

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

Introduction

1. The International Narcotics Control Board (INCB), in fulfilment of the functions assigned to it under the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol 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.¹

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 them are, in accordance with the methodology adopted by INCB, considered separately from raw materials rich in thebaine and the opiates derived from them. In table 1, the cultivation of opium poppy rich in codeine and of opium poppy rich in oripavine is currently reported separately for two countries, but in table 2, in the calculations of global supply and demand, opium poppy rich in codeine is included in the totals for opium poppy rich in morphine and opium poppy rich in oripavine is included in the totals for opium poppy rich in thebaine, pending the development of a system for the calculation of codeine and oripavine equivalency. 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 global utilization of opiate raw materials for the manufacture of all opiates. Data concerning consumption in all countries and regions (including global use for preparations in Schedule III of the 1961 Convention as amended) and stocks of opiates are also included. Utilization of controlled opioids for the manufacture of non-controlled drugs is not included in the analysis.

3. The present analysis complements the comments on the reported statistics 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

¹The 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 the utilization of seized opium that was released for licit use in the Islamic Republic of Iran and data on the demand for opiates derived from such opium.

concerning the individual substances (see part two above). The main focus of the analysis is on the last four years for which statistical data are available (2018–2021). For 2022 and 2023, the data on production are based on advance statistical information and estimates received from the main producing countries,² while the data on the demand for opiate raw materials and the opiates derived from them are INCB projections based on past trends, taking into account relevant estimates furnished by Governments.

4. Finally, the trends in global consumption of all opiates and synthetic opioids over the 20-year period 2002–2021 are analysed. This analysis provides a historical perspective on the relative importance of opiates, which are derived from opium poppy, in the global consumption of opioids.

5. **The Board highlights that although data from producing and manufacturing countries point to a balance between the supply of opiate raw materials and the demand for opiates, there are significant disparities between countries in the availability of narcotic drugs because many countries do not accurately estimate their medical need for opioid analgesics or have limited access to them. Consequently, and in line with the provisions and objectives of the 1961 Convention as amended by the 1972 Protocol, the Board emphasizes the importance of ensuring sufficient availability for all countries and regions and calls upon countries with greater resources to assist other countries in their efforts to ensure access to and the availability of substances for the treatment of pain. To this end, the Board has produced a special report on availability (E/INCB/2022/1/Supp.1), as a supplement to its annual report for 2022.**

Supply of opiate raw materials

Cultivation of opium poppy for the extraction of alkaloids

6. Table 1 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, thebaine, codeine and oripavine are listed separately, where applicable. For all types of raw material, the estimated area of cultivation is

²Those data have been adjusted, as necessary, to reflect industrially recoverable alkaloid content in the raw materials in question.

given for each year for which it is available. Data on the area sown and the area actually harvested are given for the years for which such data are available.

7. In 2021, there was a slight decrease of approximately 3 per cent in the total area cultivated with opium poppy rich in morphine. The area cultivated with opium poppy rich in thebaine decreased by 7 per cent. Cultivation of opium poppy rich in codeine increased by 26 per cent in 2021 compared with 2020, and the cultivation of the oripavine-rich variety of opium poppy decreased by 20 per cent.

8. Major producing countries are reducing cultivation of morphine-rich opium poppy and increasing cultivation of codeine-rich opium poppy. This enables them to produce codeine directly and avoid the step of extracting codeine from morphine. The onset of the coronavirus disease (COVID-19) pandemic did not significantly disrupt the global patterns of cultivation of opium poppy for the extraction of alkaloids in the main producing countries.

Morphine

9. In 2021, the area sown with opium poppy rich in morphine was similar in extent to the area sown in 2020, decreasing by 2 per cent, from 70,355 ha in 2020 to 69,082 ha in 2021. The total area of opium poppy rich in

morphine sown in major producing countries was very close in size to the estimated area of 78,496 ha for that year, or 88 per cent. Compared with 2020, annual changes in the total area harvested in 2021 varied among the major cultivating countries. Australia saw a small increase of about 150 ha, compared with 2020, while India and Türkiye saw notable increases of 500 ha and 6,000 ha, respectively. Other countries experienced significant decreases compared with 2020; the area harvested decreased by 33 per cent in France, by 50 per cent in Slovakia and by about 80 per cent each in Hungary and Spain. However, the total actual area harvested by all countries decreased by only 3 per cent, to 58,057 ha, in 2021, from 59,957 ha in 2020. The reason for this is that the increases, particularly those in India and Türkiye, were higher than the decreases in terms of absolute numbers. The annual increases and decreases in each major producing country are shown in table 1 below.

10. According to data-based projections for 2022, the total area to be sown with opium poppy rich in morphine in major producing countries is expected to decrease by 12 per cent compared with the area sown in 2021, declining to 60,809 ha in 2022. Following the trend of overall decline in the global area cultivated with opium poppy rich in morphine that started after 2019, it is estimated that in 2023 the area will increase by as much as 47 per cent compared with the estimated area for 2022, up to 89,640 ha.

