

III. WORLD CANNABIS MARKETS

As suggested above, cannabis markets tend to be highly localized. Where transnational trafficking does occur, it usually happens on a regional basis. There are a number of reasons for this. Cannabis herb is bulky, relatively easily detected and, compared to other drugs, has a low value to volume ratio. It just so happens that the most profitable markets have conveniently located producer countries nearby, notably Mexico for the United States and Morocco for Europe. Just a few decades ago, when the markets were less competitive, more remote producers could compete, but market pressures associated with increased law enforcement have made this increasingly difficult. As the big consumer markets turn to domestic indoor production, these pressures are likely to increase, making long-distance cannabis trafficking even more unprofitable.

Markets for cannabis herb

Herbal cannabis market in North America and the Caribbean

The United States is the world's largest consumer of cannabis herb, with an estimated 26 million annual users and nearly 5 million regular users (more than 20 days in the past month). According to the United States Office of National Drug Control Policy:

“Commercial-grade cannabis prices have remained relatively stable during the past decade, ranging from \$400 to \$1,000 per pound in south-west border areas and \$700 to \$2,000 per pound in the mid-west and north-east. The national price range for sinsemilla, a higher quality of marijuana, is \$900 to \$6,000 per pound. BC Bud, a type of marijuana produced in Canada, sells for \$5,000 to \$8,000 per pound in most major U.S. metropolitan areas. Variables such as buyer/seller relationships, quantities purchased, frequencies of purchase, and purity affect drug prices.” [112]

It is estimated that users of cannabis herb in the United States spent approximately \$10.4 billion on cannabis herb in 2000 [113]. This was slightly less than was spent in the United States on heroin (\$11.9 billion). It should be noted, however, that these estimates are of the amount consumed, not produced, and were generated using demand-side indicators. As a result, they are considerably less than production estimates using supply-side figures: demand-based estimates of national consumption are just over 1,000 tons, about one thirtieth of the high-end, supply-side values discussed below.

About 92 per cent of this market is supplied from within North America. According to the response to the UNODC annual reports questionnaire, in 2003 authorities in the United States reported that about 56 per cent of the cannabis trafficked into the country was from Mexico, with about 20 per cent coming from Canada. The balance is supplied by Colombia and other countries outside North America.

From the 1930s to the mid-1970s, Mexico supplied nearly all the cannabis consumed in the United States, but this dominance ended with the spraying of "paraquat", a herbicide toxic to humans, on Mexican crops in 1975 [68]. Fears of poisoning opened the market to producers in Colombia, while action by the Government in Jamaica eliminated another rival from the market. By 1979, Mexico supplied only an estimated 11 per cent of the market and by 1981 this figure had dropped to 4 per cent [68]. During the 1980s, Colombia was the source of 75 per cent of the cannabis consumed in the United States [114], but by the mid-1980s Mexico was already beginning to stage a comeback. Today, Mexican groups are again relegating groups from Colombia to a supporting role across drug markets [115]. Jamaica has again declined greatly in importance as a source of cannabis, although it is still the major source of cannabis oil to the Canadian market [37].

The three North American countries rate among the largest cannabis producers in the world. The proportion of global cannabis herb seizures made in North America rose from 32 per cent in 1990 to 58 per cent in 2003. There are several reasons for this shift, including an increase in local enforcement and a genuine shift in the patterns of international production.

Mexico has consistently topped the world in cannabis seizures in recent years and was responsible for a reported 37 per cent of the cannabis seized globally in 2003, over 2,000 tons ([116], p. 86). Mexico has undertaken a very aggressive eradication programme, destroying 31,000 hectares of cannabis in 2004. If that crop had been brought to harvest, it could have made up the bulk of global cannabis herb production. The United States Drug Enforcement Administration estimates that eradication eliminates up to 80 per cent of all the cannabis grown in Mexico ([117], pp. 12-13).^{*} The authorities in Mexico, on the other hand, say they have been eradicating 98 per cent of the cannabis crops located in the states of Chihuahua, Durango, Guerrero, Jalisco, Michoacán, Nayarit, Oaxaca, Sinaloa, Sonora and Zacatecas since 1994, but that residual areas of cannabis plant cultivation remain in the Sierra Madre mountains ([118], p. 36). Despite an increase of about 20 per cent in crop eradication, the net cultivation of cannabis plant after eradication increased by 70 per cent between 2002 and 2003, to 7,500 hectares [119]. Production was estimated at 13,500 tons of cannabis herb that year, before

^{*}This estimate is based on the ratio of hectares eradicated and net cannabis plant cultivation. However, the figures provided by the Drug Enforcement Agency differ markedly from those contained in the International Narcotics Control Strategy Reports prepared annually by the United States Department of State.

declining to 10,400 tons in 2004 [37]. According to its response to the UNODC annual reports questionnaire in 2003, the Government of Mexico estimates that 70 per cent of this production is destined for the United States and 30 per cent for local markets. In addition to crop eradication, between 1,000 and 2,000 tons of processed cannabis have been seized in Mexico since 1998, with another 750 kilograms to one ton seized at the border ([117], pp. 12-13).

Canada has also stepped up enforcement efforts, seizing 1.1 million cannabis plants per year between 1998 and 2002, a sixfold increase over 1993 [120]. In 2003, 1.4 million cannabis plants were eradicated and 21.5 tons of processed cannabis were seized [37]. According to its response to the UNODC annual reports questionnaire for 2004, an estimated 960 to 2,400 tons of cannabis are produced in Canada each year. In addition to local consumption and exports to the United States, cannabis from Canada is said to supply markets as far afield as Japan and Taiwan Province of China.

In the United States, cannabis enforcement increased throughout the 1990s, with 113 per cent more arrests related to cannabis in 2002 than in 1990 [121]. Eradication efforts have fluctuated over the years, however, from eradication of just under 4 million cultivated plants in 1985 to nearly 8 million in 1992, and then returning to a low of 2.5 million plants eradicated in 1998 and 3.65 million in 2003. A Government estimate of cannabis production in the United States lies at between 3,100 and 7,100 tons ([122], p. 4), but other figures have placed it as high as 19,000 tons.

Even taking the advanced enforcement capabilities of the North American countries into account, being responsible for nearly 60 per cent of global seizures suggests a huge amount of local production. The United States authorities estimate production of cannabis in North America at nearly 32,000 tons on the high end, exactly the same as the UNODC global production figure. Comparing low-end figures with the UNODC global total, the figures come into line: about a third of global cannabis herb production takes place in North America.

In the United States, most of the large-scale, low-grade production, at least outdoors, seems to be concentrated in just a few states. Eradication of outdoor cannabis plants was highest in 2003 in the states of California, Tennessee, Kentucky, Hawaii and New York. Indoor production was highest in California, Washington, Florida, Oregon and Texas [37]. This is a different profile from previous decades, where the mid-west (including in respect of former and current corn farmers with little affinity for the drug) played a more prominent role. This suggests that enforcement efforts in the mid-west (including asset forfeiture) have had a long lasting impact on a producer community that is sensitive to deterrence.

In recent years, much of the outdoor production of cannabis in the United States has been found in "guerrilla" cultivation on public lands, such as the national

forests and parks of the states of California and Kentucky. As enforcement strengthens in California, outdoor cultivation has moved to public lands in the states of Oregon and, increasingly, Washington [123]. The move onto public lands may be spurred in part by the threat of asset forfeiture. It exposes the crops to increased risk of theft, which may increase the violence associated with the industry. It also poses an environmental threat to protected areas, as both cultivation and eradication efforts can damage delicate ecosystems. This phenomenon is not unique to cannabis and it is not unique to the United States: cannabis has long been cultivated on public lands in Australia [124], and a similar problem is found with coca bush in Colombia, for example [125].

Formerly, most Canadian production of cannabis had been concentrated in the state of British Columbia, but this is no longer the case. Seizure and eradication figures suggest that Ontario and Quebec have recently caught up and, more recently, major operations have been detected in other provinces, such as Manitoba [126] and Nova Scotia [127, 128]. In September 2005, police in Manitoba seized over 40,000 cannabis plants in five separate law enforcement operations [129], enough to produce about 4 tons of herbal cannabis. At present, according to Canada's response to the UNODC annual reports questionnaire in 2004, about 40 per cent of cannabis in Canada is produced in British Columbia, with 25 per cent coming from Ontario, 25 per cent from Quebec and 10 per cent from other provinces.

Owing to eradication pressures, cannabis production in Mexico is highly dispersed and concealed, occurring in small plots averaging less than 1,000 square metres [130]. In 2004, the authorities in Mexico reported seizing 254,554 whole plants in 72,559 separate seizures, an average of just 3.5 plants per seizure. Cultivation micro-regions occur in a long arc though the mountain ranges of the Sierra Madre Occidental to the Sierra Madre del Sur, roughly coincident with the opium poppy producing areas. The authorities in Mexico divide cannabis production into two major zones: on the Pacific Ocean (Guerrero, Jalisco, Michoacán, Nayarit, Oaxaca and Sinaloa states), responsible for 52 per cent of production, and in the central-northern area (Baja California, Chihuahua, Coahuila, Durango, Sonora and Zacatecas states), responsible for 47 per cent. In recent years, the share cultivated in the area adjacent to the Pacific Ocean has declined and that in the central-northern area has increased. According to the response of Mexico to the UNODC annual reports questionnaire in 2004, just seven states (Chihuahua, Durango, Guerrero, Jalisco, Michoacán, Sinaloa and Sonora) are responsible for 83 per cent of production. Sinaloa, the country's breadbasket and long the traditional home of the drug trade, is the main cannabis producing state, with 96 per cent of the production being found in just nine municipalities. In 2000, 58 per cent of the processed cannabis seized was taken in the states of Chihuahua, Durango, Jalisco, Oaxaca, Sinaloa and Sonora ([118], p. 36).

As the discussion above indicates, polls conducted in the United States suggest that much of the cannabis cultivation and distribution takes place through social

networks. Nonetheless, a \$10 billion market attracts organized criminal elements. A recent assessment of gang activity in the United States found that 65 per cent of law enforcement agencies surveyed said that gangs were involved in the distribution of cannabis in their areas, a much higher share than for any other drug [131]. A large share of the outdoor cannabis plant cultivation in California occurs on land in national parks and is controlled by Mexican organized criminal groups, while the indoor market is overwhelmingly controlled by white Americans [37], with some Vietnamese involvement in the Pacific north-west. Rangers eradicating crops on public lands in California are frequently met with violent resistance from the organized criminal groups controlling the trade and booby traps on “guerrilla” cultivations are not uncommon.

