Inventory of formal diamond mining in Angola

Christian Dietrich[1]

Angola is the world's fourth largest diamond producer by value, but such is the abundance and high quality of its diamond deposits that the country could effectively lead global rough output. However, while the diamond sector produced nearly US $600 million of rough in 1999 (close to 10% of global output), the government only received US $20 million in official revenue. The underdevelopment of Angola's diamond sector is largely the result of massive artisanal production outside of state control, a protracted civil war and government corruption. State administration covers only portions of the diamond fields, creating an environment that encourages informal prospecting and smuggling. Moreover, despite the deployment of the *Forças Armadas Angolanas* (FAA) around government garrisons in the Lundas and large private security forces, bandit attacks and concentrated incursions by *União Nacional para a Independência Total de Angola* (UNITA) forces have hindered mine development and raised break-even production levels.

Foreign consortium partners also fall prey to the extractive nature of the Angolan elite who are often associated with joint venture mining operations through Angolan holding companies. A temporary return to stability after the Lusaka Protocol created a mining rush from 1996 to 1998 by foreign companies mostly listed on alternative stock exchanges in strongmen with Angolan strongmen. Greasing the wheels of patronage through security payments, informal cash settlements, and bribes and gifts paid out to civilian and military associates diminished the attraction of the diamond fields for companies operating at tight margins. As the mining juniors were largely incapable of materialising in Angola, except on their websites, the formal sector has been dominated by major global diamond producers and companies associated with the Angolan government's most prominent individuals.

The formal diamond sector seemingly does not contribute to the notions of an Angolan resource war, since state revenue from the sector is marginal – contrary to UNITA's dependence on illicit mining. However, in analysing formal mine production, certain themes tend to reoccur in Angola's war economy, such as the prominence of the Angolan elite in successful mining operations and the limited availability of company-specific data. The government and most mining companies have consistently resisted any monitoring of the diamond sector in order to further individual or corporate interests, making the accounting of this vast untapped source of revenue an instrumental step towards transparency. Quantitative analysis also exposes discrepancies in government statistics that, through the nature of their incongruities or lack of explanations, maintain a system of informal practices that intersects with blurred forms of capital accumulation in a resource-fed economy. The reduction of UNITA's stranglehold on Angola's diamond reserves has shifted the plundering of this resource to government entrepreneurs more interested in hand-outs from foreign mining consortiums than the responsible exploitation of this non-renewable resource base.

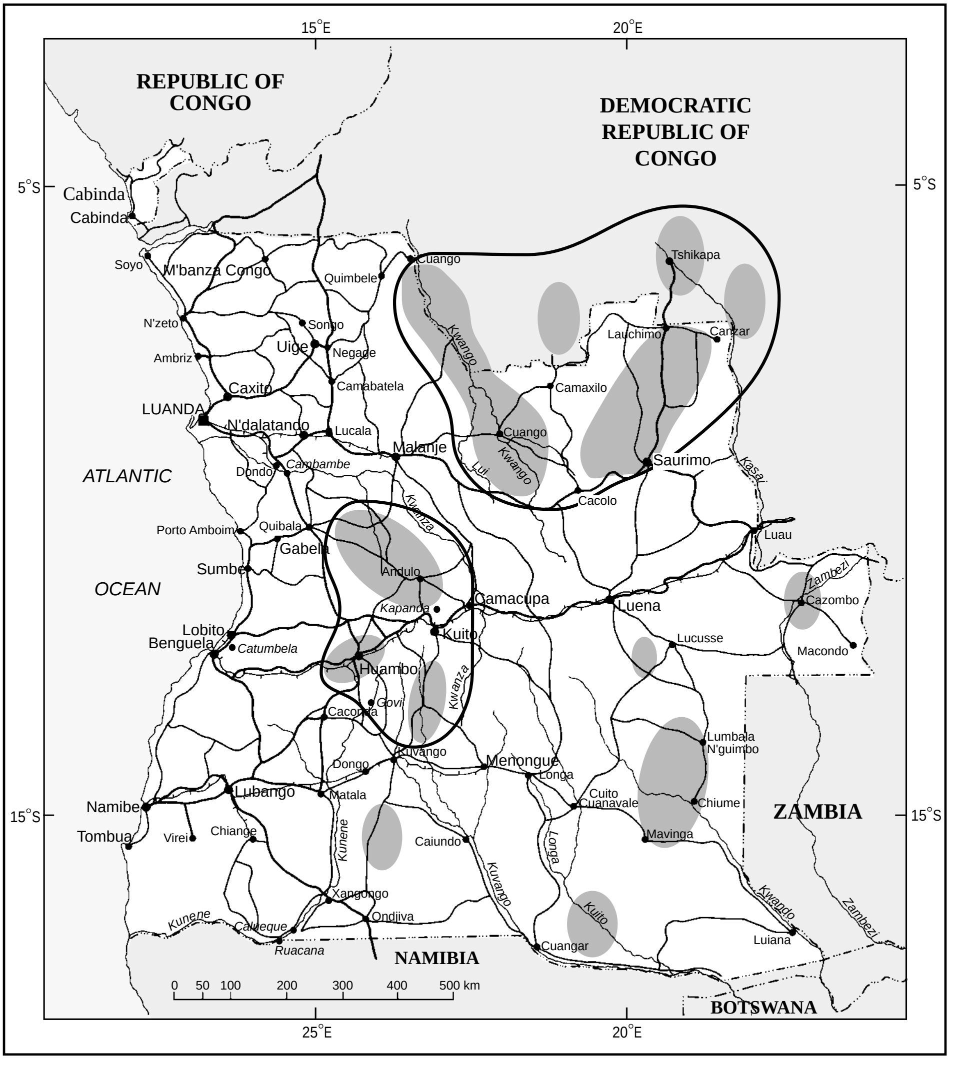
Angola's diamond geology

Diamond reserves are separated into two categories: primary, or kimberlite, and secondary, or alluvial. Kimberlite is volcanic crust that formed many hundreds of million years ago and was thrust to the earth's surface in a cone structure through volcanic activity. Alluvial diamonds are simply those stones that have been washed out of weathered kimberlite pipes and are found in contemporary or ancient river systems. Alluvial deposits generally describe diamonds that have been transported long distances to secondary deposits while elluvials are found above the original kimberlite pipe and colluvials adjacent to the pipe.

Angola falls within the rich Angola-Kasai craton that houses substantial quantities of mineral resources such as diamonds, with oil surrounding the craton in Angola, Congo-Brazzaville, Equatorial Guinea and Gabon. Angola's known diamond fields extend in a large path through the north-east, but are also found in the central, south-eastern and south-western parts of the country (see map). The area of highest diamond concentration is in the Lunda provinces and the Cuango valley, in particular. However, kimberlite pipes are scattered throughout the country, with clusters around Huambo, Andulo, the lower Cuango valley, Saurimo, Lucapa and Mavinga. Moreover, most hydrological features in these areas contain alluvial reserves due to the drainage of rough diamonds from kimberlite sources.