Table 1. Area cultivated with varieties of opium poppy rich in morphine, thebaine, codeine and oripavine, 2018–2023

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

	2018	2019	2020	2021	2022 ^a	2023 ^b
Australia						
Opium poppy rich in morphine						
Estimated area	3 469	3 904	5 766	3 900	600	300
Area sown	3 534	3 280	2 665	2 698	300	n/a
Actual area harvested	3 205	1 750	2 263	2 420	267	n/a
Opium poppy rich in thebaine						
Estimated area	7 577	4 760	5 606	5 993	3 750	4 580
Area sown	6 673	3 502	4 357	5 480	3 155	n/a
Actual area harvested	6 567	3 400	3 817	4 989	2 927	n/a
Opium poppy rich in codeine						
Estimated area	2 849	7 630	6 040	3 649	1 800	—
Area sown	2 936	4 305	3 592	2 286	466	n/a
Actual area harvested	2 683	2 300	4 236	1 954	1 314	n/a
Opium poppy rich in oripavine						
Estimated area	—	—	4 923	1 450	1 700	—
Area sown	—	1 440	3 784	727	1 678	n/a
Actual area harvested	—	—	3 721	641	1 394	n/a

Table 1. Area cultivated with varieties of opium poppy rich in morphine, thebaine, codeine and oripavine, 2018–2023 (continued)

	2018	2019	2020	2021	2022 ^a	2023 ^b
Opium poppy rich in morphine, thebaine, codeine and oripavine						
Total estimated area	13 895	16 294	22 335	14 992	7 850	4 880
Total area sown	13 143	12 527	14 398	11 191	5 599	n/a
Total actual area harvested	12 455	7 450	14 037	10 004	5 902	n/a
France						
Opium poppy rich in morphine						
Estimated area	5 550	7 600	8 750	5 400	5 347	5 150
Area sown	6 030	7 935	8 565	5 253	5 347	n/a
Actual area harvested	5 628	7 486	7 345	4 921	4 929	n/a
Opium poppy rich in thebaine						
Estimated area	2 950	—	—	800	—	n/a
Area sown	752	60	94	1 079	—	n/a
Actual area harvested	731	55	92	1 075	—	n/a
Opium poppy rich in morphine and thebaine						
Total estimated area	8 500	7 600	8 750	6 200	5 347	5 150
Total area sown	6 783	7 995	8 659	6 332	—	n/a
Total actual area harvested	6 359	7 541	7 437	5 996	—	n/a
Hungary						
Opium poppy rich in morphine						
Estimated area	6 800	20 100	11 005	8 000	1 700	1 950
Area sown	2 482	3 780	2 221	682	182	n/a
Actual area harvested	514	3 100	1 395	367	46	n/a
Opium poppy rich in thebaine						
Estimated area	220	—	—	—	—	n/a
Area sown	—	—	2	—	—	n/a
Actual area harvested	—	—	—	—	—	n/a
Opium poppy rich in morphine and thebaine						
Total estimated area	7 020	20 100	11 005	8 000	1 700	1 950
Total area sown	2 482	3 780	2 223	682	182	n/a
Total actual area harvested	514	3 100	1 395	367	46	n/a
India						
Opium poppy rich in morphine						
Total estimated area	5 134	6 500	4 959	5 498	8 500	8 500
Total area sown	5 740	6 948	4 799	5 498	8 500	n/a
Total actual area harvested	4 710	6 107	4 941	5 406	8 500	n/a
Slovakia						
Opium poppy rich in morphine						
Total estimated area	1 500	2 000	3 483	3 500	100	500
Total area sown	1 850	3 900	3 297	2 768	50	n/a
Total actual area harvested	1 604	3 500	4 822	2 540	45	n/a
Spain						
Opium poppy rich in morphine						
Estimated area	5 182	7 828	9 441	525	3 400	3 240
Area sown	1 238	8 528	4 179	510	3 049	n/a
Actual area harvested	1 238	8 528	4 179	510	3 041	n/a

Table 1. Area cultivated with opium poppy varieties rich in morphine, thebaine, codeine and oripavine, 2017–2022 (continued)

	2018	2019	2020	2021	2022 ^a	2023 ^b
Opium poppy rich in thebaine						
Estimated area	2 980	1 577	2 809	20	—	—
Area sown	2 457	—	2 695	20	—	n/a
Actual area harvested	2 457	—	2 695	20	—	n/a
Opium poppy rich in codeine						
Estimated area	—	2 001	863	6 705	2 389	2 205
Area sown	1 990	863	2 532	6 540	2 162	n/a
Actual area harvested	1 990	863	2 532	6 540	2 142	n/a
Opium poppy rich in oripavine						
Estimated area	—	846	1 480	3 900	581	550
Area sown	—	62	1 515	3 495	581	n/a
Actual area harvested	—	61	1 515	3 495	581	n/a
Opium poppy rich in morphine, thebaine, codeine and oripavine						
Total estimated area	8 162	12 252	14 593	11 150	6 370	5 995
Total area sown	5 685	9 453	10 921	10 565	5 792	n/a
Total actual area harvested	5 685	9 452	10 921	10 565	5 764	n/a
Türkiye^c						
Opium poppy rich in morphine						
Total estimated area	70 000	70 000	70 000	51 673	41 162	70 000
Total area sown	52 329	64 423	44 629	51 673	39 647	n/a
Total actual area harvested	45 123	56 511	35 012	41 893	26 979	n/a

Notes: A field shaded in red signifies that a given total estimated area has been exceeded. Figures in italics reflect advance data and projected data. A dash (—) indicates that the amount is nil. Two dots (..) signify that statistical data were furnished but values were not submitted for the item in question. The annotation “n/a” indicates that data are not yet available.

