and concentrate of poppy straw	97	119	106	120	*153*	*173*
(2) Total demand for opiate raw materials	**104**	**126**	**113**	**126**	***160***	***180***
(3) Total demand for opiates for medical and scientific purposes[f]	**55**	**55**	**67**	**102**	***115***	***130***
Balance (1) minus (2)	–20	–49	–3	52	*118*	*172*
Balance (1) minus (3)	29	22	43	76	*163*	*222*
Stocks						
Opium	21	18	13	8	. .	. .
Poppy straw	56	43	38	81	. .	. .
Concentrate of poppy straw	27	27	44	41	. .	. .
Total stocks of opiate raw materials	**104**	**88**	**95**	**130**	***248***	***420***
Total stocks of all opiates	**128**	**141**	**126**	**133**	. .	. .

Note: Two dots (. .) indicate that data are not available.

[a]For the balance between supply (stocks and production) of and demand for opiate raw materials rich in thebaine, see paragraph 25, below.

[b]Figures for 2009 are based on advance data submitted by Governments to the International Narcotics Control Board.

[c]Figures for 2010 are based on estimates submitted by Governments to the International Narcotics Control Board.

[d]In France and Spain, large quantities of thebaine alkaloid are extracted from poppy straw rich in morphine in addition to those derived from poppy straw rich in thebaine.

[e]Estimated by the secretariat of the International Narcotics Control Board.

[f]Excluding demand for substances not covered by the 1961 Convention as amended by the 1972 Protocol.

production of morphine-rich opiate raw materials in the main producing countries, which started to decline in 2004, continued to decrease for the fifth year in a row in 2008, reaching 233 tons[5] in morphine equivalent. This decline was due to the reduction in area harvested in several producing countries (see paragraph 6 above). Spain remained the leading producer in 2008, accounting for 29 per cent of global production. It was followed by Turkey (21 per cent), Australia and France (each accounting for 15 per cent), India (6 per cent) and Hungary (4 per cent).

10. Global production of opiate raw materials rich in morphine is expected to be about 451 tons in morphine equivalent in 2009. Of this quantity, 408 tons (90 per cent) will be accounted for by poppy straw and 43 tons (10 per cent) by opium. Turkey (accounting for 24 per cent of global production), Spain (21 per cent), France (19 per cent) and Australia (18 per cent) will be the main producers in 2009, followed by India

[5]The analysis is based predominantly on raw materials obtained from opium poppy rich in morphine but includes the morphine alkaloid contained in opium poppy rich in thebaine whenever appropriate.

(10 per cent). These five countries are expected to account together for about 92 per cent of global production of opiate raw materials rich in morphine in 2009.

11. According to the information submitted by the Governments of the main producing countries, global production of opiate raw materials rich in morphine is estimated to increase considerably in 2010, to 614 tons in morphine equivalent, mainly as a result of the expanded production planned in Australia, France and India.

12. Following the expansion of cultivation in the main producing countries, the global production of opiate raw materials rich in thebaine increased by 62 per cent, to 178 tons[6] in thebaine equivalent, in 2008. Australia accounted for 63 per cent of the global total, Spain for 25 per cent and France for 10 per cent.

13. Global production of opiate raw materials rich in thebaine is expected to amount to about 278 tons in thebaine equivalent in 2009, owing to expanded cultivation in all major producing countries.

14. Continued expansion in production is anticipated for thebaine-rich materials in 2010, reaching about 352 tons, which is more than one fourth above the level expected in 2009. As in previous years, the actual production of opiate raw materials in 2010 may differ considerably from the estimates, depending on weather and other conditions.

Global stocks of opiate raw materials and of opiates derived from them

15. As shown in table 2, stocks of opiate raw materials rich in morphine (poppy straw, concentrate of poppy straw and opium) amounted to about 379 tons in morphine equivalent at the end of 2008. These stocks would be sufficient to cover the expected global demand for almost 12 months. In 2008, Turkey continued to be the country with the largest stocks of opiate raw materials (78 tons in morphine equivalent, in the form of poppy straw and concentrate of poppy straw); it was followed by Spain (71 tons), France (63 tons) and India (57 tons, in the form of opium measured in morphine equivalent). Those four countries together accounted for 71 per cent of global stocks of opiate raw materials rich in morphine. The remaining stocks were held in other producing countries and in countries importing opiate raw materials.