Angola's predominantly north-flowing rivers in the Lundas have widely distributed diamonds from the country's kimberlite pipes to areas as far away as Tshikapa in the southern Democratic Republic of Congo (DRC).[2] Rough found in kimberlite pipes, or next to the pipes, often exhibits well-formed geometric structures, while alluvial diamonds, found in sediment terraces or in rivers (fluvial) are more rounded as sharp corners have been worn off.[3] Water action has also destroyed a higher number of diamonds with internal impurities (inclusions) that have not been strong enough to resist constant weathering. As a result, secondary alluvial deposits produce higher quality gems[4] because the rounded corners allow for greater weight retention in polishing and the lower proportion of heavily included stones increases retail value. Diamonds from the Catoca kimberlite pipe are 35% gem, 15% near gem and 50% industrial,[5] compared with 50% gem, 40% near gem and 10% industrial around Lucapa and Nzaji, and 90%, 7% and

Areas of highest diamond concentration



3%, respectively, in the Cuango valley.[6] Despite the lower quality of kimberlite diamonds, kimberlite pipes enable more profitable mining, but require substantial capital inputs for exploitation.

Angola has more than 600 known kimberlite pipes, of which only a few are known to be diamondiferous and commercially viable. Only one, the 66-hectare Catoca pipe in Lunda Sul is commercially exploited at present and it constitutes about 70% of the country's formal production. Two others – the Camafuca and Camatue pipes – are being sampled for possible future development. Kimberlites offer the greatest untapped diamond resource, but the war has prevented large expenditures of capital on kimberlite development. As a result, companies exploiting secondary alluvial reserves dominate Angola's formal mining sector.

History of diamond mining in Angola

The first Angolan diamond was 'discovered' in 1912 in the Lunda province after similar finds across the border in the Belgian Congo. Diamang (*Companhia de Diamantes de Angola*) was created in 1917 and diamond mining started in earnest in the 1920s. Under the Portuguese, Angolan diamond output peaked in 1971 at 2,4 million carats, ranking the country as the world's fourth largest producer.[7] However, the war for independence and ensuing civil war severely disrupted mining with Angola being reduced to seventh place in world production and diamond output falling to 750 000 carats in 1975 and 350 000 in 1977.[8]

Official diamond production decreased after Angola's independence due to the departure of Diamang's technical staff and security forces. Illicit diamond production increased markedly in the late 1970s, resulting in the *Movimento Popular Libertação de Angola* (MPLA) government dividing the Lunda province into north and south sections in 1978 to restrict population movements.[9] The MPLA also nationalised Diamang, thus transferring the sole rights to Angola's diamonds to the state under the newly established Endiama (*Empresa Nacional de Diamantes de Angola*). Diamang, as an Endiama subsidiary, then contracted De Beers to manage its mines in 1978, but after several lucrative years, Anglo-American Mining and Technical Services terminated its contract in 1985 once UNITA had seriously begun to threaten diamond mines.[10]

Formal diamond mines became the objective of several notable UNITA attacks in the 1980s, with the rebels overrunning operations in the Cuango valley, in which foreigners were taken hostage and marched to Jamba in 1984, and Endiama's Andrada (now Nzaji) sorting centre in 1985. Formal diamond production faltered due to these attacks, falling from US $64 million in 1984 (mostly accumulated before the Cuango hostage crisis)[11] to below US $15 million in 1986.[12] The decline was short-lived, however, as security improved.

The MPLA partially commercialised the diamond sector in the period immediately following the mine attacks. Diamang was dissolved in 1986 and Endiama reorganised the Lunda diamond reserves into blocks similar to the Cabinda oil enclave. Foreign companies were allowed to seek production-sharing agreements with Endiama and make their own marketing arrangements. Two of the first companies to enter Angola's transformed diamond sector were Roan Selection Trust (RST) and *Sociedade Portuguesa de Emprendimentos* (SPE),[13] with the former establishing large operations in the Cuango valley in October 1986 and the latter mining around Lucapa from July 1987. Angola's three active mines under RST, SPE and Endiama (still mining on its own in Nzaji and Dundo) produced a maximum of 100 000 carats per month in 1987, with annual production reaching 750 000 carats (valued at under US $100 million) during the year, and over one million carats in 1988 (valued at US $180 million).[14]

Endiama concurrently sought higher prices outside of the De Beers' Central Selling Organisation (CSO), coupled with the higher retail values of diamonds at the time. The government initiated a system of tenders in 1987, inviting foreign buyers such as Steinmetz-Evens Diamonds (SED), Arslanian Freres, Industrial Diamond Corporation (IDC) and Lazare Kaplan International.[15] Official government exports for 1989 were 1,32 million carats sold for US $234 million, with most of the production bought by IDC, SED and Arslanian.[16]

Although UNITA attacked the RST Cafunfo mine in August 1989 and forced its temporary closure, Angola's mining sector was already returning to a massive output. Increased investor interest in Angola was largely due to talks of a ceasefire and more liberal legislation allowing foreign companies, among other benefits, the unlimited repatriation of profits. De Beers began talks for a return to Angola, SPE invested US $20 million in prospecting in the newly acquired Lucapa area,[17] and RST finally resumed production in the Cuango.

The aura of peace in 1991 and 1992 led to further development of the formal diamond sector. For example, Odebrecht Mining Services, the subsidiary of the Brazilian construction and engineering firm Odebrecht SA, was contracted by Endiama to mine alluvial reserves at Project Luzamba in the lower Cuango valley. De Beers also finalised its return to Angola by investing US $50 million in infrastructure development in the Cuango, as well as an equal sum into prospecting for kimberlites, to be paid over a period of five years.[18] In recognition of this planned investment, De Beers would buy the Cuango diamonds through the CSO. Diamonds from Lucapa and Andrada were to pass through Steinmetz Evens Diamonds that would market the stones in conjunction with the Antwerp-based Endiama Selling Corporation. During this period, the Cuango valley represented the most lucrative mining area and, in 1992, Endiama exported US $250 million in diamonds of which US $220 million was derived from the Cafunfo and Luzamba mining projects.[19] RST's operations at Cafunfo reportedly peaked at 90 000 carats per month during this period and Odebrecht extracted 550 000 carats in total, netting US $142 million[20] over a period of 18 months. Formal production in the eastern portions of Lunda Norte, however, received several major setbacks at the beginning of the peace arrangement. Strikes and low intensity fighting/banditry from September 1991, including a heist of 26 000 carats from SPE, halted mining at Nzaji, Lucapa and Dundo.