^a Figures for area sown and actual area harvested in 2022 are based on advance data provided by Governments during consultations with the Board.

^b Figures for 2023 are based on estimates (form B) submitted by Governments to the Board.

^c Since 31 May 2022, “Türkiye” has replaced “Turkey” as the short name used in the United Nations.

Thebaine

11. In 2021, the area sown with opium poppy rich in thebaine in major producing countries decreased to 6,579 ha, from 7,148 ha in 2020. The total area sown with opium poppy rich in thebaine was 97 per cent of the total estimated area of 6,813 ha. The total actual harvested area in major producing countries decreased by an extent similar to that of the area sown, going from 6,604 ha in 2020 to 6,084 ha in 2021. However, although the overall cultivation of opium poppy rich in thebaine remained stable at the global level in 2021, Australia and France experienced significant increases in their harvests of that variety of opium poppy, compared with 2020, while the area harvested in Spain decreased by 15 times, from 2,695 ha in 2020 to only 20 ha in 2021, and Hungary did not harvest any opium poppy rich in thebaine, after harvesting 2 ha in 2020 and none in the previous few years. Cultivation in Australia increased by 30 per cent in 2021, to 4,989 ha, from 3,817 ha in 2020. Cultivation in France similarly increased, by about 1,000 ha, going from just

92 ha in 2020 to 1,075 ha in 2021, representing a much higher increase in terms of percentage, 1,068 per cent. In addition, in France, the area sown with opium poppy rich in thebaine was higher than had been estimated (800 ha); the increase was possibly related to the decrease in the area sown with opium poppy rich in morphine.

12. According to data-based projections, the total global area to be sown with opium poppy rich in thebaine is expected to decrease by almost one half in 2022, falling to 3,750 ha, from 6,579 ha in 2021. The main reason for this expected decrease is that Australia is the only country that is expected to cultivate opium poppy rich in thebaine in 2022. The situation is expected to remain the same in 2023, as in that year, Australia plans to increase its cultivation of thebaine-rich opium poppy to 4,580 ha, while France, Hungary and Spain are not expected to cultivate any of that variety. **The Board is in communication with all major cultivating countries to help ensure that there are no shortages of opiate raw materials rich in thebaine on global markets.**

Codeine

13. In 2021, the total area sown with opium poppy rich in codeine grew by 44 per cent, increasing to 8,826 ha, from 6,124 ha in 2020. The actual area harvested in 2021, 8,494 ha, was smaller than estimated. Australia and Spain were the only countries that produced this variety of opium poppy in 2021. Cultivation in Australia decreased by about one half, dropping to 1,954 ha in 2021, from 4,236 ha in 2020. Conversely, cultivation in Spain nearly tripled for the second year in a row, increasing to 6,540 ha in 2021, compared with 2,532 ha in 2020. France, which had been one of the main producers of opium poppy rich in codeine, discontinued cultivating this variety of opium poppy in 2017, the year in which Spain started to cultivate it. According to data-based projections, in 2022, Australia is expected to reduce its cultivation of codeine-rich opium poppy to 1,314 ha, whereas in Spain cultivation of this variety is expected to decrease threefold, to 2,142 ha. Spain is the only country envisaging the cultivation of this variety in 2023, estimating that the area under cultivation will be 2,205 ha.

Oripavine

14. Australia and Spain were the only countries that cultivated the opium poppy variety rich in oripavine in 2021. Australia reported a significant decrease in the cultivation of this variety in 2021, with a harvest of 641 ha, compared with 3,721 ha harvested in 2020, as it had anticipated in its reporting in 2020. According to advance data, Australia is expected to cultivate 1,394 ha of oripavine-rich opium poppy in 2022, and none in 2023. Conversely, Spain reported a significant increase in the area harvested for opium poppy rich in oripavine in 2021, as it had anticipated in its reporting in 2020, with a harvest of 3,495 ha, nearly three times larger than the area of 1,515 ha harvested in 2020. Spain, however, expects a significant decrease in its cultivation of this variety of opium poppy, with an expected harvest of 581 ha in 2022 and 550 ha in 2023.