Drug trafficking organizations in Mexico have evolved over the years. While Mexico has been the source of supplies of cannabis to the United States since the 1930s, demand was not great enough to attract organized criminal groups until the 1960s. In the interim, after the main opium producing regions of the world were lost to the enemy during the Second World War, the Allies faced shortages of morphine needed for the treatment of injured soldiers. The United States supported the cultivation of opium poppy in Mexico, which was the genesis of the heroin trade in that country. This added to the sophistication of trafficking operations.

“Operation Intercept” was an attempt in 1969 to stop the cross-border traffic of drugs through vigorous enforcement and it was during this time that Mexican traffickers learned to use low-flying aircraft to evade United States radar networks ([132], chap. 59). After losing market share owing to the use of the herbicide “paraquat” in 1975, Mexico became a trafficking route for cannabis from Colombia and domestic production began to grow. The Colombians switched from cannabis production to cocaine as North American cultivation undermined the demand for regional imports of cannabis. In the mid-1980s, when law enforcement shut down the state of Florida in the United States as a viable trafficking route, the Colombians enlisted cannabis traffickers to handle cocaine shipments (a development similar to what appears to be occurring today with the use of cannabis resin trafficking routes to traffic cocaine into Europe). More recently, it has been argued that the Mexican drug trafficking organizations have all but supplanted Colombian trafficking, reducing them to a supply role [115]. This position has been challenged recently by the authorities in Mexico, which claim that Colombian elements have taken over operations within Mexico [133]. In either case, the drug trade from Mexico to the United States, which includes cocaine and amphetamines, is extremely lucrative and the market has grown increasingly violent over the years. Recent conflicts include the use of military armaments and assassination of public officials and journalists.

In Canada, most of the medium- and large-scale cannabis production operations are controlled by organized criminal groups. “Outlaw” motorcycle groups, such as the Hell’s Angels, control outdoor and hydroponic cultivation, while Vietnamese

groups control indoor organic (soil-based) production [36]. Vietnamese involvement in indoor cultivation in London in the United Kingdom has also been reported [134]. The Hell's Angels dominate cannabis production in Quebec and the Vietnamese groups are increasingly controlling urban cannabis production in cities in Canada such as Calgary, Montreal, Toronto and Vancouver. Canadian groups of South Asian descent are allegedly involved in moving cannabis across the border in commercial trucks [135]. However, despite some inter-group violence, these ethnic divisions seem to be dissolving as groups find it more profitable to cooperate than to clash.

The increasing involvement of organized criminal groups is reflected in the growing size of shipments across the border from Canada into the United States [37]. Money derived from cannabis operations may be allowing minor organized criminal groups to graduate to trafficking in weapons and explosives, cocaine smuggling and stock-market fraud. According to a report of the Royal Canadian Mounted Police, "[t]he inter-provincial and international marijuana trade . . . has allowed several organized crime groups to expand into other criminal enterprises that may have previously been well beyond their grasp." [136]

Back in the mid-1990s, before Canada became a major source for cannabis imported into the United States, "virtually all marijuana smuggled into the United States, whether grown in Mexico or trans-shipped through Mexico from other locations such as Colombia, was smuggled across the south-west border." [137] While less true than in the past, land routes over the south-western border of the United States continue to be the primary place of importation, with false compartments in heavy goods vehicles being a perennial favourite concealment technique ([117], p. 13). Most seizures at official points of entry are made at El Paso and Laredo in Texas and San Ysidro, Otay Mesa and Calexico in California; the counties of Pima and Santa Cruz in Arizona rank highest for seizures not made at official points of entry. Along the northern border, various points in the state of Washington account for most of the cannabis entering the United States from Canada, but points in Michigan, New York and other states are growing in importance. Annual seizures in the north are generally around 1 per cent of those in the south-west, however [37]. Authorities seized 4.4 tons entering the United States from Canada in 2001-2002, 12.2 tons in 2002-2003 and 15.8 tons in 2003-2004 [122]. Sea and air routes are also used and tunnels have been found across both the south-western and northern borders of the United States. Helicopters are increasingly used to move cannabis across the Canadian border [138].

Remarkably, cannabis is also imported into Canada, including some from the United States. Between 2000 and 2003, 7.8 tons of cannabis were seized entering Canada, including 1.23 tons at the United States border [122]. There is no recorded pattern of trafficking of cannabis from the United States to Mexico. There appear to be some exports of cannabis from North America to Asia. For example, the Government of the Republic of Korea attributes the source of 55 per cent of the

cannabis trafficked into the country to the United States, while cannabis is said to be exported from Canada to Japan and Taiwan Province of China.

Once in the United States, imported cannabis is distributed through Mexican drug trafficking organizations throughout the country, although Jamaican groups are prominent in the north-east and Vietnamese groups are seen in the north-west. Since white North Americans dominate domestic outdoor production in the Appalachian area and indoor production throughout the country, they tend to control distribution within these markets as well. Street-level sales are conducted by individuals and gangs of all descriptions [37].

The Caribbean region, and Jamaica in particular, has traditionally been a source of cannabis destined for the United States and Canada, as well as the United Kingdom and Europe, although the market share commanded by this product seems to have been in decline for some time. For example, while Jamaica appears to have been the source of one third of the cannabis herb consumed in the United Kingdom in the late 1970s, it appears to comprise less than 7 per cent of the market today [139]. For all Caribbean nations, the picture is clouded by the fact that seizure figures may reflect both trans-shipped cannabis (in particular from Colombia) as well as locally produced cannabis.

In 2004, Jamaica eradicated over 400 hectares of cannabis plant and destroyed more than 5 million cannabis seedlings at 403 nurseries. In response to enforcement, cultivation operations have shifted from large plantations to smaller plots hidden in more remote areas. A new strain of cannabis plant growing to only 3 feet tall at maturity was recently discovered in Westmoreland, Jamaica. Very sophisticated cultivation methods, including portable irrigation systems, generators and floodlights, have been discovered [37].

The Government of Trinidad and Tobago reports eradicating over one million plants and seedlings in 2004 and has reported eradication of as many as 10 million plants in the past [37, 140]. If these plants had been allowed to develop, they could have produced as much as 1,000 tons of cannabis. Growing conditions are such that three annual harvests are said to be possible and, despite eradication, according to its response to the UNODC annual reports questionnaire in 2003 the Government estimates that over 17 tons are produced each year. The country also imports more potent cannabis from Colombia and from Saint Vincent and the Grenadines [141].

Several countries and territories in the Caribbean report annual seizures of 2-12 tons annually, including the Bahamas, the Cayman Islands and Cuba. Of these, the Cayman Islands claim that 100 per cent of the cannabis in the Cayman Islands comes from Jamaica, brought over on boats.

Intermediate countries and territories in terms of seizures include the Dominican Republic, Saint Vincent and the Grenadines and the Netherlands Antilles. Of

these, Saint Vincent and the Grenadines is frequently listed as a source country for cannabis imported for consumption in the Caribbean [141].

Many small island countries and territories in the Caribbean consistently report smaller seizures, with occasional windfalls, including Antigua and Barbuda, Bermuda, the British Virgin Islands, Dominica, French Guiana, Grenada, Guadeloupe, Haiti, Saint Kitts and Nevis and the Turks and Caicos Islands.

In a study by the Inter-American Drug Abuse Control Commission conducted in six Caribbean countries, the use of cannabis and cocaine in combination was documented in four of the countries studied. In Haiti, it is known as “juicy lacy”, in Martinique as “black joint” and in Dominica and St. Kitts and Nevis as “spranger” [82]. This combination is known as “season spliff” in Jamaica.

Herbal cannabis market in North Africa and West/Central Africa

After North America, Africa leads the world in seizures of cannabis herb, responsible for 26 per cent of seizures and an estimated 28 per cent of global production (12,000 tons). Most of this cannabis is consumed by Africa’s 37 million annual users (8 per cent of the African population aged 15-64 years, nearly a quarter of all global users), but a substantial amount is exported, primarily from Western and Southern Africa. France, for example, estimates that 30 per cent of the cannabis herb trafficked into the country is of African origin.

In Egypt, cannabis herb is referred to as “bango” and it continues to be illicitly cultivated in northern Sinai. Seizures of cannabis herb rose from 7 tons in 1996, to 31 tons in 1998 and to over 59 tons in 2002, but only 12 kilograms were seized in 2004. This may be because only five people were arrested for drug trafficking that year, four of whom were arrested for cannabis trafficking. Egyptian authorities say that 65 per cent of the cannabis trafficked in the country comes from Eritrea and 35 per cent from the Sudan. Eritrean nationals are identified as traffickers of cannabis and other drugs. In contrast, authorities in Israel estimate that 99 per cent of the cannabis consumed in their country comes from Egypt.

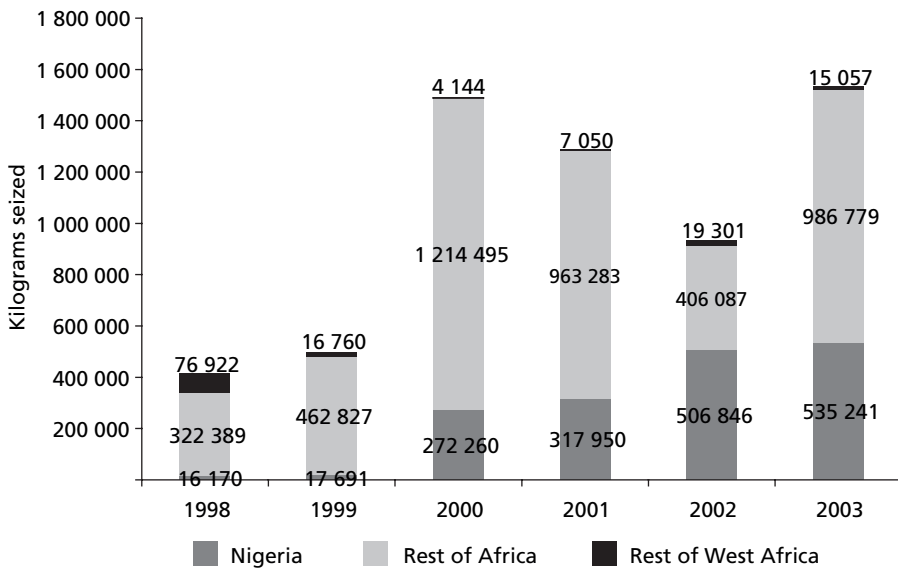
The important role of West Africa in global cannabis trafficking is remarkable because, unlike the rest of the continent, cannabis appears to have been introduced to West Africa only recently and does not play a role in traditional herbal medicine or rituals in the area.