Massive artisanal mining also characterised the two years of peace. A rush to the Lunda diamond fields by illicit prospectors of various nationalities and including former combatants, was encouraged by legislation in December 1991 that legalised the possession and sale of rough diamonds. Moreover, the government established buying offices through the Endiama Selling Corporation to mop up rough stockpiles held by individuals in the Lundas, also creating an official outlet for illegally mined diamonds. More than US $100 million was smuggled in 1990,[21] compared to an estimated illicit market of approximately US $300 million in 1991 and US $5–600 million in 1992, which threatened to destabilise the global diamond pipeline. The genuine prospecting explosion began during the exceptionally dry season of 1992 and it was during this period that illicit diamond mining became an established pillar of Angola's shadow economy.

At the end of 1992, Savimbi rejected the results of the national elections and returned to war, taking the most lucrative diamond producing areas, including the newly developed Odebrecht facilities at Luzamba. The government ceded most of the diamond fields, but defended the towns of Saurimo, Lucapa and Dundo. Even when the government recaptured Cafunfo in July 1994, UNITA maintained a strong presence in the Cuango valley, centred around Luzamba, as well as the majority of the eastern Lundas – which the rebels maintained until 1997, reaping several billion dollars in diamond profits.

Despite the capture of the majority of Angola's diamond wealth by UNITA, the government continued production in Lucapa, albeit erratically and at reduced levels. Official diamond exports in 1993 are listed at only 200 000 carats valued at US $30–35 million,[22] a considerable decline from US $250 million in 1992 and US $200 million in 1991. The new joint venture between Endiama and SPE, *Sociedade Mineira de Lucapa* (SML), registered the only formal diamond output but even this was far from predictable given the security situation prevailing in 1993. SML produced 75 000 carats from April to August 1992, but only 12 000 carats from January to March 1993.[23] By August 1993, SML again returned to normal output of 20 000 carats during the month, but the mine was "plundered by hundreds of prospectors", a setback aggravated by striking miners in September/October 1993.[24] Production only recovered to 20 000 carats per month in March 1994.[25] Concurrently, *Sociedade Mineira de Catoca* (SMC) was established in December 1993 to exploit the Catoca kimberlite pipe, with mine development slated to begin in early 1994. This was a positive expansion at the time, although production would only commence in 1997.

The Lusaka peace accords signed at the end of 1994 increased investor optimism in the ability of state jurisdiction to extend to the diamond fields. Act 30/91 that previously liberalised the diamond trade was annulled under a new diamond law in 1994. This new legislation stipulated that only Endiama or joint ventures with Endiama could hold diamond mining rights, awarded by the Council of Ministers. However, the law also made room for contractual agreements between Endiama and foreign partners, after approval by the Ministry of Geology and Mines, as well as the Council of Ministers. Endiama's diamond monopoly was effectively annulled as joint ventures could be foreign-owned in association with an Angolan company, but still in limited partnership with Endiama.[26] The law further made room for legal artisanal diamond production in areas not deemed suitable for commercial mining.[27]

It is not clear if the regulations pertaining to *garimpeiro* activity ever came to fruition although the government initiated the diamond sector stabilisation plan, named Proesda, to restrict access to the diamond fields by illegal diggers and centralise revenue from informal mining. The swell in *garimpeiro* activity in 1995 was likened to the massive illicit prospecting in 1992, with an estimated US $20 million of rough reaching outside markets from Angola per week at the peak of the 1995 dry season.[28] The lack of government control in the Lundas necessitated firm measures to clean-up illicit prospecting in the diamond fields in order to court foreign investment in the diamond sector. Similar mop-up operations had occurred since 1993, although the scale of militarisation during the Proesda mandate expanded considerably, especially under the Cancer II operation initiated in 1996. Cancer II resulted in the expulsion or death of thousands of *garimpeiros*, but failed to formalise artisanal production, particularly in the main zone of government activity from Saurimo to Nzaji. The government operations did, however, reduce unchecked lawlessness and banditry near FAA garrisons in the Lundas, enabling more effective control over proximal mining areas.

The new diamond sector plans also saw the licensing of new foreign rough buyers such as Lazare Kaplan International[29] to bring diamond proceeds from the informal market (comprised of licensed buyers purchasing from unlicensed miners) through the state. While the Endiama Selling Corporation had operated purchasing offices in Luanda with Benny Steinmetz and De Beers, increased activity by foreign buying houses caused a rise in the volume of carats passing through the informal market, with a 94% increase registered from 1995 to 1996, and another 43% increase in 1997 – followed by diminishing increases of 28% in 1998 and 7% in 1999. Unsteady formal sector production at this time increased the prominence of the informal sector as a proportion of official national output.

The diamond sector reforms also saw the licensing of numerous Angolan companies attempting to obtain concessions that could then be marketed to foreigners through production-sharing agreements. Angolan companies did not have the capital to develop diamond deposits and foreign mining consortiums needed local partners, hence facilitating this beneficial financial arrangement for Angola's elite. The number of companies created to exploit this lucrative form of capital accumulation is not known, although one source cites government plans to issue up to 65 mining licenses.[30] A map of concessions in 1997 shows that most of Angola's known diamond reserves have been awarded and lists over 20 companies with holdings, many of which cannot be identified as they have since disappeared. However, from 1996 to 1998, foreign diamond companies and their Angolan partners were confident of their ability to make money from diamond holdings, although the form of this wealth was usually based on rising penny stocks on alternative stock markets rather than profitable mining ventures.

Meanwhile, only a handful of mining companies produced the bulk of Angola's formal production in 1995 and 1996. Of 300 000 carats produced in 1995, SML accounted for approximately 200 000, with the remainder probably derived mostly from Endiama's continuing operations in Nzaji. Some of the most violent clashes during the cease-fire occurred in the Lundas and, as a result, SML's production did not increase in 1996 despite predications to the contrary – SML produced only around 100 000 carats in 1996 and the total formal output was only 230 000 carats. In 1996, the company's concession was actually reduced by over 75%, and smaller blocks hived off to companies associated with the civilian and military elite. Another potentially significant development was the awarding of three diamond concessions to De Beers in March 1996, for which the diamond giant agreed to spend US $75 million on exploration and build a diamond sorting house in Luanda – the concessions, however, could not be adequately prospected due to the presence of UNITA and unruly *garimpeiros*, and the sorting centre remains unfinished in Luanda. Two other major mining consortiums, *Sociedade Desenvolvimento de Mineira* (SDM) and SMC waited in the wings for UNITA's withdrawal. Less visible associations between foreigners and Angolans also increased at this time, such as the operations run by Brian Atwell in Cassanguidi from 1996. Some informal ventures were disrupted by the Cancer II operations[31] with machinery appropriated by FAA officers, although the more legitimate operations continued, and contributed to formal sector production.