Noscapine

15. Cultivation of noscapine-rich opium poppy³ for the purpose of opiate production was reported by Australia, France and Spain in 2021, after several years in which France was the only country reporting cultivation of this variety of opium poppy. In 2021, Australia sowed 357 ha

and harvested 317 ha of this variety and France sowed 3,194 ha and harvested 3,093 ha, similar to the previous year, while Spain harvested 387 ha. None of the three countries reported any extraction of the morphine alkaloid from the noscapine-rich opium poppy that they cultivated in 2021. According to advance data provided by the major manufacturing countries, in 2022, Australia is expected to harvest 150 ha of opium poppy rich in noscapine and France is expected to harvest 2,900 ha. France is the only country that has foreseen cultivating this variety in 2023, however it has not envisaged any extraction of the morphine alkaloid from this variety of poppy straw. The Board monitors developments in this respect and requests the countries to report any and all extraction of the morphine alkaloid from opium poppy rich in noscapine.

16. Noscapine is not under international control, even though a significant amount of the morphine alkaloid can be extracted from opium poppy rich in noscapine. **For the purposes of controlling the manufacture of morphine, the Board requests the countries that cultivate opium poppy rich in noscapine to provide information in a consistent and regular manner about the cultivation of noscapine-rich opium poppy, its intended use and any extraction and use of the morphine alkaloid from this variety.**

Production of opiate raw materials

17. Tables 2 and 3 provide an overview of the global production of and demand for morphine-rich and thebaine-rich opiate raw materials, respectively, for the period 2018–2023. As in previous years, the actual production of opiate raw materials in 2022 and 2023 may differ from the estimates, depending on the weather and other factors. There was a small decrease in the production of both raw materials rich in morphine and raw materials rich in thebaine in 2021. It is expected that the production of raw materials rich in morphine will further decrease in 2022 and 2023, whereas the production of raw materials rich in thebaine will increase in both years.

Morphine

18. Global production of morphine-rich opiate raw materials in the main producing countries decreased from 380 tons⁴ in morphine equivalent in 2020 to 329 tons in

³The harvested area and the estimated area for opium poppy rich in noscapine are reflected in the category of opium poppy rich in morphine, in table II of part four of the present publication.

⁴The 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 and in opium poppy rich in codeine, whenever appropriate.

Table 2. Opiate raw materials rich in morphine: production, demand, balance between production and demand^a and stocks, in tons of morphine equivalent, 2018–2023

	2018	2019	2020	2021 ^b	2022 ^c	2023 ^c
Australia						
Production	88	85	75	96	36	7
France						
Production	42	44	75	37	46	91
Hungary						
Production	2	11	6	0	19	10
India						
Production	25	34	27	27	33	31
Spain						
Production	37	141	113	100	109	66
Türkiye^d						
Production	102	91	69	69	53	82
Other countries						
Production	8	15	15	0	0	3
(1) Total production	304	421	380	329	296	290
Demand for						
Opium	20	24	19	24	22	24
Poppy straw and concentrate of poppy straw	317	331	308	201	326	326
(2) Total demand for opiate raw materials	337	355	327	225	348	350
(3) Total demand for opiates for medical and scientific purposes^e	306	346	307	280	392	390
Balance, (1) minus (2)	-33	66	53	104	-52	-60
Balance, (1) minus (3)	-2	75	73	49	-96	-100
Stocks of						
Opium	71	86	96	94	<i>n/a</i>	<i>n/a</i>
Poppy straw	250	302	367	496	<i>n/a</i>	<i>n/a</i>
Concentrate of poppy straw	243	257	304	298	<i>n/a</i>	<i>n/a</i>
Total stocks of opiate raw materials	564	645	767	888	718	744
Total stocks of all opiates	484	531	523	458	<i>n/a</i>	<i>n/a</i>

Note: Data in italics reflect advance data and projected data, and "n/a" indicates that data are not available yet.

^a For more information about the balance between supply (stocks and production) of and demand for opiate raw materials rich in morphine, see part three of the present publication.

^b Figures for 2021 are based on annual statistics furnished by Governments on form C, or where such information is not available, on advance data provided by Governments during consultations with the Board.

^c Figures for 2022 and 2023 are based on advance data provided by Governments during consultations with the Board.

^d Since 31 May 2022, "Türkiye" has replaced "Turkey" as the short name used in the United Nations.

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

2021 (see table 2). Spain remained the largest producer in 2021 (100 tons), followed by Australia (96 tons), Türkiye (69 tons), France (37 tons) and India (27 tons).⁵

⁵ Even though Hungary and Slovakia reported cultivation of opium poppy rich in morphine in 2021, they did not report production of morphine-rich opiate raw materials at a level significant enough to be included in the present publication, meaning that their combined production was below half a ton, which, in accordance with the Board's methodology, would be rounded up to 1 ton.

19. There appears to be a decreasing trend in the global production of opiate raw materials rich in morphine from 2020 onwards, with production expected to decrease to 296 tons in 2022 and further, to 290 tons, in 2023.

20. The main producers in 2022 are expected to be Spain (37 per cent of global production), Türkiye (18 per cent), France (16 per cent), Australia (12 per cent) and India (11 per cent). Those four countries together are expected to account for about 94 per cent of global production of opiate raw materials rich in morphine in 2022.