Given the lack of a long-standing cultural role for cannabis, the primary factor driving cultivation in the area seems to be economic. A 1995 study by the French Observatoire géopolitique des drogues of cannabis production in five West African countries found that the prices commanded by cannabis, while low by international standards, were so much higher than for other agricultural commodities that

the incentives for cultivation were very high. The study also highlighted extreme price differences within the region and between rural and urban areas [142].

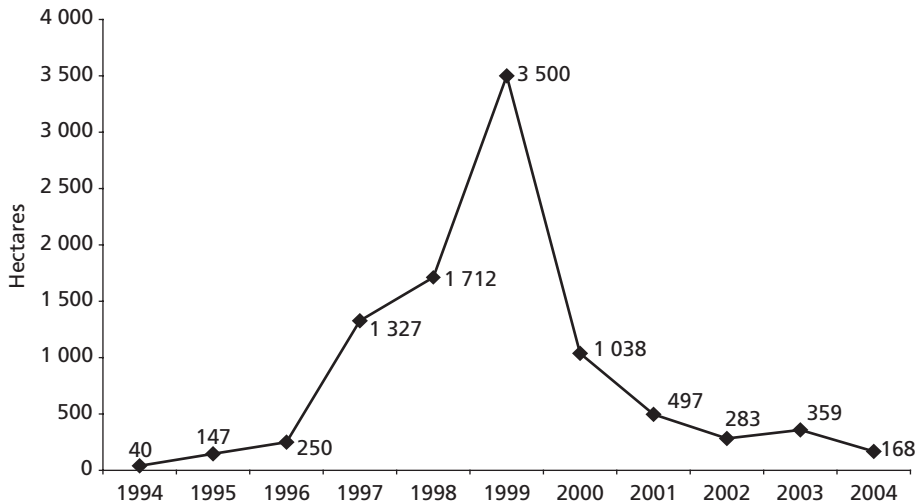
While West African organized criminal groups are a significant factor in the drug trade worldwide, the only drug produced in the region in any quantity is cannabis. Nigeria, by far the largest country in the region, is also one of the global leaders in cannabis seizures, ranking fifth in the world in 2003. Nigeria’s share of both West African cannabis seizures and total African cannabis seizures has been growing in recent years (see figure XI).

Figure XI. Breakdown of cannabis seizures in Africa by area, 1998-2003



Source: UNODC annual reports questionnaires.

According to local academics, cannabis (known officially as “Indian hemp”) was only introduced into Nigeria after the Second World War by soldiers returning from India and Myanmar [143]. According to Nigeria’s response to the UNODC annual reports questionnaire in 2003, the Dublin Group and the United States Drug Enforcement Administration, cannabis is currently cultivated in all 36 states of Nigeria, but is most widespread in the north of the country and in the states of Ondo (40 per cent), Delta (30 per cent), Edo and Cross River in the south [144, 145]. Operation “Burn the weeds” was launched in 1994 and has become the title of Nigeria’s ongoing eradication programme. After a peak in the late 1990s, a relatively small area was subject to eradication efforts in the first years of the twenty-first century, contrary to some international reports (see figure XII). Preliminary figures from the 2005 eradication effort suggest that renewed attention is being given to the matter.

Figure XII. Eradication of cannabis plant in Nigeria, 1994-2004

Source: Nigeria, National Drug Law Enforcement Agency.

Cannabis is known to be trafficked from Nigeria to the rest of West Africa. For example, in both Benin [144] and Cameroon about half the local supply is said to be brought in by Nigerians, presumably from domestic production. Cannabis is also known to be sent from Nigeria to Europe, often by sea, compacted and hidden among other products. The authorities in Poland have identified Nigeria as the origin of a significant amount of cannabis resin trafficked through Poland to the Netherlands and Germany. This is possibly a reference to trafficking by Nigerians of cannabis resin from Afghanistan, Morocco or even Senegal. As reported in the response to the UNODC annual reports questionnaire in 2003, the authorities note the recruiting of Polish nationals by Nigerian organized criminal groups. According to responses to the UNODC annual reports questionnaire in 2004, Nigerian nationals have been arrested for cannabis trafficking in countries all over the world.

Ghana has one of the highest known rates of annual cannabis use, with 22 per cent of those aged 15-64 years reporting having used the drug in 1998. Cannabis production in Ghana has expanded greatly since the 1960s [146]. In 1998, 1999 and 2002, between 4 and 5 tons were seized annually, but in 2003 over 9 tons were seized. Ghana has been the source of a number of recent major seizures (in excess of 1 ton) of cannabis herb destined for Belgium and the United Kingdom. The authorities in Belgium estimate that 25 per cent of the cannabis trafficked into their country comes from Ghana and Ghana is listed as a major source of supply to Italy, after Albania. Atha mentions Ghana as a supplier of rather low potency (0.7 per cent-4.3 per cent) cannabis to the United Kingdom [147]. These consignments are typically concealed on container ships transporting food (including in refrigerated containers).

In the 1960s, cannabis plant was cultivated in the Western, Eastern, Ashanti and Brong Ahafo regions of Ghana, primarily by intercropping [148]. Today, the Volta, Brong Ahafo, Western and Ashanti regions are the principal growing areas [149]. Although cannabis is extremely cheap in Ghana (about \$0.10 for a cannabis cigarette), it is still worth more than alternative crops, so there is no shortage of willing cultivators [150].

In Senegal, where the drug may have been introduced earlier in the twentieth century by Arab traders, cannabis is known as “yamba”. It is grown in the Casamance region and along the southern border with the Gambia, in the Niayes area (north of Dakar), along the Senegal River and in the regions of Kolda, the Karones Islands and the islands of the Saloum Delta [144]. Its distribution is mostly regional, with Dakar, other urban centres in Senegal and the Gambia being significant outlets [151, 152]. In 1998, nearly 70 tons of cannabis were seized, but success in more recent interdiction efforts has been more modest, over 7 tons in 1999 and just under 5 in 2002. Trafficking in cannabis has become a source of funding for the insurgents of the Movement of the Democratic Forces of Casamance, although its relative importance is debatable and the issue may have been exaggerated for political purposes [151, 152]. It has been claimed that the National Patriotic Front of Liberia traded guns for cannabis from the Movement of the Democratic Forces of Casamance.*

There is also documented production of cannabis resin in Senegal, although the extent to which this product is trafficked internationally remains unclear. In 2003, the police in Germany seized 2.7 tons of cannabis resin in a motor home in Hamburg, Germany, which they said had originated in Senegal and had transited through Mauritania and Morocco. Its ultimate destination was said to be the Netherlands ([154], p. 7).

Multi-ton seizures in West Africa have been made in Cape Verde (where an 8.7 ton harvest was destroyed in 2003) [144], Benin (in the counties of Zou, Collines, Mono and Plateau [144], with 2 tons seized in 2002), Guinea (almost 3 tons in 2003) and Côte d’Ivoire (4 tons seized in 2002). Smaller seizures have been made with some consistency in Cameroon, the Congo, the Gambia and Togo, and other areas are said to produce cannabis for local consumption. Equatorial Guinea is said to export cannabis to Spain.

Herbal cannabis market in Southern and Eastern Africa

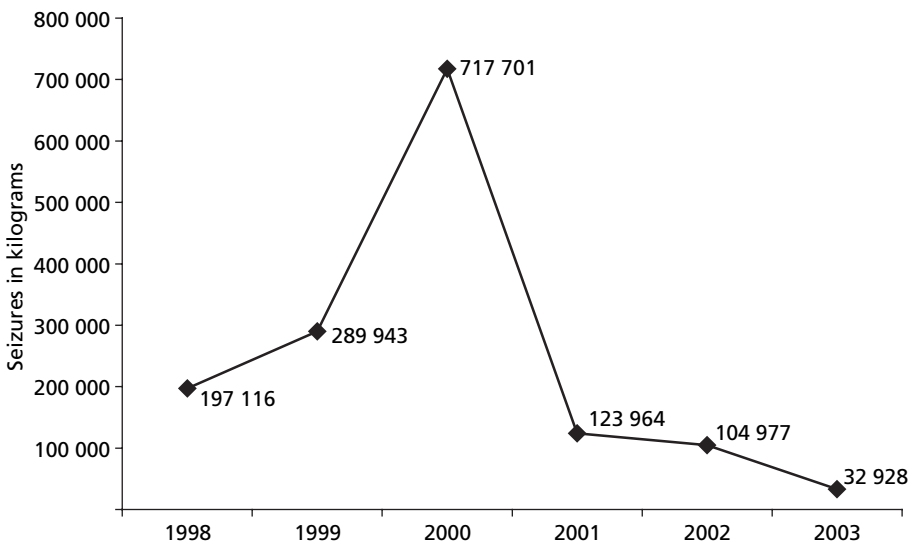
Lesotho, South Africa and Swaziland are the source of large amounts of cannabis, although exactly how significant those amounts are is a matter of debate. Cannabis is also exported from Malawi, including to South Africa and the United Republic of

*Prkic and Deng, cited in Ellis [153].

Tanzania. Little is known about what goes on in the licit economy of the Democratic Republic of the Congo, let alone the criminal economy, but there is also reason to believe that substantial production for local consumption does take place. Interdiction in the United Republic of Tanzania is erratic, but its 2003 seizures ranked third in the world, after Mexico and the United States.

According to Interpol, South Africa was among the world's top four source countries for cannabis herb at least as recently as 2001.* In addition to substantial domestic production, cannabis (known locally as "dagga") is imported into South Africa from other countries, either for local use or re-export, especially from Lesotho and Swaziland but also from Malawi, Mozambique and Zimbabwe [56]. After a peak in 2000, when a very surprising 700 tons of cannabis were reportedly seized, South Africa's eradication figures have declined, indicating a lower priority on the issue relative to other, more pressing, crime problems (see figure XIII).

Figure XIII. Cannabis seizures in South Africa, 1998-2003



Source: UNODC annual reports questionnaire.

Estimates of the total area under cannabis plant cultivation in South Africa vary, but are generally between 1,000 and 2,000 hectares, mainly located in small, semi-cultivated plots in KwaZulu-Natal and Eastern Cape provinces. Average plot size is said to be about 300 square metres [156]. Per hectare annual yields are said to be quite high (2.12 tons per hectare) but it has been questioned whether these figures are actually references to total dry-plant weight. It is also possible that these

*Interpol, cited in South Africa: Country Profile on Drugs and Crime [155].

figures could reflect two or more annual harvests, as it has been suggested occurs in Lesotho. Other estimates have placed per hectare yields at around 1.2 tons per harvest [156].

National prevalence of annual use is relatively low, at 8 per cent of the population aged 15-64 years. This suggests a substantial export market. Authorities estimate that excess production enabled exports to grow from 15 per cent of total production in 1991 to 70 per cent of total production by 1996 [155].