Despite the flurry of Endiama activity in licensing holding companies, rough buying agents and foreign mining concerns, the bulk of Angolan diamond production remained under UNITA jurisdiction. Numerous sources cite various estimations of rebel output between US $300 and US $700 million, but UNITA's real diamond production has always been a mystery for some and a closely guarded secret for others. For example, the *Economist Intelligence Unit (EIU)* records De Beers' figures for total Angolan production at US $600 million in 1995, of which Endiama only controlled US $120 million and UNITA US $320 million[32] – but Table 1 shows formal government production at US $167 million suggesting that Endiama accounted for a higher proportion of the country's output. But other sources, including a later *EIU* report, cite UNITA producing close to US $500 million during the same year.[33] Another *EIU* report cites total Angolan production of US $1 billion in 1996, split between UNITA at US $600 million, illegal sources at US $300 million and the government at US $100 million.[34] However, government statistics recorded US $267 million produced by the formal and informal sectors during that year according to Table 1. Basic estimation suggests that UNITA produced about US $600 million annually in diamonds from 1995 to 1997 out of nearly US $1 billion annual production.

The Lusaka Protocol had been pointedly vague in the demarcation of Angola's diamond fields. Savimbi was supposed to join the government of national unity, but it was expected that the transition of UNITA from a military organisation to a political party contesting elections against the MPLA would demand revenue from diamonds. The realistic impasse over territorial control in the Lundas caused serious friction between the rebels and the government, necessitating numerous talks between the opposing parties, beginning in mid-1995. UNITA was to be awarded the right to join the operations of SDM and America Mineral Fields, as well as mine three other concessions through a licensed company, *Sociedade General Mineiro* (SGM), in exchange for vacating the diamond territory to be exploited. SGM did sign a deal in June 1997 for two exclusive concessions in Mussende, Bie province near Nharea, and in Calai, Cuando Cubango province, but further incorporation was delayed over UNITA's claim to the Luarica concession. The deal, like most power-sharing agreements that were unrealised by the end of 1997, resulted from UNITA's unwillingness to vacate its holdings before legal mining rights could be assured which, in turn, would not be granted before the rebels relinquished the diamond territory. This stalemate, however, was broken when UNITA was outmanoeuvred militarily in the Lundas in 1997 and forced to relinquish control of its primary mining sites. Without a bargaining platform, UNITA could no longer demand official incorporation into mining consortia preparing to exploit reserves previously controlled by the rebels. Thus, the official handover of Cuango town to the government in September 1997, Mavinga in October and Luzamba in January 1998 did not result in UNITA gaining territory in negotiations. While UNITA was represented in the Ministry of Mines, the diamond partitioning deal was rescinded by the government, with UNITA only allowed to buy into established mining consortia with its own money, which it never did.

The promise of increasing government jurisdiction over the Lunda diamond fields and the proposed peace deal had created an Angolan mining rush in the meantime. While Angolan concession holders had been licensed starting in 1994 and 1995, the entry of foreign mining juniors increased by 1996. Companies with adequate in-house private security, or mercenary forces were initially seen to be the most effective competitors, especially as the government was seeking to diminish UNITA's military capacity in the Lundas during the quartering process. However, as the peace deal seemingly moved forward, a more diverse array of junior mining concerns received concessions, with their operations protected by Angolan private security companies. Most of these mining companies, many of which were listed on alternative stock markets, announced shareholding in diamond reserves in joint ventures with local Angolan companies often associated with members of the military or civilian elite. Companies such as DiamondWorks and SouthernEra began producing sizeable quantities of diamonds, while others carried out extensive prospecting operations, at least according to their press releases.

The mining rush relied on investor confidence despite the gradual return to war in mid-1998, prefacing future hardships for mining juniors entering the formal sector. More frequent 'banditry' on the diamond concessions during this time resulted in mining companies beginning to reduce their exposure and financial commitment in the Lundas. Moreover, the resumption of full war necessitated cargo transport by air and higher security payrolls, further escalating costs that were often maximised by FAA officers. A mixture of corrupt business practices by members of the Luanda elite, as well as UNITA's vicious assault of Petra employees and the attack at DiamondWorks' Yetwene mine in November 1998 symbolised the rapid decline of junior mining optimism. The Yetwene attack heralded the end of the mining rush, as SouthernEra had also suspended operations towards the end of 1998, creating a graveyard of small mining houses.

The normalisation of the diamond fields from 1996 led to the massive reduction in 'cowboys and bandits' according to one foreigner working in the Lundas, and the resultant mining rush by junior capital was also concurrent with the return of larger players. International Trading and Mining began working portions of the previous SML concession by 1997. Operations at Catoca also began during the same year, followed by SDM in the lower Cuango in mid-1998 (when ITM's other mines also came on-line). The return to war in mid-1998 did not significantly affect these large companies operating close to FAA garrisons, with the exception of SDM which has been forced to evacuate staff several times in the last year. The government primarily protects the core mining areas close to Saurimo, Lucapa, Nzaji and Dundo where the main mines are located, with less emphasis given to concessions peripheral to these principal sites, such as Cassanguidi, Yetwene and Luo. At least 7–8 000 carats must be produced monthly from an alluvial concession for a mine to break even, a tall order for even the more prominent junior companies. Informal practices such as kickbacks given to civilian or FAA elite coupled with UNITA attacks, incapacitated smaller mining companies already on the threshold of profitable diamond exploitation. Rent-seeking by the government elite has similarly plagued the larger mining consortia, but their higher diamond production rate and greater military protection have allowed Angola's formal diamond sector to return to massive output despite the war.

Quantifying total Angolan production

Official output is divided between the formal sector, comprising all mining consortia licensed through Endiama, and the informal sector, comprising licensed rough purchasing companies, reduced in 2000 to a single marketing entity monopolised by the government. Both official sectors exhibit a large grey area where semi-legitimate mining and buying ventures are licensed by FAA commanders or politicians who supply foreigners with valid documentation, but which is not issued by the state. Such semi-legal enterprises can be exemplified by South Africans mining near Cassanguidi with FAA generals, or a South African who established a rough purchasing operation in 1997 after paying nearly US $1 million for licenses, a telephone and an office. Neither the miners nor the rough buyer are really part of the formal or informal sectors, respectively, because their licenses presumably do not come from Endiama and the Council of Ministers. Lastly, illicit diamond buyers and artisanal diggers comprise the unofficial sector although licensed buying houses purchase exclusively from the *garimpeiros* who are not licensed (a procedure that the government hopes to change by licensing artisanal diggers). The informal sector therefore overlaps considerably with the illicit Angolan diamond market, basically defined as diamonds smuggled out of the country, and including UNITA's production. Furthermore, licensed mining companies are widely alleged to have bought from the informal market, although the quantities were probably not substantial. Such a system is neither fully defined nor controlled, with much of Angola's total diamond production leaving the country illegally. The total Angolan production in 1999 in estimated to be within the range of 5 million carats, divided as follows:

- Official exports totalled nearly US $600 million in 1999, comprising 3,45 million carats, divided between 2,1 million from the formal sector and 1,35 million from the informal sector, according to Table 1. Given the numerous references to Angola producing close to or more than US $1 billion per annum during the mid and late 1990s, illicit production smuggled out of the country must be substantial, and can be attributed to UNITA and *garimpeiros*.
- UNITA's production represents an unknown factor, with the rebel group reportedly producing US $150 million in diamonds from the Lundas alone in 1999, according to a partial estimate by De Beers.[35] De Beers does not assess the quantity of rough produced by the rebels in the south-east of Angola where kimberlite and alluvial reserves can be found in substantial quantities, nor does the figure account for UNITA mining in Bié province until late 1999. Moreover, De Beers assumes that UNITA has been forced out of the Cuango valley which is incorrect. UNITA production from all mines could have been close to 1,2 million carats in 1999, earning up to US $300 million, and putting the value of UNITA gems somewhere between the value of Australia's production and the sum of diamonds produced in South America.[36]
- The informal market was entirely comprised of *garimpeiro* and UNITA production in 1999, with 1 357 898 carats valued at US $298 million passing through licensed buyers according to government statistics (Table 1). UNITA diamonds maybe accounted for up to US $50 million of this, meaning that *garimpeiros* produced at least the remaining US $250 million, but probably much more. Given the numerous illicit dealers based in the Lundas and the sale of Angolan diamonds through neighbouring countries, but accounting for organised and secure purchasing methods by licensed buyers, about 40% of artisanal production probably bypassed the informal sector (or at least the official records of the informal sector). Licensed buyers used dubious purchasing methods to compete with illegal dealers but still could not corner the sale of *garimpeiro* production, exemplified by the massive and undefined illicit market for rough passing through Luanda alone. Thus, a further *garimpeiro* production of 600 000 carats, or about US $150 million, is not unlikely, bringing the total artisanal production close to US $400 million from 1,6 million carats.

This chapter will assess formal diamond production and provide a basic framework for an analysis of the informal diamond market in a separate chapter.

Table 1: Total Angolan government diamond production[37]

Carats			
Year	**Formal Market**	**Informal Market**	**Total**
1995	316 942	354 452	671 394
1996	230 054	687 365	917 419
1997	433 323	984 068	1 417 391
1998	1 448 289	1 267 538	2 715 827
1999	2 112 634	1 357 898	3 470 533

US Dollars			
Year	**Formal Market**	**Informal Market**	**Total**
1995	161 473 739	(97 128 221)[a]	161 473 739
1996	267 574 128	(201 013 572)	267 574 128
1997	381 570 419	(266 082 171)	381 570 419
1998	424 905 831	(256 151 805)	424 905 831
1999	279 127 649	298 133 982	577 261 632

[a] The informal market figures are not added to the total US dollars until 1999.

The figures in Table 1 present two major anomolies. First, the informal market should produce higher quality diamonds than the formal market. Second, the formal market's production in 1998 appears to be a complete fabrication.

According to these figures, the informal market was responsible for 11% more carats, but 66% lower value than the formal sector in 1995; 198% more carats, but 33% lower value than the formal sector in 1996; 127% more carats, but 43% lower value in 1997; 14% fewer carats and 65% lower value in 1998; and 56% fewer carats and 7% higher value in 1999 – the one ratio that seems plausible. The informal market usually comprises those stones deemed commercially viable, or parcels predominantly comprising gem quality rough. Artisanal miners mostly collect the higher quality diamonds, while mining consortia mine to the concession's grade, utilising higher technology, and producing a larger proportion of lower quality gems. Therefore, the diamonds produced by the informal sector should be of higher value than diamonds produced by the formal sector, a notion not evident in the government figures.[38]

The volume of diamonds passing through the informal market nearly doubled from 350 000 carats in 1995 to 687 000 carats in 1996, increased by nearly 50% to 984 000 carats in 1997, by about 30% to 1 267 000 carats in 1998, and registered a negligible increase of less than 10% to 1 357 000 carats in 1999. The informal market thus increased the most *before* UNITA had relinquished significant territory in the Lundas, probably as a result of the licensing of rough buying houses in 1996. When the FAA extended its control over the Lundas in 1997 and 1998, the assumption could be made that 'government friendly' *garimpeiros* operating out of or selling through government towns would have expanded their operations to this newly liberated territory, boosting sales to the informal rough market. Government statistics, however, do not reflect this assumption. Instead, less substantial increases in carat volume passing through the informal market in 1998 and 1999 suggest that the widely cited withdrawal of UNITA from the mining areas did not occur. Carats produced by formal mining ventures increased by 387% from the end of UNITA's control over the lower Cuango valley in 1997 to 1999, while the informal sector increased by only 37% over this period. The formal sector increases were only partially derived from territory previously occupied by UNITA (Luzamba and Chitotolo), raising questions about what happened to the output from other territory supposedly relinquished by the rebels. War typically reduces *garimpeiro* activity, but UNITA's production of over US $600 million in 1997 to only about US $300 million at present, leaves a substantial diamond volume that cannot only be accounted for by the formal market and which should logically have been sold through the informal market, especially with Kabila's diamond reforms in DRC in 1999.

The government figures cite carat production by the formal sector increasing by 230% from 1997 to 1998, and 46% from 1998 to 1999. This first substantial rise in production is supported by the fact that many mining companies such as Catoca and SDM began operations in 1998. However, it is difficult to justify the 46% rise from 1998 to 1999 since increased production by Catoca was offset by mine closures and poor results from Calonda. The author's own estimate of carats produced by the formal diamond sector from 1997 to 1999, based on output recorded by individual mines (see Table 3), differs significantly from those provided by the Angolan government only in 1998: 428 000 carats in 1997 (*5 000 carats below government statistics*); 1 983 000 carats in 1998 (*535 000 carats above government statistics*); and 2 175 000 carats in 1999 (*63 000 carats above government statistics*). The underreporting of the 1998 production by the government therefore shows a 52% decline in revenue to 1999, a major reduction even if Catoca's lower valued diamonds did increase as a proportion of the 1999 production based on the above.

Ironically, Table 1 displays a further peculiarity: the total value of diamonds from 1995 to 1998 does not account for the informal market, while the total value for 1999 includes revenue from the informal market.[39] The reason for this is unknown, but may be related to taxation of the entire diamond sector, with the informal sector presumably being excluded from tax figures. Tax rendered by the entire diamond sector has been relatively low (especially with the exclusion of the informal sector from the total revenue figure until 1999), hence the current justification for the Angola Selling Corporation (Ascorp)/*Sociedade de Commercialização de Diamantes* (Sodiam) monopoly:

Table 2: Tax produced by the formal and informal diamond sectors[40]

Year	Value US Dollars	Proportion of Total Value
1995	3 799 576	2,35%
1996	3 933 259	1,47%
1997	6 822 663	1,79%
1998	9 967 895	2,35%
1999	20 747 789	3,59%[a]

[a] Including the informal sector.

