

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

1. The International Narcotics Control Board (INCB), in compliance with the functions assigned to it under the Single Convention on Narcotic Drugs of 1961¹ and the relevant resolutions of the Commission on Narcotic Drugs and the Economic and Social Council, examines on a regular basis issues affecting the supply of and the demand for opiates for licit requirements and endeavours to maintain a lasting balance between the two. The present document contains an analysis of the current situation, based on the data provided by Governments.² Taking into account that analysis, INCB has made recommendations to support the balance between the supply of and the demand for opiates, which 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 as well as on opiates manufactured from them, dealing separately with raw materials rich in morphine and opiates derived from those materials and raw materials rich in thebaine and opiates derived from them, in accordance with the methodology adopted by INCB. The global supply of those raw materials is measured by the production and the stocks of opiate raw materials. The global demand for such raw materials is assessed on the basis of data on total utilization of opiate raw materials for the manufacture of all opiates (see paragraph 18 below). Data concerning the total consumption of opiates and stocks of those opiates are also included, as appropriate.

3. The present document complements the comments on the reported statistics shown above for individual opiate raw materials that are obtained from opium poppy (opium, poppy straw and concentrate of poppy straw) and the opiates obtained from them, and readers are invited to turn to those comments for more in-depth information on long-term developments concerning the individual substances (see pages 77-99 above). In this analysis, the main focus is on the present situation, starting with the last four years for which

statistical data are available. Data on production for 2008 and 2009 are based on, respectively, the advance statistical information and the estimates received from the main producing countries,⁴ while data on the demand for opiate raw materials and opiates derived from them for 2008 and 2009 are INCB projections based on past trends.

4. Finally, in this section, INCB examines the trends in global consumption of all opiates and synthetic opioids during the last two decades. The findings derived from such 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 provides an overview of the cultivation of opium poppy (*Papaver somniferum*) for the extraction of alkaloids in the main producer countries, listing varieties rich in morphine and those rich in thebaine separately, where applicable, from 2004 to 2009. 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. Variations between the estimates of the area of cultivation, which are provided by Governments, and the actual area harvested are mainly due to weather conditions.

6. In 2007, the harvested area of opium poppy rich in morphine increased in Australia and Spain, but declined in the other main producing countries. In France, the area harvested decreased by more than half, whereas in Turkey it declined by more than 40 per cent. In India, which is the only opium-producing country covered in this analysis, the total area under opium poppy cultivation was further reduced. In 2007, the harvested area of opium poppy rich in thebaine decreased in Australia but increased in France. In Spain, opium poppy rich in thebaine was harvested again in 2007, while no harvest was reported for 2006.

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

²The analysis excludes data on China and the Democratic People's Republic of Korea, which produce opiate raw materials solely for domestic use. It also excludes data on 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 2008* (United Nations publication, Sales No. E.09.XI.1).

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

Table 1. Cultivation of opium poppy rich in morphine, and opium poppy rich in thebaine, 2004-2009
(Estimated area, as confirmed by the International Narcotics Control Board and area harvested, in hectares)