The potential for export from South Africa, however, includes much of the output of Lesotho and Swaziland. It has been suggested that much of what is marketed as “Durban poison” is, in fact, from Lesotho. Cannabis is trafficked from South Africa to Europe and at one point South Africa was said to be the number one source of foreign supply to the United Kingdom. In 2003, the authorities in Ireland reported that 96 per cent of the cannabis herb trafficked into their country came from South Africa, 20 per cent of which was believed to be destined for the United Kingdom. They noted that it was generally carried in by couriers believed to be South African, in quantities of 20-40 kilograms, but volumes were down in recent years, which was attributed to key arrests of traffickers at Dublin airport.

Swaziland is known for producing high-quality cannabis (“dagga” or “insangu”) in the north of the country. The seed stock, including strains such as “rooibaard” and “Swazi gold”, has been marketed internationally, largely by nationals of the Netherlands. In 2002, the police in Swaziland noted cannabis exportation to Japan, the Netherlands, the United Kingdom and the United States [157] and this situation does not appear to have changed much in more recent times. Cannabis from Swaziland is often compacted for export and police have seized mechanical devices for compressing cannabis. Substantial efforts at eradication have occurred over the years and the quality of cannabis from Swaziland seems to have declined.

Cannabis is called “matekoane” in Lesotho and it is thought to be the third largest source of income for its people, after foreign aid and remittances from expatriate workers (who are largely based in South Africa, many involved in the mining industry). It is grown in the Berea, Mokhotlong, Thaba-Tseka and Qacha’s Nek areas. Fields are rarely larger than one hectare and the plant is grown alongside corn. As in South Africa, small farmers sell their produce to wholesalers, who consolidate the many small inputs for trafficking in 50 kilogram mealie sacks. The crop is sun dried. Weeded males are harvested early and sold as “majat” in South Africa, which is used in smoking “white pipe”, a combination of cannabis, tobacco and Mandrax (the sedative methaqualone). This allows “two harvests” per year ([158], p. 193).

Malawi is world renowned for the quality of its cannabis, so much so that it exports to South Africa. The traditional wrap is the well-known “Malawi cob”, wrapped in banana leaves, but these are rarely seen in export markets nowadays.

About 3 to 9 tons are seized annually in this small, under-policed country of about 13 million people, suggesting a substantial export market.

The United Republic of Tanzania recently leapt onto the cannabis seizure map in 2003, coming third in the world after Mexico and the United States for the first time, with a huge haul of 750,000 kilograms. From January through June 2004, over 230,000 kilograms of cannabis were destroyed, nearly as much as the annual total in the previous record year, in 2001 [159].

According to official reports, 80 per cent of the cannabis consumed in the United Republic of Tanzania is grown domestically, with 20 per cent being imported from Malawi; 90 per cent of locally produced cannabis is consumed locally according to the response to the UNODC annual reports questionnaire for 2003. This is remarkable because only 0.2 per cent of the local population aged 15-64 years is estimated to use cannabis, about 39,000 people.* This would leave each user with about 19 kilograms of cannabis apiece, if 2003 seizures had not been made. Clearly, some part of this equation is incorrect: it could be that the United Republic of Tanzania has much higher levels of use than generally believed; or exports are perhaps much greater (to unknown destinations); there could be substantial transshipment of which the authorities are unaware; or the size of seizures could have been somehow miscalculated. Of these, it is likely that the user population has grown in the last five years, since over 5,000 people were arrested for cannabis in 2003, a substantial share of the estimated user population, and over 2,000 people were arrested for selling cannabis in the first half of 2004 alone [159].

As in West Africa, it would appear that many poor farmers in the United Republic of Tanzania are seeking to compensate for the declining prices commanded by the traditional cash crops of coffee, cotton, cashew nuts and sisal, and cannabis is far more lucrative than any other crop. Wholesalers tend to be Somali or Arab in origin, except along the Kenyan border where nationals from that country advance money to local farmers to grow cannabis. Cannabis is cultivated in 10 of the 20 regions of the mainland of the United Republic of Tanzania, especially in those that border on the neighbouring countries of Burundi, the Democratic Republic of the Congo, Kenya, Malawi, Mozambique, Rwanda, Uganda and Zambia, and police believe that as many as half of the families in these 10 regions of the country are involved in the cultivation of cannabis [160]. It is not clear where all this product is being shipped, however.

In Mozambique, cannabis herb for local consumption is produced throughout the country, particularly in Cabo Delgado, Manica, Nampula, Niassa, Sofala, Tete and Zambezia provinces. Limited amounts are exported to neighbouring countries, especially South Africa. The Government of Mozambique has no estimates on crop size. Intercropping is the most common method of production [149].

*This estimate, based on 1999 survey data that were not nationally representative, must be deemed tentative, however.

Uganda has consistently reported annual seizures in excess of 5 tons (except in 2002), and in 2003 reported 25 tons seized. Aside from supplying a small local demand, “enjaga” as cannabis is known in Uganda, is exported to Kenya and beyond.

In Kenya, fairly large-scale cannabis cultivation occurs in the Lake Victoria basin, in the central highlands around Mount Kenya and along the coast. As much as 1,500 hectares of cultivation have been estimated in this area, some in the lower farmlands concealed among traditional crops and smaller cultivation in the higher reaches in areas regarded as national wildlife reserve [161]. Despite two highly publicized, successful targeted raids on 14 farms around Mount Kenya in 2001 and 2002, which collectively destroyed 461 tons of cannabis, police noted increased cultivation of cannabis during targeted raids (some of which were successful, some not) in 2004. Kenyan authorities seized 190 tons of cannabis in 2004 and arrested 3,292 suspects. Officials believe that Kenyan coastal waters and ports are major transit points for the shipment of cannabis resin from Pakistan to Europe and North America [161].

Smaller seizures are consistently made in Ethiopia, Mauritius and the Seychelles. Low-grade cannabis cultivation is also reported for the Comoros and Madagascar.

Substantial seizures of cannabis resin have also been made in Southern and Eastern Africa, including Mozambique (15 tons in 2000), South Africa (11 tons in 2000), Kenya (6 tons in 2000) and the United Republic of Tanzania (2 tons in 2002). This is almost certainly trans-shipped cannabis resin from Pakistan, as there is very little evidence of local cannabis resin production.

Herbal cannabis market in South America

Two countries in South America are major sources of cannabis: from one (Colombia) cannabis is exported beyond the region, and from the other (Paraguay) cannabis is exported primarily for regional consumption. South America is unusual in having high levels of seizures and, according to surveys, low levels of domestic use. No South American country has reported that more than 6 per cent of the population aged 15-65 years consumes cannabis each year. The country with the highest recorded use levels, Chile (5.3 per cent in 2004) [162], is one of the most developed countries with the lowest crime level in the region; it also has one of the lowest levels of seizures. This suggests that the relatively high use rates may be an indication of the accuracy of data collection rather than pointing to an exceptionally high consumption problem in Chile. In contrast, Brazil (with 1 per cent of the population aged 12-64 years reporting cannabis use in 2001), Colombia (an estimated 4.3 per cent), Paraguay (an estimated 1.8 per cent), Argentina (3.7 per cent of the population aged 16-64 years) and Peru (1.8 per cent) were all among the top

20 countries in terms of the weight of cannabis seized in 2003. If the survey figures are correct, either interdiction rates are extremely high, or much of the cannabis cultivated in the region is exported. With the exception of Colombia, however, none of the South American countries is known to export cannabis in any great quantity outside the region.

High regional levels of production with low levels of use pose something of a puzzle. For example, only 1 per cent of the population aged 12-65 years in Brazil reported using cannabis in 2001, a total of just over 1 million annual users. But nearly 200 tons of herbal cannabis were seized in the country in 2002, for an average of about 200 grams seized per user for the year. In addition, almost 2.5 million cannabis plants were eradicated that year. If these had been missed, they could have produced another 250 tons, raising the per-user production to almost half a kilogram apiece. As will be discussed below, after cleaning, this is more than one cannabis cigarette a day per person, which is probably more than was actually consumed by these annual users, many of whom use only occasionally. Moreover, this is just the amount destroyed. Unless interdiction rates are above 50 per cent, this suggests an export market, but Brazil is not known to be a major exporter of cannabis. In fact, it is a major importer. As discussed below, officials argue that most of the cannabis consumed in the country comes from Paraguay.

In a school survey of seven Latin American countries, Paraguay had the second lowest levels of annual cannabis use (1.7 per cent) and cannabis was only the second most popular drug, after “jarra loca” (a mix of wine and tranquilizers) ([163], p. 16). Yet only Brazil and Colombia claim higher seizures than Paraguay, with about 80 tons seized per year, or about 1.3 kilograms for each of about 60,000 annual users. Of course, Paraguay is known to be a major exporter, in particular to Argentina, Brazil, Chile and Uruguay. Still, it is surprising that a country with such a large production to population ratio would have so little local consumption.

This would suggest that either the survey figures on consumption are substantially underestimated (perhaps because of cultural stigma against cannabis use) or local law enforcement is extremely effective in seizing the cannabis circulating in these countries.

In Brazil, cannabis is known as “maconha”. As reported in the response to the UNODC annual reports questionnaire for 2003, official sources estimate that most (80 per cent) of the cannabis consumed in Brazil (especially in urban centres like São Paulo) comes from Paraguay, with only 20 per cent being produced locally. The cannabis from Paraguay enters Brazil by land or air through the borders of Mato Grosso do Sul and Paraná states, through the neighbouring cities in Paraguay and Brazil of Ciudad del Este and Foz do Iguacu, Salto del Guairá and Guaira, Pedro Juan Caballero and Ponta Pora, and Fuerte Olimpo and Pôrto Murtinho. It is then brought to the illicit markets in the states of Rio de Janeiro, São Paulo, Espírito Santo, Minas Gerais, Paraná, Santa Catarina, Rio Grande do Sul, Goiás and the

Federal District. It sometimes reaches the north-eastern region of Brazil, from Bahia to Rio Grande do Norte states [164].

Cannabis produced in the north-eastern region of Brazil is primarily destined for domestic use, according to the Government of the United States, which states that drug production is not an issue in Brazil: “with the exception of some cannabis grown in the interior of the north-east region, which is primarily consumed domestically . . .” [149] Estimates of the area under cultivation in the north-eastern part of Brazil vary widely, from 3,500 hectares to 118,000 hectares. Production is said to involve plantation style operations, utilizing forced labour, with connections to urban-based organized criminal groups ([165], pp. 9-10).