16. Stocks of opiate raw materials rich in thebaine increased to about 130 tons in thebaine equivalent at the end of 2008 as a result of production exceeding utilization during the year. These stocks are sufficient to cover the expected global demand in 2009 for almost 10 months (see table 3). Australia, France, Hungary, India and Spain together accounted for about 82 per cent of the world total in 2008, while the countries importing those raw materials held the remaining stocks.

17. Global stocks of opiates based on morphine, mainly held in the form of codeine and morphine, have grown steadily since the 1990s. At the end of 2008, global stocks of such opiates stood at 360 tons, sufficient to cover global demand for more than one year, even if no additional opiates had been manufactured from opiate raw materials.

18. Global stocks of opiates based on thebaine (oxycodone, thebaine and a very small quantity of oxymorphone) have increased significantly in recent years, although with fluctuations. At the end of 2008, those stocks stood at 133 tons of thebaine equivalent and were sufficient to cover global demand for such opiates for about 14 months.

Demand for opiates

19. As described below, INCB measures demand for opiates in two ways: *(a)* in terms of the utilization of opiate raw materials, in order to reflect the demand by manufacturers; and *(b)* in terms of global consumption of all opiates controlled under the 1961 Convention.[7]

Demand for opiate raw materials by manufacturers measured as utilization of raw materials

20. Global demand for opiate raw materials rich in morphine had increased, with fluctuations, by about 2 per cent on average per year over the past decade, but declined to 372 tons of morphine equivalent in 2008, owing to less demand by major users. In 2009 and 2010, global demand is expected to increase again. Global demand for opiate raw materials rich in morphine is anticipated to be about 390 tons in 2009 and 410 tons in 2010.

[6]The analysis is based predominantly on raw materials obtained from opium poppy rich in thebaine but includes the thebaine alkaloid contained in opium poppy rich in morphine whenever appropriate.

[7]Prior to 2003, INCB measured the global demand only by global consumption of major opiates controlled under the 1961 Convention, expressed in morphine equivalent. However, by using that approximation the following were excluded: *(a)* demand for less commonly used narcotic drugs; *(b)* demand for substances that are not under control of the 1961 Convention but are manufactured from opiate raw materials and for the consumption of which data are not available to INCB; and *(c)* fluctuations in the utilization of raw materials due to developments in the market anticipated by the manufacturers, such as expectations of sales of opiates, expected changes in prices of raw materials or opiates and so on.

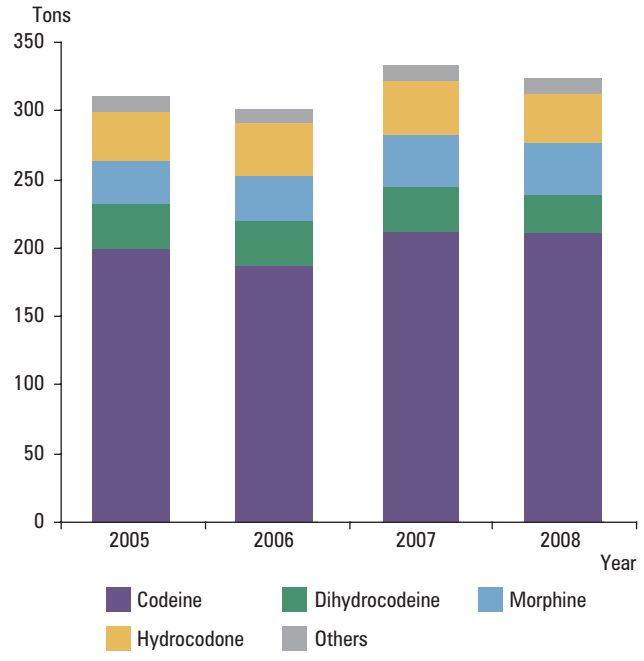
21. Global demand for opiate raw materials rich in thebaine has been increasing in recent years, albeit with fluctuations. After a decline in 2007, global demand increased again, to 126 tons of thebaine equivalent, in 2008, which was the same level as in 2006 (see table 3). Global demand for raw materials rich in thebaine is expected to be about 160 tons of thebaine equivalent in 2009 and 180 tons in 2010.

Demand for opiates measured as consumption

22. Figure I presents a breakdown of the demand for morphine-based opiates, expressed in morphine equivalent, for the main narcotic drugs. Global demand for morphine-based opiates has continued to increase, with some fluctuations. In 2008, global demand for opiates used for medical and scientific purposes amounted to 322 tons. That demand is expected to increase further, including in countries where consumption of opiates was low in the past. As a result, global demand for opiates based on morphine may reach 350 tons in 2009 and 365 tons in 2010.