Quantifying formal production

Table 3: Commercial diamond mining, formal sector 1997–2000

Concession	Owner / Operator	1997 Est. Output, Carats	1998 Est. Output, Carats	1999 Est. Output, Carats	2000 Avg. Monthly Output, Carats
Chitotolo	ITM / Lumanhe	90 000	90 000	130 000	12 000
Calonda	ITM / Lumanhe / SML	50 000	90 000	40 000	10 000
Mafutu	ITM / SML	—	130 000	150 000	15 000
Lucapa	ITM[a], SML	170 000	195 000	60 000	5 000
Uari[b]	ITM / Lumanhe	—	—	60 000	(Lucapa)
Camatue	SML / Angola Diamond Corporation	—	—	—	—
Cuango	Ashton, Odebrecht	—	60 000	185 000	10 000
Catoca	Odebrecht, Alrosa Daumonty	50 000	1 200 000	1 500 000	120 000
Yetwene	DiamondWorks	—	19 500	20 000	—
Luo	DiamondWorks	28 600	54 600	30 000	—
Luo	SouthernEra	—	24 000	—	—
Camafuca / Camazambo	SouthernEra	—	—	—	—
Cassanguidi	SAA Distributors; SAA / SouthernEra[c]	40 000	120 000	—	8 000
Total		**428 600**	**1 983 100**	**2 175 000**	

[a] Until 31 March 1999, thereafter SML.
[b] Incorporated into SML's Lucapa concession, September 1999.
[c] SAA Distributors or an affiliated company mined 80 000 carats during 1996 and 1997, which has been loosely divided into 40 000 per annum for the table. In 1998, SAA Distributors and SouthernEra mined the concession together.

The formal diamond sector comprises licensed mining operations approved by the Council of Ministers, Ministry of Mines and Geology and Endiama. The formal mines are based around Saurimo, Lucapa, Nzaji, Dundo and Cuango/Luzamba,[41] and can be split somewhat arbitrarily between three main geographical areas: Lucapa to Cassanguidi (460 000 carats in 1999), Saurimo area (1 530 000 carats in 1999), and Cuango valley (185 000 carats in 1999).[42] The present mining axis from Saurimo to Lucapa in reality comprises isolated pockets of stability around formal mines and government garrisons, with proximal mines even attacked by UNITA at times.

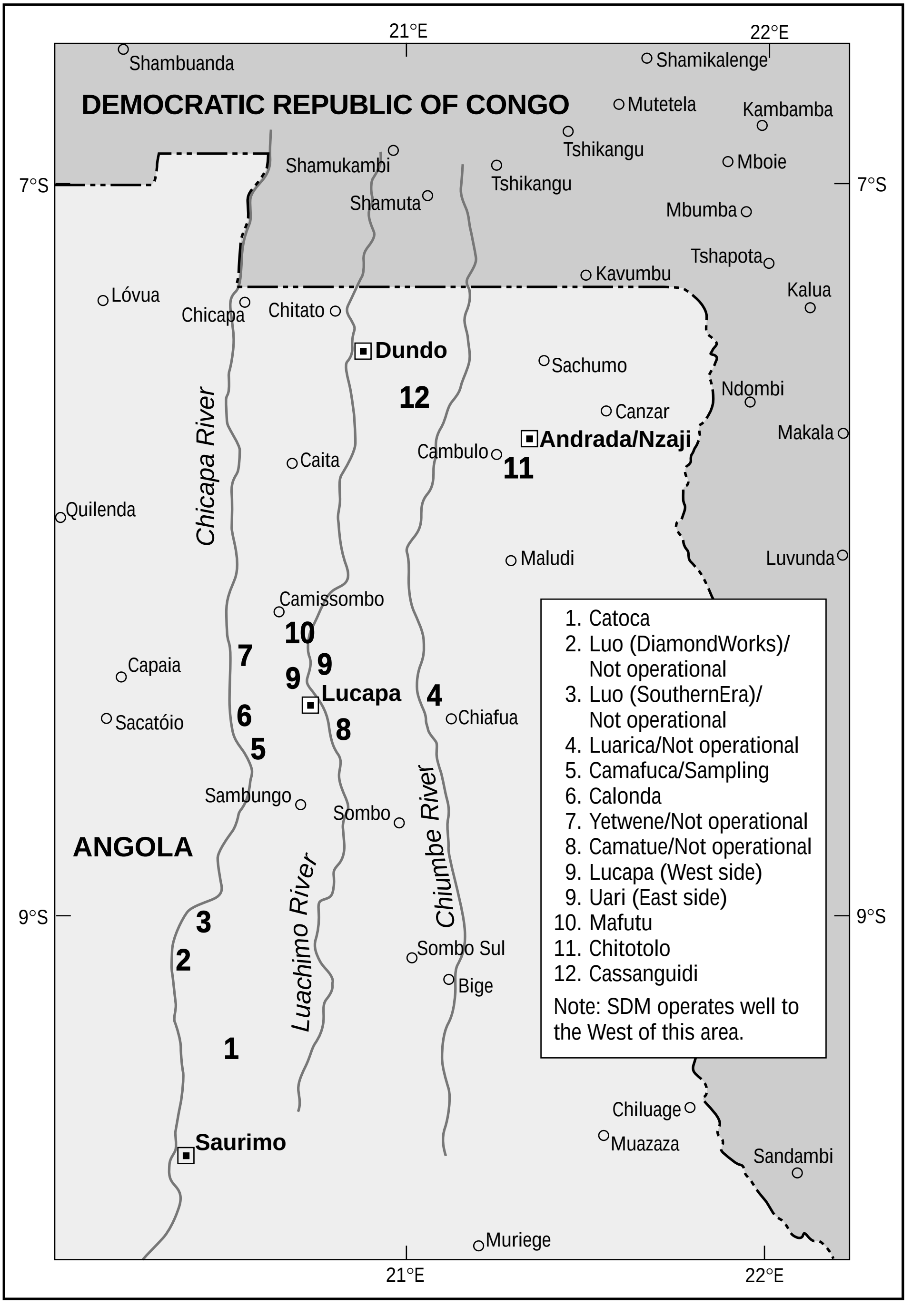
Lucapa, Nzaji and Dundo

The area from Lucapa to Cassanguidi houses most formal mining operations. International Trading and Mining (ITM) operates the Calonda concession along the Chicapa River, about 30 km west of Lucapa, which overlaps with the Camafuca kimberlite prospected by SouthernEra. Directly to the north of Calonda was the DiamondWorks Yetwene concession. South of Lucapa, is the Camatue kimberlite, a concession held by the Angola Diamond Corporation. To the east of Lucapa, DiamondWorks' Luarica concession remains unworked. Directly north of Lucapa town, SML has returned to the Lucapa concession, including the adjacent Uari holding. Further north-east, about 25 km from Lucapa town, ITM is mining the Mafutu concession. Approximately 100 km north-east of Lucapa, near Nzaji, ITM also operates the Chitotolo concession. Between Nzaji and Dundo, SAA Distributors through Global Gems has resumed operations on the Cassanguidi concession after a hiatus in 1999. DiamondWorks was also active in Cassanguidi, but only worked reject pits; Messina Diamonds previously ran this site and reportedly still has a contract for it. It is also alleged that João de Matos, the FAA chief of staff, has a mining interest in Cassanguidi. West of Dundo, an unnamed FAA general is allegedly mining a large area between Lovua and Dundo, and bordering the DRC to the north.