It is true that most of the eradication in Brazil today occurs in the north-east of the country, in particular the Submédio São Francisco region, where cultivation began in the mid-1980s, but also in Maranhão, Rio Grande do Norte and Paraíba states. However, large numbers of cannabis plants (over 1 million) have also been eradicated in other parts of the north as recently as 2001. Processed cannabis seizures are highest not in the north-east but in the mid-western, south-eastern and southern parts of the country. There are also reports of cultivation in the Bahia and Pernambuco region (the so-called “cannabis polygon”), along the border with Paraguay (Mato Grosso), and in the south-east (the interior of São Paulo, Ribeirão Preto and Bauru states) ([165], pp. 9-10).

Cannabis grown in Brazil supposedly has a 90-day production cycle, allowing three to four annual harvests in the irrigated areas of the north-east and three harvests in the rain-fed areas of the north. Farmers are estimated to make as much as \$150 per month (on average) by growing cannabis. The price of 1 kilogram of cannabis at the producer level is less than \$30. This can be sold for approximately \$220 on the streets [164].

Cannabis is marketed in the favelas of Rio de Janeiro by three competing families of drug gangs, which also sell cocaine. All of these families emanated from prison gangs: the *Comando Vermelho*, the *Terceiro Comando* and the *Amigos dos Amigos*. These factions compete violently for the more profitable sales points (*bocas de fumo*), with additional violence applied within the groups, between the groups and communities and against the police.

In addition to being the primary source of cannabis sold in Brazil, Argentina, Chile and Uruguay all claim that nearly all the cannabis in their countries comes from Paraguay. For example, in 2003, Uruguay, a country with a 1.5 per cent annual use rate, seized only 30 cannabis plants. It credits Paraguay as the source of 100 per cent of the cannabis consumed, with most of it arriving by air.

In 2004, authorities in Paraguay destroyed 753 hectares of an estimated 5,500 hectares under cannabis cultivation [149], an area that is about the same

size as the area cultivated in Colombia. In 2005, authorities estimated the total land area under cultivation to be 6,000 hectares, comprising two harvests of 3,000 hectares each (cultivars have been introduced that can grow during the dry season), producing 15,000 tons of cannabis, 85 per cent of which is destined for the Brazilian market, 10-15 per cent of which is for other Southern Cone countries and 2-3 per cent of which is for local consumption ([166], p. 1). The authorities in Paraguay estimate the yield of cannabis crops at 3 tons per hectare [167]. Since it does not appear that this is a result of multiple harvests on the same ground, more research is required to understand this high level of productivity. Many of the trafficking organizations in Paraguay are headed by Brazilian nationals ([166], p. 1). In 2002, Brazilians comprised some 20 per cent of the people arrested for drug crimes in Paraguay [168].

Paraguay has also been the source of some significant seizures of cannabis resin, apparently of local origin. "Cera paraguaya" is the name given to the small balls (about 3 grams each) of cannabis resin produced in that country. They are trafficked to Argentina and Brazil.

Colombia has long been the region's primary exporter of cannabis, cocaine and heroin. In the 1970s, when deliveries from Colombia to the United States were at their peak, some 30,000 hectares were estimated to be under cannabis cultivation. More recently, the United States has estimated that 5,000 hectares have been under cannabis cultivation every year since 1996, with a potential yield of 4,000 tons, of which less than 6 per cent was seized in Colombia. The authorities in Colombia report eradicating 20 hectares and estimate that 2,000 remained for production. Most of this is produced in the areas of Magdalena, Guajira, Cesar and Cauca. Colombian authorities also eradicated some 11,000 cannabis plants in three major operations.

Chile, the country with the highest reported per capita use levels in the region, destroyed nearly 80,000 cannabis plants in 2003 (about 8 tons of potential cannabis), showing sizeable domestic production, mostly in the centre of the country. It estimates local production capacity at about 80 tons, suggesting a reasonable 10 per cent eradication rate. Despite this, the Government of Chile estimates that 78 per cent of its supply comes from Paraguay, that some 20 per cent of the cannabis consumed locally is of unknown origin and that about 2 per cent is from Peru. Some 4 tons of cannabis were seized in 2003; since Chile is not part of an obvious trafficking route to anywhere, these were probably intended to be consumed in the country.

The authorities in Peru say that all the cannabis consumed in their country is locally produced, mostly around the cities of Huánuco and Lima and in the region of San Martín, and that 100 per cent of the locally produced cannabis is locally consumed. Over 19 tons of cannabis were seized in 2003 and over 17 tons of cannabis plants were destroyed.

In 1998 and 2000, Ecuador seized about 18 tons of cannabis, but this performance has not been approximated in any other recent year.

Between 5 and 19 tons of cannabis have been seized in the Bolivarian Republic of Venezuela every year since 1996, 100 per cent of which is said to come from Colombia and about 30 per cent of which is said to be destined for the local market and 70 per cent for various Caribbean islands. Most of this is brought in on the highways, hidden in passenger cars or among foodstuffs in commercial vehicles. The Government of the Bolivarian Republic of Venezuela asserts in its response to the UNODC annual reports questionnaire for 2003 that "Venezuela is a transit country, not a production country."

In Bolivia, the cultivation of cannabis has been found in the regions of Tarija, Chuquisaca and Cochabamba [169].

Some cannabis is produced in Argentina and about 14,000 cannabis plants were eradicated from small patches in 2003, but most cannabis found in Argentina is said to come from Paraguay. Cannabis is moved across the river border with Paraguay and through the provinces of Misiones and Corrientes [149]. According to the response of Argentina to the UNODC annual reports questionnaire for 2003, about 40 per cent of this product will continue on to Chile. The Federal Police and Naval Prefecture of Argentina, in a joint operation in October 2003, seized 5,984 "small balls" of cannabis resin [170], most likely "cera paraguaya".

While cannabis is cultivated and consumed in most Central American countries, exports are small and interdiction capacity is limited. In 1995 and 2000, the Inter-American Observatory on Drugs described Central American seizures as "insignificant" ([171], p. 29). Costa Rica, however, a country with just over four million citizens, claims to have eradicated about two million cannabis plants in 1999, 2000 and 2001, and about one million plants in 2002 and 2003, enough for 100 to 200 tons of production [172].

Herbal cannabis market in Oceania

The market for cannabis herb in Oceania is probably best viewed as many small markets, as there is presently little evidence of widespread cross-island trafficking; there is little need for trafficking, as cannabis plants grow wild in many of the region's countries, including Australia, Fiji, Micronesia (Federated States of), New Zealand, Papua New Guinea and Samoa, as well as in the territory of American Samoa [173].

An estimated 5,000 hectares of cannabis plant are cultivated in Australia in the outdoors [174], often on public lands, but the most commonly detected method of cultivation is actually indoors ([175], p. 34). This combined production exists

almost entirely to supply sizable local demand (14 per cent annual use among those aged 15-64 years in 2004) and almost all cannabis consumed in the country is locally produced. The importation of cannabis into Australia has declined greatly in recent years, owing in part to law enforcement efforts and in part to increased domestic production, in particular indoor production. In 1996-1997, over 24 tons of cannabis were stopped at Australia's borders [176]. In contrast, the 642 detections of imported cannabis in 2003-2004 weighed a total of only 15.3 kilograms, with an average weight of less than 25 grams per detection ([175], p. 33).

Licit hemp production occurs in the Australian states New South Wales, Queensland, Tasmania and Victoria, suggesting illicit outdoor cultivation would be successful in all those areas, but cannabis produced indoors commands twice the price of the product produced outdoors. Authorities report that domestic outdoor cultivation has shifted to a larger number of smaller plots in recent years, in response to interdiction efforts ([124], p. 19).

New Zealand is another country where cannabis production basically meets demand for the drug, and cannabis is neither imported nor exported to any great extent. New Zealand has pursued a considerable crop eradication programme, destroying about half a million cannabis plants annually, but this has had little effect on price [177]. Most plots are situated in the more remote areas of New Zealand's North Island. There appears to be a relationship between cannabis cultivation operations and the manufacture of methamphetamine; the New Zealand authorities reported in the response to the UNODC annual reports questionnaire in 2003 that seven clandestine methamphetamine laboratories had been found during the course of a two-month cannabis spraying operation. Despite this, one cannabis market study concluded: "outdoor cannabis cultivation in New Zealand is currently carried out by a large number of small independent operators and some locally based gang operations, and . . . market violence is not a central feature of the 'business'." [178]

In Papua New Guinea, cannabis is known as "spak brus" and annual use levels are believed to be the highest in the world (30 per cent of those aged 15-64 years in 1995). It was allegedly introduced to the area by Australians after the Second World War, but only reached some of the current cultivation areas during the 1970s [179]. The country produces "nuigini gold", a distinct cultivar characterized by its red stem. "Nuigini gold" was formerly exported to Australia, but is no longer widely available in that country [71]. In 1998-1999, Papua New Guinea was the embarkation point for 30 kilograms of cannabis intercepted by Australian customs authorities, but by 2003-2004, that figure was less than 1 kilogram ([175], p. 34).

Cannabis is produced in remote areas of the highlands in Papua New Guinea, from where it has to be transported by foot, and much of the cultivation appears to be on a small scale. Seizure figures have not been provided to UNODC, but newspaper reports suggest the amounts trafficked are also relatively small [180]. Local

demand is high. In the cities, the drug is dealt by urban street gangsters (known as “raskols”).

There have been persistent rumours that the cannabis trade to Australia had fuelled violence in indigenous Papua New Guinea communities, as cannabis was being traded for automatic weapons [181]. It has even been suggested that a submarine was being used in the trade. Nevertheless, if this was ever a major trafficking issue, it does not appear to be one today, if for no other reasons than that large supplies of the weapons in demand are not readily available in Australia and the growth of domestic production of high potency cannabis in Australia seems to have squeezed imports out of the market. If trade is occurring, it seems to be largely opportunistic and to involve lower calibre weapons ([71], p. 62).

In Indonesia, over 200,000 cannabis plants were uprooted by the Government in 2004 and 24 tons of the drug were seized in 2003. The authorities in Indonesia claim that half the local production is consumed domestically, while the other half is exported to Australia, although this conflicts with what the authorities in Australia say. It has been alleged that the Free Aceh Movement was funding itself in part through trafficking in cannabis. The police in Indonesia report recently seizing over 40 tons of cannabis and arresting a number of members of the Movement guarding the production areas. As in other areas where insurgencies are allegedly involved in cannabis, the Movement is said to levy a tax on rural production, which is controlled by Jakarta-based trafficking organizations [37].