	2004	2005	2006	2007	2008 ^a	2009 ^b
Australia						
Estimated area (rich in morphine)	7 400	6 700	4 900	4 982	5 250	10 506
Actual area harvested (rich in morphine)	6 644	6 599	3 457	4 661	3 336	—
Estimated area (rich in thebaine)	6 800	6 500	5 300	3 872	9 700	11 857
Actual area harvested (rich in thebaine)	5 578	4 633	4 839	3 837	7 426	—
Total estimated area (morphine and thebaine)	14 200	13 200	10 200	8 854	14 950	22 363
Total actual area harvested (morphine and thebaine)	12 222	11 232	8 296	8 498	10 762	—
France						
Estimated area (rich in morphine)	7 600	8 500	9 100	5 150	3 650	7 500
Actual area harvested (rich in morphine)	8 312	8 841	6 632	3 198	3 705	—
Estimated area (rich in thebaine)	2 000	1 100	1 000	1 000	2 650	2 500
Actual area harvested (rich in thebaine)	1 007	524	1 444	2 707	2 535	—
Total estimated area (morphine and thebaine)	9 600	9 600	10 100	6 150	6 300	10 000
Total actual area harvested (morphine and thebaine)	9 319	9 365	8 076	5 905	6 240	—
Hungary						
Estimated area (rich in morphine)	16 000	14 000	12 000	13 000	12 500	15 500
Actual area harvested (rich in morphine)	7 084	5 106	4 322	3 269	2 262	—
India						
Estimated area (rich in morphine)	16 595	8 156	7 300	6 220	4 680	11 262
Actual area harvested (rich in morphine)	18 591	7 833	6 976	5 913	2 653	—
Spain						
Estimated area (rich in morphine)	7 002	7 002	6 002	7 600	6 000	8 830
Actual area harvested (rich in morphine)	5 986	4 802	2 146	5 606	5 507	—
Estimated area (rich in thebaine)	-	500	1 000	-	2 500	2 100
Actual area harvested (rich in thebaine)	996	490	-	1 482	2 537	—
Total estimated area (morphine and thebaine)	7 002	7 502	7 002	7 600	8 500	10 930
Total actual area harvested (morphine and thebaine)	6 982	5 292	2 146	7 088	8 044	—
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)	30 343	25 335	42 023	24 603	31 922	—

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

^aFigures for 2008 are based on advance data submitted by Governments to the International Narcotics Control Board.

^bFigures for 2009 are based on estimates submitted by Governments to the International Narcotics Control Board.

^cEstimate referring to the maximum area expected to be harvested. (The Government of Turkey expects cultivation of 35,000 hectares.)

Table 2. Opiate raw materials rich in morphine: production, demand and balance between the two,^a 2004-2009
(Production, demand, balance and stocks in tons of morphine equivalent)

	2004	2005	2006	2007	2008 ^b	2009 ^c
Australia						
Production	96	130	70	58	40	90
France						
Production	101	96	56	20	48	97
Hungary						
Production	30	15	17	14	16	28
India						
Production	92	37	38	30	15	60
Spain						
Production	55	36	17	75	78	97
Turkey						
Production	60	64	106	30	35	70
Other countries						
Production	13	13	12	25	25 ^d	25 ^d
(1) Total production	447	391	316	252	257	467
Demand						
Opium	54	68	68	70	70	70
Poppy straw and concentrate of poppy straw	308	314	332	334	350	380
(2) Total demand for opiate raw materials	362	382	400	404	420	450
(3) Total demand for opiates for medical and scientific purposes^e	292	309	299	330	340	350
Balance (1) minus (2)	85	9	-84	-152	-163	17
Balance (1) minus (3)	155	82	17	-78	-83	117
Stocks						
Opium	238	209	178	127	..	..
Poppy straw	406	444	370	297	..	..
Concentrate of poppy straw	152	185	177	112	..	..
Total stocks of opiate raw materials	796	838	725	536	373	400
Total stocks of all opiates	241	259	283	337	..	..

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

^aFor the balance between supply (stocks and production) of and demand for opiate raw materials rich in morphine, see paragraph 23 below.

^bFigures for 2008 are based on advance data submitted by Governments to the International Narcotics Control Board.

^cFigures for 2009 are based on estimates submitted by Governments to the International Narcotics Control Board.

^dEstimated by the secretariat of the International Narcotics Control Board.

^eExcluding demand for substances not covered by the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol.

7. In 2008, adverse weather conditions had an impact on production in several producer countries. The harvested area of opium poppy rich in morphine declined in all main producer countries except France and Turkey. The area harvested in India dropped by more than 55 per cent. In Australia and Spain, a significant increase in the harvested area of opium poppy rich in thebaine was observed in 2008.

8. For 2009, the Governments of all major producer countries anticipate a significant extension of the area under cultivation with opium poppy rich in morphine.

The area of land used for such cultivation is expected to at least double in Australia, France and India. The Government of Australia also anticipates an increase in the area under cultivation with opium poppy rich in thebaine, while in France and Spain the area under such cultivation is expected to decline slightly.