Table 3. Opiate raw materials rich in thebaine: production, demand, balance between production and demand^a and stocks, in tons of thebaine equivalent, 2018–2023

	2018	2019	2020	2021 ^b	2022 ^c	2023 ^c
Australia						
Production	207	116	115	152	149	166
France						
Production	8	0	5	8	0	20
Hungary						
Production	0	0	0	0	1	1
India						
Thebaine extracted from opium	5	3	3	3	3	3
Spain						
Production	9	0	59	1	19	9
Other countries						
Thebaine extracted from poppy straw (M)	1	0	0	0	0	0
(1) Total production	230	119	182	164	172	199
Demand for						
Opium	2	2	2	2	2	2
Poppy straw and concentrate of poppy straw	144	162	116	120	174	169
(2) Total demand for opiate raw materials	146	164	118	122	176	171
(3) Total demand for opiates for medical and scientific purposes^d	97	97	111	104	130	130
Balance, (1) minus (2)	84	-45	64	42	-4	28
Balance, (1) minus (3)	133	22	71	60	42	69
Stocks						
Opium	7	9	10	9	<i>n/a</i>	<i>n/a</i>
Poppy straw	145	74	234	266	<i>n/a</i>	<i>n/a</i>
Concentrate of poppy straw	83	105	76	98	<i>n/a</i>	<i>n/a</i>
Total stocks of opiate raw materials	235	188	320	373	285	296
Total stocks of all opiates	248	241	194	218	<i>n/a</i>	<i>n/a</i>

Note: Data in italics reflect advance data and projected data; and “n/a” indicates that data are not yet available.

^a For more information about the balance between supply (stocks and production) of and demand for opiate raw materials rich in thebaine, see part three of the present publication.

^b Figures for 2021 are based on annual statistics furnished by Governments on form C, or where such information is not available, on advance data provided by Governments during consultations with the Board.

^c Figures for 2022 and 2023 are based on advance data provided by Governments during consultations with the Board.

^d Excluding demand for substances not covered by the 1961 Convention as amended by the 1972 Protocol.

Thebaine

21. In 2021, global production of opiate raw materials rich in thebaine amounted to 164 tons⁶ in thebaine equivalent (see table 3 below), a decrease from 182 tons in 2020. Australia continued to be the largest producer in 2021 (accounting for 93 per cent of the global total), followed by France (5 per cent), India (2 per cent), which extracts thebaine from opium, and Spain (about 1 per cent). Compared with 2020, production in 2021 increased notably in Australia, decreased significantly in Spain, decreased slightly in France and remained at the same level in India.

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 wherever appropriate.

22. Global production of opiate raw materials rich in thebaine is expected to increase to about 174 tons in 2022. Australia is expected to remain the main producer, followed by Spain and India. France is not expected to produce any raw materials rich in thebaine, while Hungary is expected to return as a producer, with about 1 ton of thebaine equivalent expected to be produced in the country in 2022. Australia is expected to be the only country cultivating opium poppy rich in thebaine in 2023 and will likely produce about 83 per cent of the global total. However, according to advance information provided by the major producing countries in consultation with the Board (see table 3, in the column for 2023), France, Hungary, India and Spain also plan to produce opiate raw materials rich in thebaine in 2023. Total production of thebaine-rich opiate raw materials is expected to increase to 199 tons in 2023.

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

Morphine

23. As shown in table 2, stocks of opiate raw materials rich in morphine (poppy straw, concentrate of poppy straw and opium) amounted to about 888 tons in morphine equivalent at the end of 2021,⁷ an increase of 16 per cent from 767 tons in 2020. Türkiye was the country with the largest stocks of opiate raw materials rich in morphine (303 tons); it was followed by Spain (176 tons), France (138 tons), Australia (103 tons), India (78 tons, all in the form of opium), Japan (43 tons, of which 2 tons were opium), Hungary (19 tons), the United States (13 tons) and the United Kingdom (8 tons). Those nine countries together accounted for about 99 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.

24. At the end of 2021, global stocks of opiates of morphine-based opiate raw materials, mainly in the form of codeine and morphine, amounted to 458 tons in morphine equivalent, a decline from 523 tons at the end of 2020.

Thebaine

25. Stocks of opiate raw materials rich in thebaine (poppy straw, concentrate of poppy straw and opium) increased from 320 tons in thebaine equivalent at the end of 2020 to 373 tons at the end of 2021.⁸ Spain held the largest stocks of opiate raw materials rich in thebaine (149 tons); it was followed by Australia (127 tons), France (57 tons), the United States (29 tons) and India (9 tons). The stocks of opiate raw materials rich in thebaine in those five countries together accounted for about 99 per cent of global stocks in 2021, while countries with lower production levels and countries importing those opiate raw materials held the remaining stocks.

26. Global stocks of thebaine-based opiate raw materials (oxycodone, thebaine and a small quantity of oxymorphone) increased from 194 tons in thebaine equivalent by the end of 2020 to 218 tons in 2021.