Herbal cannabis market in Europe

Cannabis consumption has increased substantially in almost every country in Europe over the past 10 years and Europe currently accounts for about 20 per cent of global cannabis consumption. While Europe is best known for its cannabis resin market, it also possesses a substantial and growing market for cannabis herb. Indeed, in Austria, Belgium, the Czech Republic, Estonia and the Netherlands, the market for cannabis herb is estimated to exceed that of cannabis resin ([10], p. 44). If estimates in respect of the growing market share commanded by home-grown product in the United Kingdom are accurate, then its market for cannabis herb may also be larger. While it is believed that cannabis resin is still more popular in Germany, the margin is small and may be growing smaller. As discussed above, in countries where cannabis herb represents a cheaper source of THC than cannabis resin, resin may be facing a declining market share.

The Netherlands has long been the epicentre of cannabis cultivation in Europe and the world.

The authorities in Belgium report that 90 per cent of the cannabis produced in that country is for export and that cultivation areas are found mostly along the

border with the Netherlands. Despite this, small-scale production for personal consumption appears to be on the increase. According to the response of Belgium to the UNODC annual reports questionnaire for 2003, some 70 per cent of the cultivation operations detected in 2003 involved less than six plants. Groups operating from Belgium and the Netherlands are said to “control” indoor production in France.

In Eastern Europe, Albania remains a major exporter of cannabis herb. Mass production of cannabis began in the southern parts of Albania in the early 1990s ([182], p. 5). Cannabis herb is said to be trafficked by road from Albania through the former Yugoslav Republic of Macedonia and Bulgaria to Turkey ([183], p. 43). All of the cannabis trafficked into Montenegro and Serbia comes from Albania and about half of this amount remains there, with the rest going on to Bosnia and Herzegovina and Croatia. Albanian cannabis is also trafficked to Italy and Greece (according to the UNODC annual reports questionnaire). Cannabis production in the southern areas of Albania is believed to be destined almost exclusively for export to Italy [184]. Drug trafficking groups are said to be small (three to nine members) and linked by family or “clan” ties. The authorities of Albania report an increase in domestic cannabis prices, attributed to enforcement efforts. Cannabis oil has also been detected, according to the response to the UNODC annual reports questionnaire.

Cannabis is also cultivated in Greece and Italy. Some 200,000 cannabis plants were eradicated by the authorities in Italy in 2003. The authorities in Greece uprooted 21,000 plants in 2003, about 40 per cent of which were found on the island of Crete. The growth in Albanian cannabis production is believed to be linked in part to the crackdown on cannabis cultivation in some areas of Greece [184].

In Bulgaria, cannabis is grown in the south-west (Sandanski and Petrich) and in the north and north-west (Silistra and Dobrich). Many of the growers are elderly, and are paid by people linked to organized criminal groups. Production on public lands is also reported [183]. About half the cannabis herb that is trafficked in Bulgaria is domestic in origin, while most of the balance is from Albania and this product may be trafficked on to Greece and Turkey. Some 12 tons of cannabis plants were destroyed in a relatively small number (31) of eradication operations in 2003, suggesting the existence of large-scale cultivation.

About 20 per cent of cannabis herb that is trafficked in Croatia is domestic in origin, with the balance being brought into the country from Bosnia and Herzegovina (about half of the total), Montenegro, Serbia and other countries. About half of this remains in Croatia, while the rest is sent on to Western Europe. All domestically produced cannabis is consumed in the country, however.

The authorities in Poland report cultivation of cannabis plants in central, south-eastern and western Poland in cereal fields, by forest roads, in gardens and in greenhouses. In 2003, the authorities eradicated over 6 hectares of cannabis

plants and seized 32 indoor operations. They estimate that about 45 per cent of locally produced cannabis is destined for export, mainly to Germany and the Netherlands.

As suggested above, the cannabis market in the United Kingdom seems to be undergoing a transition from reliance on imported cannabis herb and cannabis resin to locally produced cannabis herb. Despite this, large amounts of cannabis are still brought into the United Kingdom. A recent example is the seizure of 5 tons of cannabis from Mexico hidden in a shipping container in October 2005 [185].

Herbal cannabis market in Central Asia

Central Asia, in particular Kazakhstan and Kyrgyzstan, contains what appears to be the largest areas of cultivation of cannabis plant in the world. In Kazakhstan's Chui Valley alone, as much as 400,000 hectares of cannabis plant grow wild, with a potential output of 6,000 tons, although the estimated harvest is only 500 tons [186]. This wild cannabis has an unusually high THC content, up to 4 per cent [187], making it viable for low-end international sale and good stock for cannabis resin production. The consensus, however, is that most of this cannabis is consumed in the region and that its value does not warrant long-range trafficking across multiple borders [188]. Thus, while the productive potential of this area remains immense, it is likely to remain unrealized unless circumstances change.

In the Kyrgyzstan districts surveyed by UNODC, approximately 3,005 hectares of cannabis plant were identified, mostly in Jalalabad province and in four districts within the Issyk-Kul province. More than 70 per cent of the cannabis plant cultivation was found either on abandoned farmland or on land being used for agricultural purposes [187].

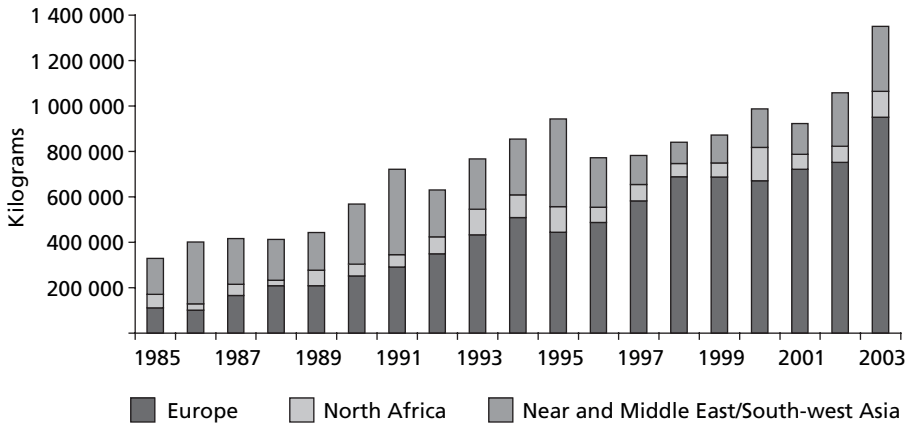
The authorities in the Russian Federation stated in their response to the UNODC annual reports questionnaire for 2004 that 70 per cent of the cannabis herb consumed in that country was locally produced, with another 15 per cent coming from Kazakhstan and Ukraine and 15 per cent coming from Kyrgyzstan and Moldova. In some areas, such as the Russian Far East and the Caucasus region, the demand for cannabis is still almost entirely satisfied by local production [189]. According to the response to the UNODC annual reports questionnaire for 2003, the authorities estimate that 63 per cent of domestic cultivation of cannabis plant occurs in the province of Kursk, with 13 per cent occurring in the Moscow region.

Markets for cannabis resin

Global cannabis resin seizures increased by 25 per cent in 2003 to 1,361 tons, reaching a new all-time high. Cannabis resin seizures increased most significantly

in North Africa (63 per cent), in the Near and Middle East and South-west Asia (21 per cent) (following an increase of 74 per cent a year earlier) and in Europe (26 per cent) (see figure XIV).

Figure XIV. Cannabis resin seizures, 1985-2003



Source: UNODC annual reports questionnaire.

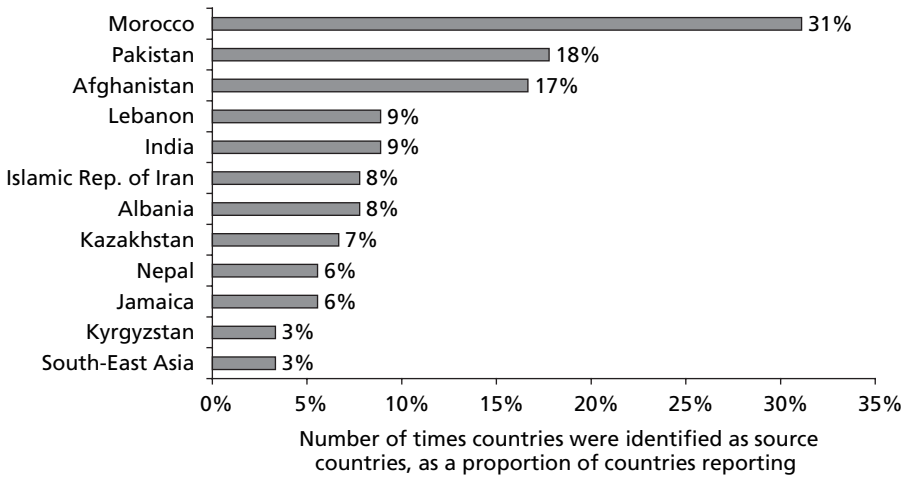
Cannabis resin market in Europe

Over half of the cannabis resin seized in the world in 2003 was seized in Spain (727 tons out of 1,361 tons seized) and 100 per cent of the cannabis resin seized in Spain is believed to come from Morocco. Adding in the rest of West and Central Europe accounts for 70 per cent of the global total (947 tons) and another 96 tons were seized at source in Morocco. Thus, the Western Europe/Morocco cannabis resin market is responsible for just under 80 per cent of global cannabis resin seizures.

The North African expatriate community is an important link in the distribution network for cannabis resin. Some 10 per cent of the people arrested in France in 2003 for trafficking in cannabis were Moroccan or Algerian, and about 12 per cent of the arrests related to cannabis in Italy were of Moroccans, Tunisians or Algerians. The main countries identified as sources of cannabis resin are shown in figure XV.

Morocco is said to supply all of the cannabis resin consumed in Portugal and Spain, 82 per cent of the cannabis resin consumed in France, 80 per cent of that consumed in Belgium, 85 per cent of that consumed in Sweden and 70 per cent of that consumed in the Czech Republic. Much of the cannabis resin transits the Netherlands and Spain before being shipped to other countries. The remainder of

Figure XV. Main sources of cannabis resin, 1999-2003^a



^aBased on information from 90 countries.