Production of opiate raw materials

9. Tables 2 and 3 provide an overview of global production of opiate raw materials from 2004 to 2007

Table 3. Opiate raw materials rich in thebaine: production, demand and balance between the two,^a 2004-2009*(Production, demand, balance and stocks in tons of thebaine equivalent)*

	2004	2005	2006	2007	2008 ^b	2009 ^c
Australia						
Production	44	60	58	70	116	173
France^d						
Production	9	4	11	13	20	29
Spain^d						
Production	11	14	2	22	44	36
India						
Thebaine extracted from opium	9	4	4	3	2	5
Other countries						
Thebaine extracted from poppy straw (M)	4	2	2	2	4 ^e	5 ^e
(1) Total production	77	84	77	110	186	248
Demand for						
Opium	6	7	7	7	7	7
Poppy straw and concentrate of poppy straw	80	97	119	106	133	153
(2) Total demand for opiate raw materials	86	104	126	113	140	160
(3) Total demand for opiates for medical and scientific purposes^f	48	55	55	67	75	80
Balance (1) minus (2)	-9	-20	-49	-3	46	88
Balance (1) minus (3)	29	29	22	43	111	168
Stocks						
Opium	24	21	18	13	..	..
Poppy straw	75	56	43	38	..	..
Concentrate of poppy straw	31	27	27	44	..	..
Total stocks of opiate raw materials	130	104	88	95	141	229
Total stocks of all opiates	91	128	141	126	..	..

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

^aFor the balance between supply (stocks and production) of and demand for opiate raw materials rich in thebaine, see paragraph 24, below.

^bFigures for 2008 are based on advance data submitted by Governments to the International Narcotics Control Board.

^cFigures for 2009 are based on estimates submitted by Governments to the International Narcotics Control Board.

^dIn 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.

^eEstimated by the secretariat of the International Narcotics Control Board.

^fExcluding demand for substances not covered by the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol.

and the projected production for 2008 and 2009. These tables are presented in a new format, but the information that they contain remains comparable with the information contained in tables 2 and 3 of previous editions of this publication. As shown in table 2, the total production of morphine-rich opiate raw materials in the main producing countries, which started to decline in 2004, declined further for the fourth consecutive year in 2007, reaching 252 tons⁵ in morphine equivalent. This

⁵The 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.

decline was due to a further drop in the area harvested in several producing countries (see paragraph 6 above). Spain became the leading producer in 2007, following a strong increase in the harvested area of opium poppy rich in morphine and a higher industrial yield for the extraction of morphine from poppy straw achieved in that country. Spain accounted for 30 per cent of global production, followed by Australia (23 per cent), India and Turkey (each accounting for 12 per cent), France (8 per cent) and Hungary (6 per cent). Other producer countries accounted for about 10 per cent of global production in 2007.

10. Global production of opiate raw materials rich in thebaine⁶ increased to 110 tons in thebaine equivalent in 2007 (see table 3), owing to an increase in production in Australia and a resumption of production in Spain. Australia accounted for 64 per cent of the global total, Spain for 20 per cent and France for 12 per cent.

11. In 2008, production of morphine-rich raw materials is expected to remain below the level planned and to rise only slightly, to 257 tons in morphine equivalent, because of adverse weather conditions in several producing countries. According to currently available information, Spain is expected to remain the largest producer in 2008, with 78 tons, followed by France with 48 tons. Production of opium in India is expected to drop to only 15 tons in morphine equivalent, half of the production in 2007, due to a sharp decline in the area harvested (see paragraph 7 above).

12. As shown in table 3, production of opiate raw materials rich in thebaine is expected to rise significantly again in 2008, to a total of 186 tons in thebaine equivalent, owing to expanded cultivation in Australia and Spain.