⁷Data on stocks are collected from the annual statistics on production, manufacture, consumption, stocks and seizures of narcotic drugs (form C) relating to concentrate of poppy straw and opium or, if that information is not available, from advance data submitted by the major producing and importing countries in consultation with the Board.

⁸Ibid.

Demand for opiates

27. As described below, INCB measures the 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 for medical and scientific purposes of all opiates controlled under the 1961 Convention as amended.⁹

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

28. Global demand for opiate raw materials rich in morphine (in particular opium) had been decreasing since 2014, with the exception of 2019, and stood at 225 tons in morphine equivalent at the end of 2021, a significant decrease from 327 tons in 2020. However, it is expected to increase again, to 348 tons in morphine equivalent in 2022, and further, to 350 tons in morphine equivalent, in 2023 (see table 2).

29. Global demand by manufacturers for opiate raw materials rich in thebaine had also followed a decreasing trend beginning in 2016, with the exception of 2019, when it rose before falling again to 118 tons in thebaine equivalent at the end of 2020. In 2021, demand rose slightly, to 122 tons of thebaine equivalent, despite previous projections of a more significant increase. Such an increase is, however, expected in 2022, as demand is expected to rise to 176 tons in thebaine equivalent in that year and then to decrease slightly, to 171 tons, in 2023 (see table 3).

Demand for opiates measured as consumption

30. Figure I below presents a breakdown of the demand for opiates in terms of consumption of morphine-based opiates, expressed in morphine equivalent, for the main narcotic drugs. Codeine and hydrocodone are the most consumed opiates manufactured from morphine. Global demand for morphine-based opiates decreased from 307 tons in morphine equivalent in 2020 to 280 tons in 2021.

⁹Prior to 2003, INCB measured the global demand only by global consumption of major opiates controlled under the 1961 Convention as amended, 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 controlled under the 1961 Convention as amended 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 expected sales of opiates and expected changes in the prices of raw materials or opiates.

Figure I. Consumption of morphine and opiates derived from morphine, in morphine equivalent, 2018–2021

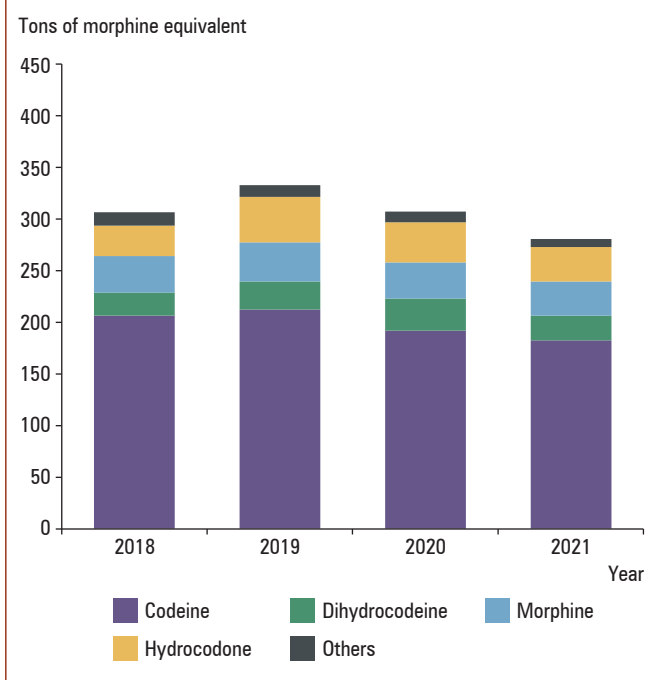
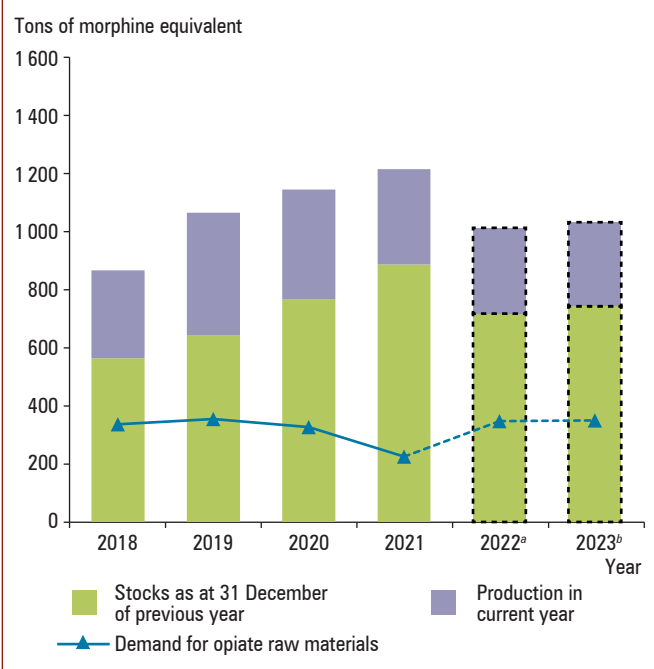


Figure II. Supply of and demand for opiate raw materials rich in morphine, in morphine equivalent, 2018–2023



^aData for production and demand for 2022 are based on advance data (dotted line) submitted by Governments.