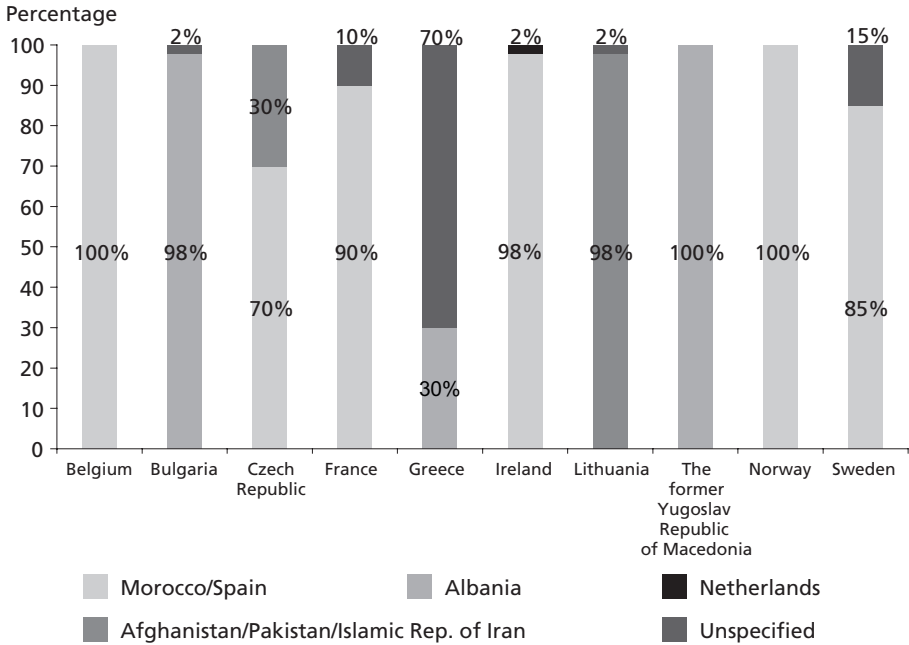
Source: Responses to UNODC annual reports questionnaires.

the cannabis resin supply originates in Afghanistan or Pakistan (e.g. 10 per cent of the cannabis resin consumed in Belgium and 30 per cent of that consumed in the Czech Republic), Central Asia (mostly for the Russian Federation, other members of the Commonwealth of Independent States (CIS) and some of the Baltic countries) or from within Europe (mainly Albania, supplying the markets of various Balkan countries and Greece) (see figure XVI).

In Germany, the bulk of cannabis products seized when entering the country in 2003 came from two sources: relatively small shipments (average about 2 kilograms) from the Netherlands, or massive shipments (average about 1 ton) directly from Morocco (together amounting to about 3.5 tons, out of 8.6 tons imported). Spain was also the origin of a significant amount (just under 1 ton) of medium-sized shipments (average 15 kilograms). In 2004, the size of the shipments of cannabis originating in Morocco dropped drastically (to an average of 64 kilograms) and the leading source of cannabis became clearly the Netherlands, responsible for half of the volume and 78 per cent of the incidents ([190], p. 35).

As noted above, the world’s most significant source of cannabis resin for the Western European market is Morocco. About 80 per cent of cannabis resin seized in Western Europe is estimated to have originated in Morocco. Since cannabis resin is the primary form of cannabis consumed in most of Europe, an analysis of cannabis production for the European market must focus on Morocco.

Figure XVI. Sources of trafficked cannabis resin in selected European countries



Source: Responses to UNODC annual reports questionnaires.

UNODC and the Government of Morocco conducted comprehensive cannabis resin surveys of the country in 2003, 2004 and 2005. The resulting estimates are based on the analysis of satellite photographs (from SPOT 5 and IKONOS)* covering the whole of the Rif area of northern Morocco, and subsequent ground truthing. The 2003 survey placed total cannabis resin production at about 3,070 tons, cultivated on 134,000 hectares of land in the Rif region (equivalent to 10 per cent of the total land or 27 per cent of the agricultural area in the five provinces** investigated) by some 96,600 families, providing income for some 800,000 people in the region. This was significantly higher than the previous estimate by the European Union of 80,000-85,000 hectares for the late 1990s ([191], p. 514) or the 44,500 hectares estimated by the Moroccan authorities in 1995.

The 2004 survey showed a 10 per cent decline in the land dedicated to cannabis plant cultivation (120,500 hectares), with production falling to 2,760 tons ([54], p. 5). This decline was mainly because of lower levels of cannabis plant cultivation

*The survey was based on an analysis of 16 SPOT 5 (multispectral, 10 metre resolution) and 13 IKONOS (panchromatic, 1 metre resolution) photographs.

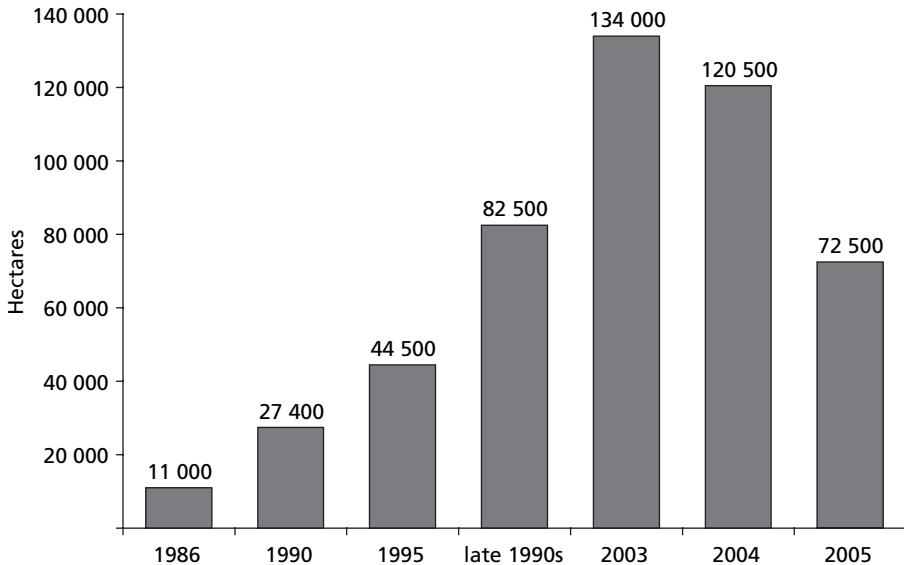
**Al Hoceima, Chechaouene, Larache, Taounate and Tétouan.

in the provinces of Taounate (-43 per cent) and Al Hoceima (-54 per cent), an indirect consequence of the earthquake in early 2004, which led to increased interest and assistance from the authorities. Most cannabis was produced in the province of Chechaouene (50 per cent in 2003 and 62 per cent in 2004).

In 2005, drought caused a drastic reduction in cannabis cultivation, down 40 per cent to only 72,500 hectares. Since much of this production (80 per cent) was on rain-fed land, total cannabis production slid even more drastically, down 43 per cent to 53,300 tons. Further, the cannabis resin extraction rate also dropped, from 2.8 per cent to 2 per cent, resulting in a 62 per cent drop in cannabis resin production, down to just over 1,000 tons ([192], p. 4).

The area dedicated to cannabis plant cultivation of 120,500 hectares in Morocco in 2004 (see figure XVII) was less than the area found in a previous UNODC cannabis survey in Kazakhstan (330,000 hectares in 1998/1999; although most of this was “wild cannabis”) [193] and less than opium poppy cultivation in Afghanistan in 2004 (131,000 hectares), but more than opium poppy cultivation in Myanmar (44,200 hectares) or the Lao People’s Democratic Republic (6,200 hectares) and more than the area under coca bush cultivation in Colombia (80,000 hectares), Peru (50,300 hectares) or Bolivia (27,700 hectares) ([116], pp. 41 and 61).

Figure XVII. Area under cannabis plant cultivation in Morocco, 1986-2005



Sources: UNODC, Maroc: enquête sur le cannabis 2004 [8]; UNODC, annual reports questionnaire data; United States Department of State, Bureau for International Narcotics and Law Enforcement Affairs, International Narcotics Control Strategy Report [192].

Despite the decline of cannabis production in Morocco to 2,760 tons in 2004, production is still higher than in the late 1990s, when it was estimated at around 2,000 tons per annum ([191] p. 514). The increase in production also meant that prices of cannabis resin at the point of source declined, from around 7,000 Moroccan dirhams per kilogram (equivalent to €690 per kilogram) in 1999/2000 to an average of 1,400 dirhams per kilogram (€125 per kilogram) in 2004 ([54] p. 5).*

The yield estimates for 2004 were based on a scientific yield study, conducted on 30 plots across the five provinces of the survey. The yield on rain-fed land was found to amount to 750 kilograms per hectare and the yield on irrigated land was on average 1,270 kilograms per hectare in 2004. The rain-fed area amounted to 106,100 hectares; the irrigated area was 14,500 hectares. Thus, total production of cannabis material was estimated at 98,000 tons. Out of this cannabis material, the farmers produced 1,019 tons of first quality cannabis resin, 921 tons of second quality cannabis resin and 823 tons of third quality cannabis resin, i.e. in total some 2,760 tons of cannabis resin (This was equivalent to 2.8 per cent of all cannabis material) ([54] p. 42).

Subsequent analysis of the THC content, based on samples from the 30 plots in the survey, revealed that the dry cannabis leaf had, on average, a THC content of 1.2 per cent; the dried flowering tops had a THC content of, on average, 2.7 per cent (with a confidence interval of 2.1-3.4 per cent) and the cannabis resin had on average a THC content of 8.3 per cent (with a confidence interval of 7.1-9.4 per cent), with a THC content of the samples analysed ranging from 5.5 to 11.3 per cent ([54], pp. 29-33).

The income for the farmers from the production of cannabis resin was around €260 million in 2004, equivalent to 0.7 per cent of the gross domestic product of Morocco. The amount of money earned from Moroccan cannabis resin in Western Europe (deducting seizures made in Morocco and in Western Europe) was estimated at around €10.8 billion.

Despite the decline of cannabis production in Morocco in 2004, both seizures and estimates of consumption of cannabis resin suggest that the long-term trend since the early 1990s is towards a growth in global production. The *World Drug Report 2004* [194] placed global production at between 5,100 and 7,400 tons. The *World Drug Report 2005* [116] put production at the high end of that range. It would appear that more than 40 per cent of the global cannabis resin supply is being produced in Northern Africa and more than a quarter in the Near and Middle East ([116], p. 83). These two regions account for more than two thirds of global cannabis resin production. Other cannabis resin producing regions of importance are Central Asia, South Asia and, to a lesser extent, South-eastern Europe and the Caribbean.

*Some of the decline appears to have been a consequence of an earthquake, resulting in increased attention being given by the national authorities and the international community to the region concerned.

Cannabis resin market in Central Asia

The second largest market for cannabis resin is the Near and Middle East/South-western Asia region. This region is mainly supplied with cannabis resin produced in Afghanistan and Pakistan and, to a lesser degree, from cannabis resin originating in Lebanon. Some of the cannabis resin from Afghanistan and Pakistan is also being shipped to Canada and to countries in Eastern Africa.

Afghanistan has long been a centre of cannabis resin production, both for regional use and for export to Europe. While today Afghanistan commands only a minority share of the market for cannabis resin in Europe, production remains considerable. Cannabis plants are grown like a hedge around opium poppy plots, with the same farmers cultivating both drugs.