13. According to estimates submitted by the Governments of the main producing countries, global production of opiate raw materials rich in morphine in 2009 is expected to rise sharply, to 467 tons in morphine equivalent, because of a significant expansion of the area cultivated in those countries, in particular in Australia, France and India. For thebaine-rich materials, global production is expected to further increase, to 248 tons in thebaine equivalent, because of the continued expansion of cultivation in Australia. As in previous years, the actual production of opiate raw materials in 2009 might differ considerably from the estimates, owing to weather and other conditions.

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

14. As shown in table 2, global stocks of opiate raw materials rich in morphine (including concentrate of poppy straw, which is an intermediary product) have been sufficient at the end of 2007 to cover global demand for more than 15 months. In 2007, Turkey remained the country with the largest stocks of opiate raw materials (134 tons, in the form of poppy straw and concentrate of poppy straw); it was followed by India, which held 107 tons in morphine equivalent in the form of opium. Those two countries together accounted for 45 per cent of global stocks of opiate raw materials rich in morphine. The share of global

stocks of morphine-rich opiate raw materials held by the other main producing countries in 2007 was 41 per cent, with France holding in stock 88 tons of such opiate raw materials, Spain 65 tons, Australia 51 tons and Hungary 15 tons. The remaining stocks were held in countries importing opiate raw materials.

15. Stocks of thebaine-rich opiate raw materials reached 95 tons in 2007 (see table 3) and were sufficient to cover global demand for about 8 months. The producer countries Australia, France, India and Spain together accounted for more than 70 per cent of the world total in 2007, while the countries importing those raw materials held the rest.

16. Global stocks of opiates based on morphine, held mainly in the form of codeine and morphine, have grown steadily since the 1990s. At the end of 2007, global stocks of such opiates stood at 337 tons, which would have been sufficient to cover global demand for them for about one year, even if no additional opiates had been manufactured from opiate raw materials.

17. Global stocks of opiates based on thebaine (oxycodone, thebaine and a very small quantity of oxymorphone), after growing continuously in recent years, fell to 126 tons at the end of 2007. Those stocks, which are held mainly in the countries using those opiates, continue to be sufficient to meet global demand for them for about 22 months.

Demand for opiate raw materials

18. INCB measures demand for opiates in two ways, as shown in the following analysis: (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 the manufacturers measured as utilization of raw materials

19. Global demand for opiate raw materials rich in morphine has increased, with fluctuations, over the last two decades. As can be seen in table 2, this

⁶The 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.

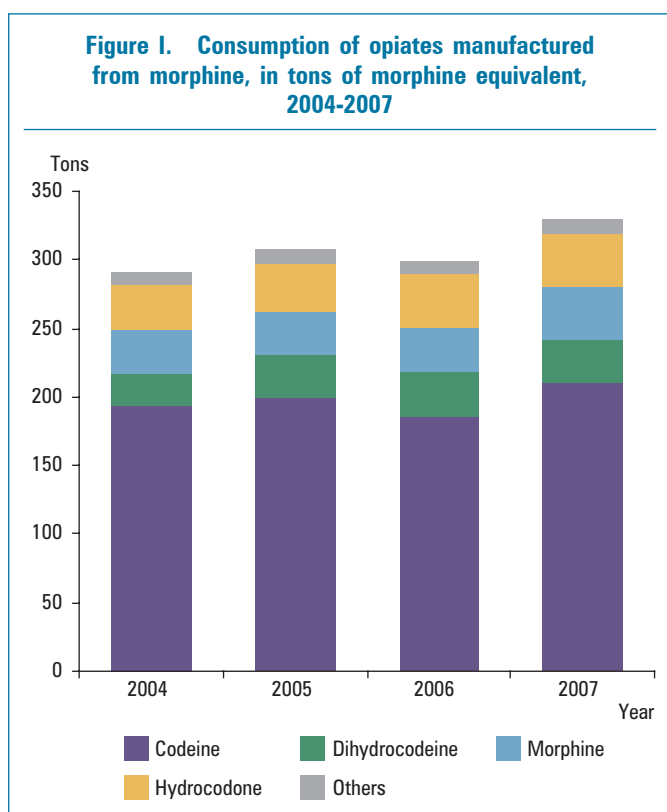
⁷Prior to 2003, INCB measured the global demand only by global consumption of major opiates controlled under the 1961 Convention, expressed in morphine equivalent. However, by using that approximation the following were excluded: (a) demand for less commonly used narcotic drugs; (b) demand for substances 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 and expected changes in prices of raw materials or opiates.