23. Demand for thebaine-based opiates, which was concentrated mainly in the United States and which has increased sharply since the late 1990s, increased further, to 102 tons, in 2008 and is likely to continue to rise, partly because the consumption of such opiates is expected to spread to other countries. Global demand is anticipated to reach approximately 115 tons of thebaine equivalent in 2009 and 130 tons in 2010.

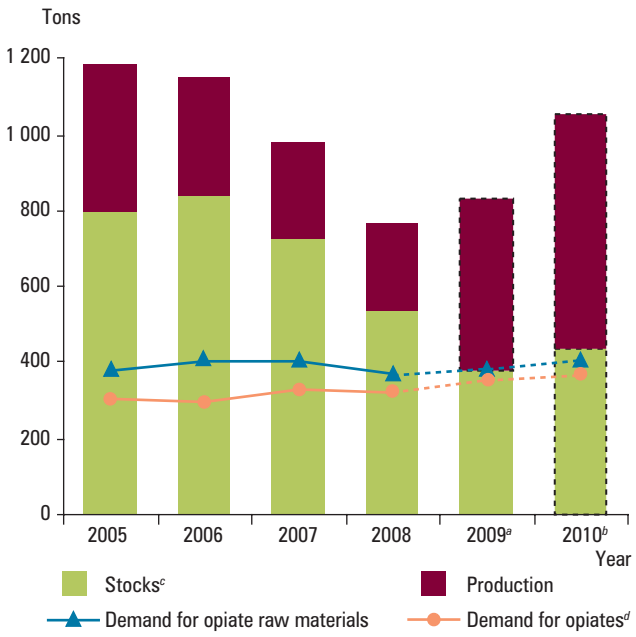
Figure I. Consumption of opiates manufactured from morphine, in morphine equivalent, 2005-2008



Balance between the supply of and demand for opiate raw materials

24. In the period 2006-2008, global production of opiate raw materials rich in morphine was lower than global demand for those raw materials. Global production met about 70 per cent of global demand on average during the period. As a result, stocks have been decreasing since 2005. At the beginning of 2009, stocks of opiate raw materials rich in morphine stood at about 379 tons, sufficient to cover the expected global demand for almost 12 months (see figure II[8]). In 2009, global production of opiate raw materials rich in morphine is expected to exceed global demand, meaning that global stocks of those raw materials will be replenished in 2009. Stocks are expected to reach 440 tons by the beginning of 2010, which is equivalent to the global demand for about 13 months. For 2010, producing countries plan to increase production significantly, to a level higher than global demand. That would further reverse the trend experienced by global stocks in the period 2006-2008. Stocks are anticipated to reach about 644 tons at the end of 2010, sufficient to cover global demand for about 19 months. The global supply of opiate raw materials rich in morphine (stocks and production) will remain fully sufficient to cover global demand.

Figure II. Supply of and demand for opiate raw materials rich in morphine, in morphine equivalent, 2005-2010



[a]Data for production and demand for 2009 are based on advance data (*dotted line*) submitted by Governments.

[b]Data for 2010 are based on estimates (*dotted line*) submitted by Governments.

[c]Stocks as at 1 January of each year.

[d]Excluding substances not covered by the 1961 Convention as amended by the 1972 Protocol.

[8]Because of a change in format, figures II and III are not directly comparable with the figures that appeared as figures II and III in this technical publication before 2008.

English

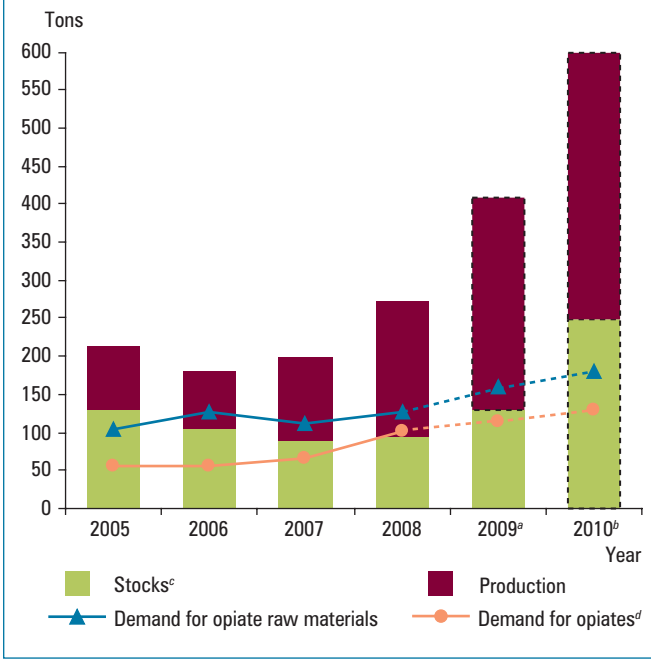
25. As global production of opiate raw materials rich in thebaine was lower than global demand between 2004 and 2007, stocks dropped to about 95 tons at the beginning of 2008 (see figure III), equivalent to the global demand for about 9 months. In 2008, global production was higher than demand, leading to an increase in stocks (to 130 tons) at the beginning of 2009, equivalent to global demand for 10 months. Production is expected to continue to grow strongly in 2009 and 2010 such that global stocks of opiate raw materials rich in thebaine are likely to reach, at the beginning of 2010, a level sufficient to cover global demand for 17 months and, at the end of 2010, a level sufficient to cover 28 months. The global supply of opiate raw materials rich in thebaine (stocks and production) will be fully sufficient to cover global demand.