According to the official response to the 2004 UNODC annual reports questionnaire, in 2003 the authorities in Afghanistan reported the area under cannabis plant cultivation to be 52,000 hectares, compared to 80,000 hectares of opium poppy in that year. Each hectare is said to produce 85 kg of cannabis resin a year. This indicates the harvesting of two crops of about 4 per cent yield. Estimated total cannabis resin production was thus 4,420 tons according to the authorities in Afghanistan.

Cannabis production was reported to take place in most provinces of Afghanistan. Research by UNODC in connection with the annual opium survey suggested a cultivation area of about 30,000 hectares. This information was based on interviews with farmers in villages throughout the country. According to these sources, two thirds of the cannabis plant cultivation occurs in just three provinces: Sari Pul (33 per cent), Balkh (18 per cent) and Paktya (17 per cent). Interviews with village leaders produced slightly different results, with both Kandahar and Nangahar also figuring prominently. About two thirds of the villages where villagers said they grew cannabis plant also said they produced opium.

In Afghanistan in 2003, there were more people arrested for cannabis trafficking (62) than for heroin trafficking (41). Cannabis seizures were exclusively of cannabis in the form of cannabis resin (81.2 tons). This accounted for 20 per cent of all seizures made in Afghanistan in 2003. Trafficking in cannabis resin was reported to have increased, with the product going mainly to central Pakistan (often going via Peshawar, crossing the Torkham border) and to the Islamic Republic of Iran and Central Asia (Tajikistan and Turkmenistan). Domestic cannabis trafficking patterns included the movement of cannabis resin from Kunduz, Baghlan, Balkh, Samangan and Sari Pul to Ghor province and then to the Islamic Republic of Iran, as well as cannabis resin from Badakhshan, Takhar, Mazari Sharif, Kunduz, Paktya, Logar and Kapisa being trafficked to markets in Peshawar, Pakistan. The Government of Afghanistan reports that 5 per cent of the cannabis is locally consumed, while the rest is exported.

Most of the processing of the cannabis is reported to take place in the regions bordering with Pakistan. It is processed in the inaccessible areas of Pakistan's Orakzai and Kurram tribal agencies and the Tirah area of the Khyber agency [195]. It is thus difficult to differentiate between cannabis products from Afghanistan and from Pakistan and, while it is widely believed that cannabis is produced throughout Pakistan, it would appear that the bulk of the cultivation occurs on the Afghan side of the border.

Turkey reports that about half of the resin trafficked into that country comes from Lebanon, with 27 per cent coming from the Syrian Arab Republic and 18 per cent coming from the Islamic Republic of Iran. Lesser amounts are also said to come from Jordan. The authorities in both Jordan and the Syrian Arab Republic assert that all this cannabis resin comes from Lebanon. Nationals of the Islamic Republic of Iran are said to be involved in trafficking cannabis resin into Turkey. In 2003, unlike the previous year, no cannabis was detected coming in from Albania. The cannabis plant grows wild in Turkey and production of cannabis herb is known to occur in more than 15 provinces, of which Kastamonu and Ağrı are the largest known producers, accounting for 40 per cent of the total.

Lebanon was once the world's leading producer of cannabis resin. In the late 1980s, cultivation of cannabis plant was estimated to cover as many as 11,000 to 16,000 hectares, yielding up to 1,000 tons of cannabis resin. In the period 1991-1993, forces in Lebanon and the Syrian Arab Republic eradicated illicit cultivation in the Bekaa Valley, Lebanon. Despite this, 40 tons were seized in 1994 [196]. The authorities in Lebanon assert that 98.8 per cent of the cannabis resin produced in the country is also consumed there, with a small share being exported to Bulgaria and Dubai, United Arab Emirates. Most production in Lebanon today occurs in the Bekaa Valley, in the areas of Baalbek and Hermel.

The authorities of the Syrian Arab Republic say 100 per cent of the cannabis resin trafficked in their country comes from Lebanon, and that 95 per cent of it is headed to the Gulf States, with 5 per cent being destined for Turkey. They assert that there is no drug production in the Syrian Arab Republic.

Cannabis herb and cannabis resin markets of Asia

Asia as a whole has the lowest per capita rate of cannabis consumption of any major region in the world (2.2 per cent), but sheer population size means that it is home to the largest number of users. Cannabis also commands a smaller share of treatment demand in Asia than in any other major region (13 per cent).

Asia does host some cannabis supplier countries, however. In Nepal, cannabis plant is cultivated in the southern parts of the country and grows wild through much of the north. Cannabis resin produced in Nepal is trafficked around the

world, with seizures made in Canada, Denmark, the Hong Kong Special Administrative Region (SAR) of China, New Zealand and the United Kingdom. There have been claims that Maoist revolutionary groups are using cannabis to fund their insurgency. Maoist groups are known to have called upon local residents in the Birgunj area of Nepal to increase cannabis production. The authorities of Nepal report that the Maoist groups levy a 40 per cent tax on cannabis production in certain areas [37, 197]. There is evidence that the Maoist insurgents both charge a levy on cannabis resin passing through territory they control and operate a system whereby growers are authorized to cultivate a certain hectareage per year for the payment of a fee [198].

In India, cannabis herb is known as “ganja”, a name whose usage has spread to the many parts of the world with substantial Indian expatriate and immigrant communities. While exports are comparatively light, India is a major cannabis consumer country. In 2004, UNODC and the Ministry of Social Justice and Empowerment of India jointly released the National Survey on the Extent, Pattern and Trends of Drug Abuse in India, the first of its kind. It showed that 2.3 million Indians were dependent on cannabis [198].

Cannabis resin found in India is imported from Afghanistan, Nepal and Pakistan. It is smuggled into India from Nepal across the land border in the states of Bihar and Uttar Pradesh, from where it finds its way to New Delhi and Mumbai [198]. It is also produced in India itself, especially in the Kullu Valley in Himachal Pradesh. In addition, cannabis plants are grown in Andhra Pradesh, Uttar Pradesh, Tamil Nadu, Kerala and Manipur states. In 2004, the Government of India eradicated 214 hectares of cannabis plant. Authorities say that while a percentage of Indian produced cannabis products are destined for export, the vast majority are consumed locally [199]. Cannabis resin from Nepal is trans-shipped through India to other destinations.

Sri Lanka is said to have about 500 hectares under cannabis plant cultivation, especially in the east and the south of the country. The estimated number of regular users is 600,000.

The authorities of Bangladesh say their country receives all its cannabis resin from India and that all of it is consumed locally. About 60 per cent of the cannabis herb in the country is produced domestically, with about 32 per cent being imported from India and 8 per cent coming from Nepal. About 30 per cent of the imported cannabis found in the country is destined for export to Europe. Cannabis is cultivated in the districts of Naogaon, Rajshahi, Jamalpur and Netrokona in the north-western region, as well as the hilly districts near Cox’s Bazaar, Bandarban, Khagrachari and Rangamati in the south-east (bordering Myanmar) [198].

Despite substantial industrial cultivation, cannabis use is not believed to be widespread in China. The drug has been seized in the special economic areas of

Shenzhen, Zhuhai and Shantau, all of which border on Guangdong province, which is close to the Hong Kong and Macau SARs of China. The seized cannabis was produced in Cambodia and Thailand. Eradication campaigns have been carried out in Yunnan province and Xinjiang Uighur Autonomous Region of China. In Xinjiang, cannabis is produced solely for making cannabis resin. Cannabis is marketed by local ethnic minorities and, in Beijing, by Afghan and Pakistani expatriates. Street dealers in Beijing are often unemployed men, waiters and kebab salesmen, while wholesalers are often restaurant owners ([198], p. 62). In the Hong Kong SAR of China, cannabis herb is imported from the Golden Triangle, Cambodia and the Netherlands (*sinsemilla*), often via South Africa, Dubai or Thailand, whereas cannabis resin is imported from South Asia.

Cannabis plant also continues to be cultivated in and smuggled out of Cambodia, the Lao People's Democratic Republic, Indonesia, Myanmar and Thailand. Information from customs authorities suggest that Indonesia and Thailand are also sources of cannabis resin.

Some 14 hectares of cannabis plant were eradicated in Cambodia in 2004 and production is said to be as much as 1,000 tons. Analysis of seizures in recent years indicates that Europe is the major destination for Cambodian cannabis, with other destinations including Australia, the United States and Africa. Much of the production occurs in Cambodia's north-western provinces and is reputed to be "contract cultivation", carried out by Cambodians operating with the financial help and under the control or influence of foreign (especially Thai) criminal syndicates.

A similar phenomenon is seen in the Lao People's Democratic Republic, where low-grade cannabis production largely takes place in the lowlands, in the southern part of the country, and in particular in areas near to the Mekong River (provinces of Vientiane, Bolikhamxai, Salavan, Champasak and Savannakhet). Most of this is for export to Thailand, undertaken on contract for Thai organized criminal groups, who advance money and consolidate production emanating from Cambodia, the Lao People's Democratic Republic and Thailand [200].

Some of this produce is trans-shipped through Viet Nam, confusing its source of origin, while cultivation in Viet Nam is said to be "insignificant" [201]. However, the Vietnamese were once producers of potent cannabis for export to the United States market. Today, Vietnamese nationals have been implicated in cannabis plant cultivation, particularly indoor, soil-based cultivation, in Australia, Canada, the United Kingdom and the north-eastern United States. Viet Nam has a long tradition of cannabis plant cultivation [202], but it has been suggested that widespread cultivation to produce cannabis for psychoactive purposes was taken up only when the practice was introduced by servicemen from the United States during the Viet Nam war.*

*Ayres, cited in Brecher [132].

Cannabis plant cultivation in the Philippines appears to have increased dramatically, with 107 plantations identified in 2005, up from just 9 three decades earlier [203]. In the Philippines in 2004, using manual eradication, the Government destroyed 2,361,581 cannabis plants and seedlings. The largest areas of cannabis plant cultivation are the mountainous areas of Northern Luzon (particularly the Cordillera Administrative Region), Regions 1 and 2, Regions 6 and 7 in Central Visayas, Davao Oriental and Davao del Sur in Eastern Mindanao, and Sulu, Maguindanao and other adjoining provinces in south-western Mindanao [204]. The Communist group the New People's Army is said to provide protection to growers in the northern areas in exchange for a "revolutionary tax". The Abu Sayyaf Group also collects protection money and controls a thriving production site for cannabis herb in Basilan. Most of the cannabis herb produced in the Philippines is for local consumption, with the remainder supposedly smuggled to Australia, Japan, Malaysia, Taiwan Province of China and Europe [149].