trend continued in the period 2004-2007, with total demand for opiate raw materials reaching 404 tons in 2007, expressed in morphine equivalent. In 2008 and 2009, total demand is expected to increase further. The share of opium in total utilization of raw materials is expected to continue to decline. Total demand for opiate raw materials rich in morphine is anticipated to be about 420 tons in 2008 and 450 tons in 2009.

20. Global demand for opiate raw materials rich in thebaine has increased in recent years, albeit with fluctuations, as shown in table 3. In 2007, however, the demand for opiate raw materials rich in thebaine declined to 113 tons of thebaine equivalent, owing to the high level of global stocks of opiates derived from them (see paragraph 17 above). Total demand for raw materials rich in thebaine is expected to be about 140 tons of thebaine equivalent in 2008 and 160 tons in 2009.

Demand for opiates measured as consumption

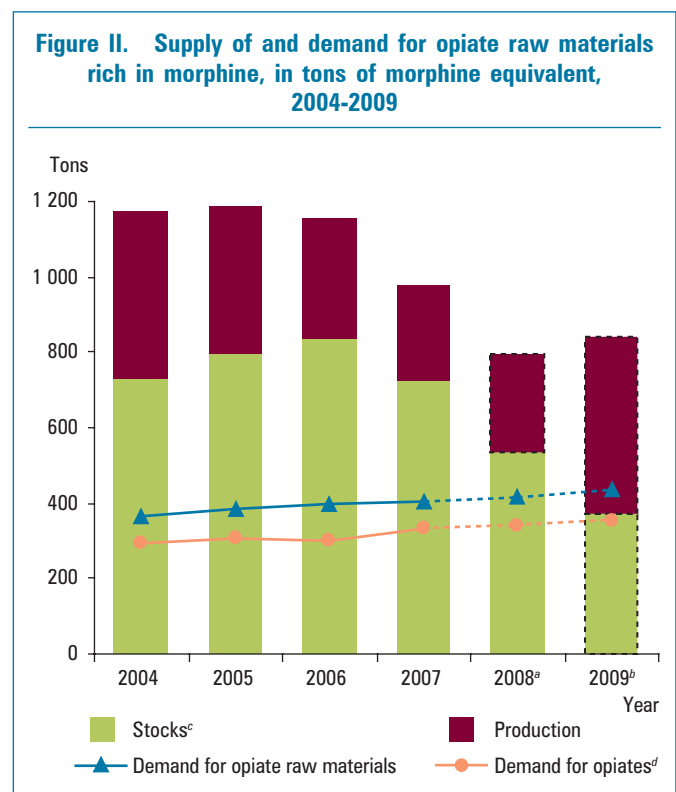
21. Figure I presents a breakdown of the demand for morphine-based opiates, expressed in morphine equivalent, for the main narcotic drugs. Global demand for morphine-based opiates has continued to increase, with some fluctuations. In 2007, total demand for opiates for medical and scientific purposes amounted to 330 tons. Such demand is expected to increase further, including in countries where consumption of opiates was low in the past. As a result, total demand for opiates based on morphine might reach 340 tons in 2008 and 350 tons in 2009.



22. 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 67 tons in 2007 and is expected to continue to rise, partly because the consumption of such opiates is expected to spread to other countries. Global demand in 2008 is anticipated to attain approximately 75 tons of thebaine equivalent and 80 tons in 2009.

Balance between the supply of and demand for opiate raw materials

23. In 2006 and 2007, global production of opiate raw materials rich in morphine fell short of global demand for those materials. Total production met about 80 per cent of total demand in 2006 but only about 60 per cent of total demand in 2007. Global stocks of opiate raw materials rich in morphine were sufficient at the beginning of 2008 to cover global demand for more than 15 months (see figure II).⁸ It is projected that total production will continue to be less



^aData for production and demand for 2008 are based on advance data (dotted line) submitted by Governments.