Sociedade Mineria de Lucapa

Sociedade Mineira de Lucapa (SML) is a joint venture created in 1992 between Endiama (51%) and *Sociedade Portuguesa de Emprendimentos* (SPE). Of SPE's remaining 49%, 80% is in turn owned by the Portuguese state investing company *Investimentos e Participações Empresariais SA* (IPE). SML is no more than a holding company with its mining projects contracted to SPE, but with Endiama sharing in the profits. SPE comprises former Diamang employees and was first contracted by Endiama in 1987 to operate a massive concession based around Lucapa. When SML was formed, SPE continued production in Lucapa even during the height of the war, and despite serious setbacks due to gem thefts, striking miners and *garimpeiro* activity, provided the bulk of the formal sector's production.

Formal mining operations in the Lunda's



War and mismanagement, however, had driven SML heavily into debt with SPE registering losses of US $70 million by 1996 due in part to Endiama's unpaid arrears to the company.[43] The purchase of Endiama's debt by IPE resulted in a major financial restructuring of SML in early 1996. SPE signed a new agreement with Endiama in February 1996 valued at $35 million and aimed at boosting production in Lucapa,[44] with SPE receiving greater control over management decisions. The deal apparently also included the reduction of SML's concession from 32 000 to 8 000 sq km due to investment not reaching the negotiated level over the five-year period.[45] This reduction also reportedly resulted from tension between the Portuguese investors and the Angolan government, although SPE initially retained rights to develop the Camatue kimberlite.[46] The confounding developments in 1996 suggest that SPE had initially maintained favourable concessions, but poor mining returns (the company only produced 100 000 carats from three mines in 1996[47]) led to SPE's departure from a direct mining role and the concession was redistributed to other companies. SPE did, however, maintain a financial interest in several of the new concessions.

Calonda and later Uari were awarded to an Angolan company, Lumanhe, consisting of FAA generals who then contracted ITM.[48] ITM was also awarded Lucapa and Mafutu without the generals. Calonda Sul, about 15 km from Camafuca, similarly went to an association of former generals, Antigua Combatants. The company brought in SouthernEra, which also began prospecting the Camafuca pipe that had been rejected by ITM. Yetwene was taken over by DiamondWorks, although it is not known if the concession was first awarded to a domestic company associated with civilian or military elite. The Camatue kimberlite concession that SPE originally maintained was also redistributed by 'tender' and awarded to the Angola Diamond Corporation at a later date.

SPE returned as SML's operator in 1999, taking the Lucapa (April 1999) and Uari (September 1999) concessions over from ITM. The two concessions are mined together at present and produce only about 5 000 carats per month.[49] Such a low production results from SPE not having the manpower or equipment to increase output substantially at present.

International Trading and Mining

International Trading and Mining (ITM) is a mining contractor currently ranked with the *Sociedade Mineira de Catoca* as the largest formal producer by value in Angola.[50] ITM is also the oldest operator having previously worked the Cuango concession now run by SDM, under the name Roan Selection Trust (RST).[51] ITM mining is registered in the Bahamas and formed part of the larger RST group,[52] and was reportedly bought by Chris Hellinger[53] for the name. The previous principal of RST, Andrew Sardanis, left Angola around 1992, approximately the time that ITM was formed, but remained a principal of ITM International.[54] However, it is unknown whether the RST group or ITM International are still connected to ITM Mining (henceforth referred to only as 'ITM'). It is further unknown whether

Hellinger still has financial interests in ITM – he has now left Angola for other opportunities. But his company, TransAfrik,[55] may be linked to ITM through shareholding.[56] Other companies that are allegedly linked to ITM through common principal shareholders are Wade Adams, World Marine and Global Mining Support Group. ITM's current projects are Calonda, Mafutu and Chitotolo; previously, the company also operated the Lucapa and Uari concessions. Although ITM took over portions of the former SPE concession at the end of 1996, production did not begin immediately due to insecurity.[57]

Mafutu North (also referred to as Camafutu or Mafutu), came on line in June 1998 producing 10–12 000 carats per month and increasing to a maximum of 15 000 carats per month in 1999.[58] Mafutu is a 50/50 venture between ITM and SML and enables ITM to profit directly from the diamond extraction. Chitotolo (15% Endiama, 85% split between ITM and Lumanhe) is operated by ITM under contract to Lumanhe, a company owned by former FAA generals. Chitotolo produced 6–7 000 carats per month in 1998, increasing to 13–15 000 in 1999, which is the mine's limit. ITM also operates the Calonda mine (15% SML, 85% split between ITM and Lumanhe) under contract to Lumanhe. Calonda came on line in 1997, producing approximately 50 000 carats during the year,[59] with monthly output initially increasing, but then declining in 1998. As a result, Lumanhe was also awarded Uari due to Calonda's poor performance, with the concession mined by ITM from December 1998 to September 1999. Uari and Calonda then produced about 100 000 carats together during 1999. ITM further mined the Lucapa concession as an operator for SML from 1997 to early 1999, pulling out an average of 14–16 000 carats per month, but with only 30 000 carats produced in 1999 before Lucapa was handed back to SPE in April 1999.

ITM's diamond output was sold through the *Banco Nacional de Angola* (BNA) at 10 annual sales. However, a source close to the company noted a special arrangement with the government. ITM was allegedly requested to put together a parcel each month from the Lucapa concession consisting of 1–2 000 carats, valued at approximately US $20–30 000, with the routine lasting for about one year.[60] The 'special packets' were then sent to the BNA and reportedly forwarded to the president of Gabon, Omar Bongo, as a gift.

Angola Diamond Corporation

Angola Diamond Corporation (ADC) has the lowest profile of any mining company in Angola. The opaque nature of the company results from the fact that it is not known to have mined diamonds in considerable quantities and is allegedly linked to Isabelle dos Santos, daughter of President dos Santos, and former Endiama chief Noé Baltazar. The company is rumoured to have multiple alluvial concessions in Lunda Norte, although this cannot be verified.[61] The one concession to which ADC has been positively linked is a 60% interest in the Camatue kimberlite, with Endiama at 25% and IPE (SPE's major shareholder) at 10%, with the remaining 5% "reserved for Angolan businessmen."[62] SML did not have the capital to develop the 70 metre deep kimberlite pipe south-west of Lucapa, and the concession was put up for tender instead. De Beers, SouthernEra and ITM reportedly bid for it, but it was awarded to ADC in late 1997. As it is doubtful that ADC has the capital for kimberlite development, this concession will probably be offered to a foreign mining consortium, with ADC retaining significant shares in the profits. Another Angolan company, Terramina, is reportedly associated with the Camatue pipe. This company, in turn, has been linked to Noé Baltazar and is said to control Angola Diamond Corporation.[63] Baltazar is also president-director of the new Angola Selling Corporation. It would seem plausible that these central figures would expand the holdings of Terramina or Angola Diamond Corporation, especially with the proposed reduction in all mining concessions to a maximum of 3 000 sq km. Reforms in the informal market, in which Baltazar seems to be a central Angolan figure, may largely reflect a greater centralisation of profits from joint ventures in formal diamond exploitation.