^bData for 2023 are based on estimates (dotted line) submitted by Governments.

31. Demand for thebaine-based opiates is concentrated mainly in the United States and increased sharply after the late 1990s. However, in 2013, global demand started to decline, owing to the decrease in demand in the United States. It nevertheless grew again in 2020, reaching a level of 111 tons in thebaine equivalent, but declined again in 2021 to a total of 104 tons in thebaine equivalent. Demand is expected to increase to a total of 130 tons in thebaine equivalent in 2022 and to remain at that level in 2023.

Balance between the supply of and demand for opiate raw materials

Morphine

32. In the period 2009–2016, global production of opiate raw materials rich in morphine exceeded global demand. As a result, stocks increased during that period, with some fluctuations. In 2017 and 2018, global production was lower than global demand, leading to a decline in global stocks.

33. As can be seen in table 2, in 2019, the stocks increased again, significantly, to about 645 tons in morphine equivalent, then to 767 tons in 2020, and further, to 888 tons, in 2021. This quantity of stocks is sufficient to cover the global

demand at the expected level for 2022¹⁰ of 348 tons for nearly 31 months (see figure II¹¹), well over the 12 months required by the Board. Global production of opiate raw materials rich in morphine is expected to decrease significantly in 2022, and the stocks are expected to consequently decrease, to 718 tons. This estimated level of global stocks at the end of 2022 will be sufficient to cover for more than 24 months the expected global demand at the level projected for 2023 (350 tons). Producing countries have indicated that they plan to decrease production in 2023, from 296 tons to 290 tons, whereas the demand for raw materials is expected to increase slightly, from 348 tons to 350 tons. Accordingly, stocks are expected to increase somewhat in 2023, reaching 744 tons in morphine equivalent at the end of 2023, a level considered to be sufficient to cover expected global demand in 2023 for nearly 26 months.

¹⁰In order to ensure that the supply can cover the expected demand for at least one year in case of unforeseen supply issues, such as crop failure, the Board assesses the stocks at the end of year to calculate whether they are sufficient to cover the projected demand for the following year. For the calculation, the Board determines the total amount of stocks at the end of the year and divides that number by the total amount of projected demand, then multiplies the resulting number by 12 to arrive at the total number of months for which the stocks would be able to cover the following year's demand at the projected level.

¹¹Because of a change in format, figures II and III are not directly comparable with the figures that appeared as figures II and III in editions of this technical report published before 2008.

34. The global supply of opiate raw materials rich in morphine (stocks and production) is expected to continue to be fully sufficient to cover global demand for more than one year.

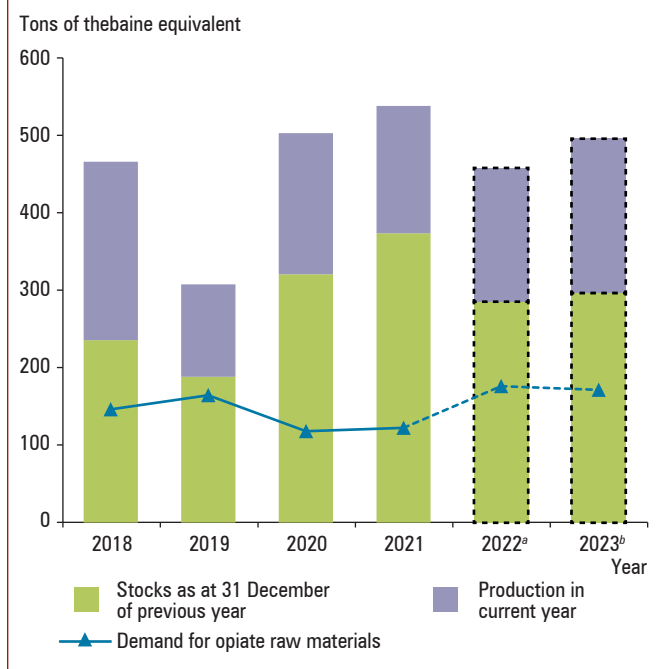
Thebaine

35. As can be seen in table 3 above, in 2021, the global production of opiate raw materials rich in thebaine amounted to 164 tons in thebaine equivalent, a decrease from 182 tons in 2020. Demand for opiate raw materials rich in thebaine followed a decreasing trend until 2018, and, after increasing to 164 tons in thebaine equivalent in 2019, decreased again in 2020, to about 118 tons, then increased again in 2021, to 122 tons. Those developments led to a significant increase in the level of stocks held at the end of 2021, which rose to 373 tons in thebaine equivalent in 2021, from 320 tons in 2020 and 188 tons in 2019. Those stocks were considered sufficient to meet global demand at the level projected for 2022 (176 tons) for 25 months. Global production is expected to decrease somewhat in 2022, to 172 tons. By the end of 2022, global stocks of opiate raw materials rich in thebaine are expected to decrease to 285 tons because demand is expected to increase to as much as 176 tons in 2022, compared with 122 tons in 2021. The stocks in 2022 are expected to be at a level sufficient to cover global demand at the level projected for 2023 (171 tons) for 20 months. In 2023, production is expected to increase to 199 tons, based on the estimates provided by Governments. Demand for opiate raw materials rich in thebaine is, however, expected to decrease, to 171 tons, leading to a slight increase in stocks (projected at about 296 tons in thebaine equivalent at the end of 2023).