^bData for 2009 are based on estimates (dotted line) submitted by Governments.

^cStocks as at 1 January of the given year.

^dExcluding substances not covered by the Single Convention on Narcotic Drugs of 1954 as amended by the 1972 Protocol.

⁸Figures II and III are published in a new format. Stocks displayed in these two figures are stocks as at 1 January of a given year. Therefore, the information in these figures is not directly comparable with that contained in figures II and III in previous editions of this publication.

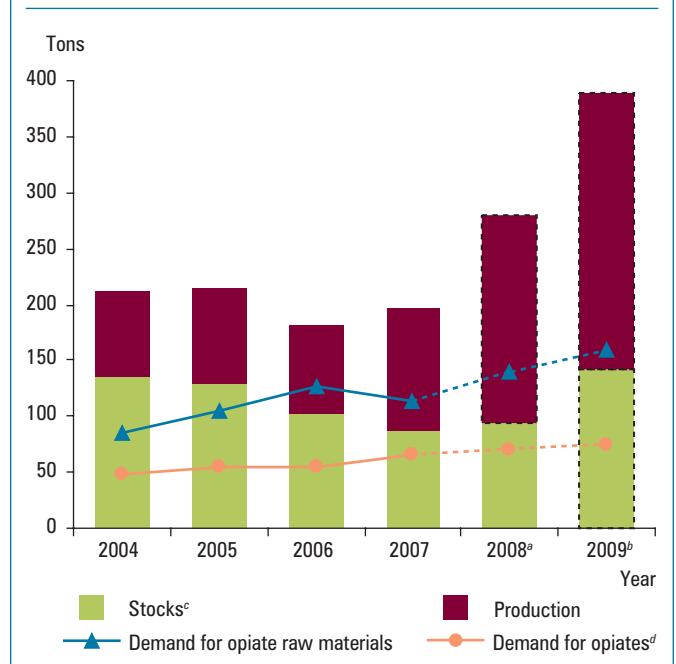
than total demand in 2008 by about the same percentage as in 2007. As a result, in 2008 part of the demand will again have to be met by stocks, leading to a further depletion of stocks. At the beginning of 2009, stocks will be sufficient to cover global utilization of opiate raw materials rich in morphine for about 10 months. In 2009, it is expected that total production will exceed total demand and that at the end of 2009 stocks will be able to cover global utilization for about 11 months. Global supply of opiate raw materials rich in morphine (stocks and production) will remain fully sufficient to cover global demand.

24. For raw materials rich in thebaine, production has fallen short of demand since 2004 but was almost equal to demand in 2007. Stocks of thebaine-rich opiate raw materials at the beginning of 2008 were sufficient to cover global demand for about 8 months (see figure III).⁸ It is expected that total production of raw materials rich in thebaine for 2008 and 2009 will exceed total demand and that stocks will be replenished. Stocks of raw materials rich in thebaine at the beginning of 2009 will be sufficient to cover total demand for less than 11 months and stocks at the end of 2009 should cover demand for about 17 months. Global supply of opiate raw materials rich in thebaine (stocks and production) will be fully sufficient to cover global demand.

Commission on Narcotic Drugs resolution 51/9, on the need for a balance between demand for and supply of opiates used to meet medical and scientific needs

25. At its fifty-first session, the Commission on Narcotic Drugs adopted resolution 51/9, on the need for a balance between demand for and supply of opiates used to meet medical and scientific needs. In that resolution, the Commission urged all Governments to continue to contribute to maintaining a balance between the licit supply of and demand for opiate raw materials used for medical and scientific purposes, supporting traditional and established supplier countries, and to cooperate in preventing the proliferation of sources of production of opiate raw materials. The Commission also urged the Governments of all countries where opium poppy had not been cultivated for the licit production of opiate raw materials, in the spirit of collective responsibility, to refrain from engaging in the commercial cultivation of opium poppy in order to avoid the proliferation of supply sites. The Commission further urged Governments of all producer countries to adhere strictly to the provisions of the 1961 Convention and