Trends in consumption levels of opioids

26. Figure IV presents the global consumption levels of opiates and synthetic opioids over the 20-year period from 1989 to 2008. The figure reflects data including buprenorphine and pentazocine, which are opioids controlled under the Convention on Psychotropic Substances of 1971.[9] To allow the aggregation of consumption data for substances having different potencies, the consumption levels are expressed in millions of defined daily doses for statistical purposes.[10]

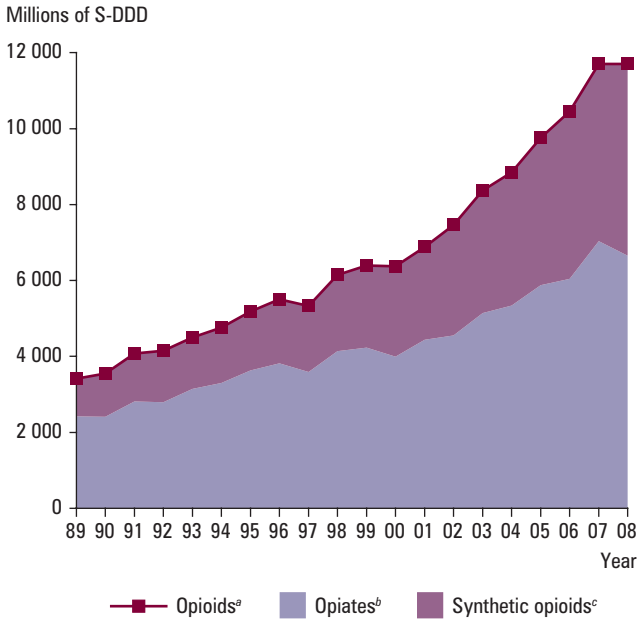
27. The global consumption of opioids increased almost three and a half times during the period under consideration. The consumption of opiates, expressed in defined daily doses for statistical purposes, increased more than two and a half times during the period. Throughout the period, the supply of opiate raw materials from which opiates were obtained was sufficient to cover the increasing demand. The consumption of synthetic opioids, which are used for the same indications as opiates, more than quintupled. As a result, the share of consumption of opiates in the total consumption of opioids declined from 71 per cent in 1989 to 57 per cent in 2008. The demand for opiates is expected to increase steadily in the future, while its share in the total consumption of opioids will further decline, owing to the expected faster growth in the consumption of synthetic opioids.

Figure III. Supply of and demand for opiate raw materials rich in thebaine, in thebaine equivalent, 2005-2010



[a]Data for production and demand for 2009 are based on advance data (*dotted line*) submitted by Governments.
[b]Data for 2010 are based on estimates (*dotted line*) submitted by Governments.
[c]Stocks as at 1 January of each year.
[d]Excluding substances not covered by the 1961 Convention as amended by the 1972 Protocol.

Figure IV. Global consumption of opioids,[a] in millions of defined daily doses for statistical purposes (S-DDD), 1989-2008



[a]Opioids: opiates and synthetic opioids.
[b]Including buprenorphine, an opiate controlled under the 1971 Convention.
[c]Including pentazocine, a synthetic opioid controlled under the 1971 Convention.

[9]United Nations, *Treaty Series*, vol. 1019, No. 14956.

[10]See the explanatory notes to tables XIV.1-XIV.3 for an explanation of defined daily doses for statistical purposes and for the method used to calculate those consumption levels; see table XIV.3 also for further details on developments in consumption levels.