36. It is estimated that in 2022 and 2023 the global supply of opiate raw materials rich in thebaine (stocks and production) will be more than sufficient to cover the annual global demand (see figure III).

37. Although the supply of opiate raw materials rich in morphine and thebaine is considered to be sufficient to cover global demand, according to the statistical data and estimates submitted by countries, the Board highlights that there are significant disparities between countries in the availability of narcotic drugs because many countries do not accurately estimate their medical need for opiate analgesics or have limited access to them. **Consequently, and in line with the provisions and objectives of the 1961 Convention as amended, the Board reminds Governments of the importance of ensuring sufficient availability at the global level and urges opioid-manufacturing countries to allocate an increasing amount of morphine for utilization in the production of immediate-release oral morphine preparations to be used for the treatment**

Figure III. Supply of and demand for opiate raw materials rich in thebaine, in thebaine equivalent, 2018–2023



^aData for production and demand for 2022 are based on advance data (dotted line) submitted by Governments.

^bData for 2023 are based on estimates (dotted line) submitted by Governments.

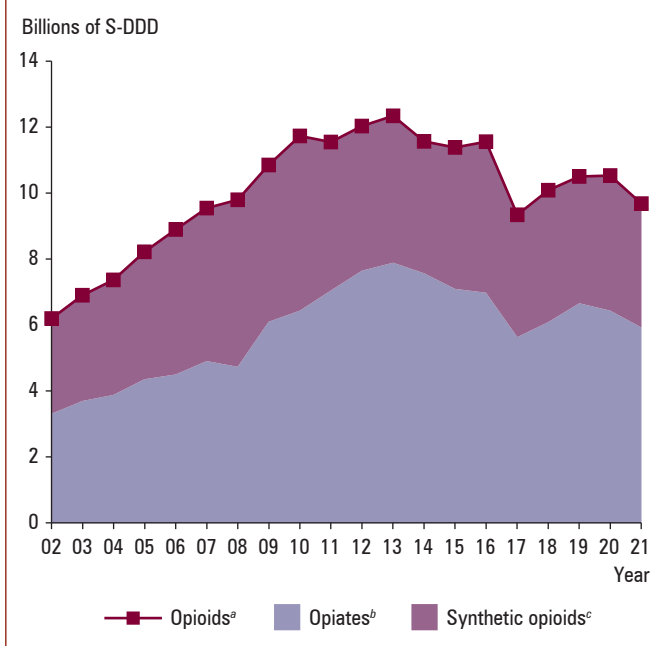
of pain, particularly in low- and middle-income countries, and to adopt an essential package of palliative care, as recommended by the Lancet Commission on Palliative Care and Pain Relief, the Stanford-Lancet Commission on the North American Opioid Crisis and the World Health Organization.

Trends in consumption levels of opioids

38. The global levels of consumption of opiates and synthetic opioids over the 20-year period 2002–2021 are presented in figure IV. The figure reflects data on opioids, including buprenorphine and pentazocine, which are opioids controlled under the 1971 Convention. To allow the aggregation of consumption data for substances having different potencies, the consumption levels are expressed in billions of defined daily doses for statistical purposes.¹²

¹²See the explanatory notes to tables XIV.1.a–i, XIV.2 and XIV.3 for an explanation of defined daily doses for statistical purposes and for the method used to calculate those consumption levels; see also table XIV.3 for further details on developments in consumption levels.

Figure IV. Global consumption of opioids,^a expressed in billions of defined daily doses for statistical purposes (S-DDD), 2002–2021



^aOpioids: opiates and synthetic opioids.

^bIncluding buprenorphine, an opiate controlled under the 1971 Convention.

^cIncluding pentazocine, a synthetic opioid controlled under the 1971 Convention.

39. In the past 20 years, global consumption of opioids has increased significantly, more than doubling between 2002 and 2013, after which it followed a decreasing trend until 2018, when it started to rise again. In 2021, it decreased again, but nevertheless remained at a much higher level than the levels observed in previous decades. The share of consumption of opiates in the total consumption of opioids fluctuated, rising from 51 per cent in 2008 (the lowest share) to 65 per cent in 2014 (the highest share). In 2021, the share of opiates remained the same as in 2020, amounting to 61 per cent. The share of consumption of synthetic opioids, which are used for the same indications as opiates, amounted to 39 per cent, the same level as in 2020. The overall trend in the past decade points to a possible decline in the demand for opiates in the future, but it is not clear whether their share in the total consumption of opioids will increase or decrease in relation to the consumption of synthetic opioids.