Figure III. Supply of and demand for opiate raw materials rich in thebaine, in tons of thebaine equivalent, 2004-2009



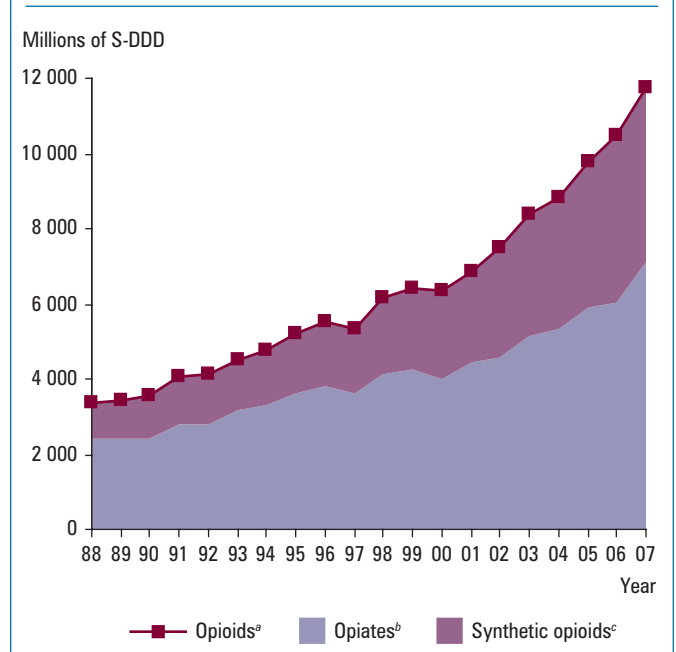
^aData for production and demand for 2008 are based on advance data (dotted line) submitted by Governments.

^bData for 2009 are based on estimates (dotted line) submitted by Governments.

^cStocks as at 1 January of the given year.

^dExcluding substances not covered by the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol.

Figure IV. Global consumption of opioids,^a expressed in millions of defined daily doses for statistical purposes (S-DDD), 1988-2007



^aOpioids: opiates and synthetic opioids.

^bIncluding buprenorphine, an opiate controlled under the Convention on Psychotropic Substances of 1971.

^cIncluding pentazocine, a synthetic opioid controlled under the Convention on Psychotropic Substances of 1971.

that Convention as amended by the 1972 Protocol and to take effective measures to prevent the illicit production or diversion of opiate raw materials to illicit channels, and encouraged improvements in practices in the cultivation of opium poppy and the production of opiate raw materials.

Trends in consumption levels of opioids

26. Figure IV presents the development of global consumption levels of opiates and synthetic opioids for the 20-year period 1988-2007. The data shown include buprenorphine and pentazocine, which are opioids controlled under the Convention on Psychotropic Substances of 1971.⁹ To allow the compounding of the consumption data of substances that have different potencies, the consumption levels

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

are expressed in millions of defined daily doses for statistical purposes (S-DDD).¹⁰

27. For opiates, consumption, expressed in defined daily doses for statistical purposes, has increased steadily, almost tripling during the period under consideration. Throughout that period, the supply of opiate raw materials from which opiates were obtained has been sufficient to cover the increasing demand. For synthetic opioids, which are used for the same indications as opiates, consumption has almost quintupled since 1988. As a result, the share of consumption of opiates in the total consumption of opioids has declined from 72 per cent in 1988 to 61 per cent in 2007. The demand for opiates is expected to increase steadily in the future, while its share in the total consumption of opioids will further decline, due to the expected faster growth of the consumption of synthetic opioids.

¹⁰See the explanatory notes to tables XIV.1-XIV.3 (on pages 176-177) for an explanation of S-DDDs and for the method used to calculate those consumption levels; see also table XIV.3 for further details on developments in consumption levels.