SAA Distributors / Sphere Mining / Global Mining Ventures / Global Gems

SAA Distributors also keeps a low profile as the company is not publicly listed and is not obliged to disclose information concerning its operations. The company is associated with Sphere Mining, Global Mining Ventures Limited and Global Gems Limited, the latter two being ‘off-shore’ companies and presumably representing SAA in Angola.[64] Under the direction of Brian Atwell and in association with Piet Cronje,[65] SAA and its Angolan partners apparently entered into diamond agreements in 1994. The company sought concessions in Luo and Cassanguidi, although there is some confusion over the actual commencement of operations. As for Cassanguidi, SAA brought in SouthernEra as a mining subcontractor[66] in 1998, although the actual agreement could have been made much earlier in 1996 (see the section below); SouthernEra also provided financing for the project. There is speculation over which company ultimately profited from the 120 000 carats mined from the concession in 1998.[67] However, the venture with SouthernEra at Cassanguidi was apparently terminated at the end of 1998 and the concession was not mined during 1999. SAA, through Global Gems and Global Mining, however, is currently working the Cassanguidi concession, having started in early 2000, and is reportedly producing close to 8 000 carats per month.

SAA’s operations at Luo are slightly more difficult to ascertain. SAA finished its contract at Luo in December 1998, after mining for different periods since 1995 or 1996. During 1996 and 1997, SAA mined approximately 80 000 carats, but the average price for these stones was exceptionally high due to the reported recovery of a fancy pink. SouthernEra joined SAA at Luo in late 1997 with SAA or an affiliated company contracted to mine (DiamondWorks also started mining a Luo concession, which could have been under SAA previously, although DiamondWorks’ operations were separate from those of SAA). SouthernEra’s Luo project only produced 24 000 carats in 1998, providing negligible revenue. The mine was also reportedly attacked by UNITA at the end of the year.

Therefore, SAA, through Global Gems, Global Mining Ventures and Sphere Mining, has worked the Luo concession from 1996 to 1997. After this, DiamondWorks began to work in Luo, and SAA joined SouthernEra at another proximal Luo concession in 1998. SAA, through associated companies, has also worked the Cassanguidi concession, having moved in during 1997, and working in conjunction with SouthernEra in 1998. Besides the current mining at Cassanguidi, SAA has been prospecting its Chimbongo concession since December 1998, which includes prospecting the terraces and mining the river. SAA's links with Canadian mining juniors cannot be verified as the company entered into negotiations with Randsburg International Gold Corporation of Vancouver, which subsequently failed,[68] but still retains an unknown number of shares in SouthernEra acquired in 1996.

SouthernEra

SouthernEra paid Sphere Trading Limited and its Angolan affiliates US $2,5 million in shares and cash, for interest in four alluvial concessions in November 1996.[69] However, SouthernEra only recorded substantial production in 1998, reportedly producing 144 300 carats during the year, but suspending operations in 1999. SouthernEra's website lists the company's current concessions as Cassanguidi (30%), Group L (30%), Artisanal (30%), Camafuca (51%), Luo (30%), and Area 1 (Group A) (50%). However, formal production by the company was only derived from Cassanguidi and Luo, and some prospecting at Camafuca. Currently, SouthernEra has no recorded production.

SouthernEra began production at the Cassanguidi concession in late 1997 and produced 120 000 carats from the mine in 1998. Mining was halted, however, over a disagreement with the company's partners at the concession, presumably SAA Distributors, and SouthernEra recorded no output from Cassanguidi in 1999. SouthernEra's Luo concession, next to that of DiamondWorks, commenced production in 1998 and recorded 24 000 carats for the year. However, the company halted production from the concession presumably due to the war, as well as for financial reasons, and recorded no output from Luo in 1999.[70] Although not widely reported, SouthernEra's Luo mine was apparently attacked by UNITA in 1998, which may have led to the mine's closure. After Luo was vacated, SouthernEra's mining equipment and personnel were transferred to Camafuca.[71]

The third concession, and apparently SouthernEra's only current foothold in Angola, is the formidable Camafuca-Casamba (or Camafuca-Camazambo) kimberlite, which lies on the Chicapa River about 30 km west of Lucapa, overlapping ITM's Calonda concession. In April 1997, SouthernEra signed a joint-venture agreement giving the company a 51% interest in the Camafuca kimberlite pipe, obtained through the issuing of US $3 million in SouthernEra shares and US $2 million in cash to SAA Distributors in May.[72] The shareholders in the concession are listed as SouthernEra (51%), Endiama (20%), SML (15%), *Consorcio Mineiro Camafuca-Camazambo* (Comica) (7%), SAA Distributors (7%).[73] SouthernEra initiated computer modelling in 1997 and later, bulk-sampling of the kimberlite, scheduled to be finished in 1999. According to the company, it only produced 3–4 000 carats from the sampling. The Camafuca kimberlite 'pipe' is the largest in the world, but technically consists of five different overlapping pipes. However, a river runs through the kimberlite making mining a capital-intensive affair. It is unlikely that SouthernEra can generate the necessary capital and is therefore looking to sell its shares or take a junior role in the kimberlite mining. The company recently concluded an agreement whereby Welox Limited of Hong Kong will acquire up to a 32% interest in the mine – about half of SouthernEra's present 65% interest (including SAA and Comica), with the rest held by Endiama (20%) and SML (15%).

A recent development was a suspected UNITA attack at the Camafuca kimberlite site. Sixty armed men overran the mine, killing a Gray Security consultant and abducting seven Angolan workers on 7 August 2000.[74] Infrastructure was not badly damaged with the bandits or rebels only stealing canned food.[75] A bizarre twist to the story is that two South Africans working for or with SouthernEra in 1999 were reportedly under observation by the Angolan police in Lucapa as possible UNITA sympathisers. The suspicions that the two individuals are spying for UNITA may have resulted from an attack on SouthernEra's Luo mine in 1998.

DiamondWorks

Despite the highly publicised corporate friendship between DiamondWorks and Executive Outcomes, the company has been a real loser in Angola and is rumoured to be on its way out of the country. DiamondWorks, through its Angolan subsidiary, Branch Energy, worked the alluvial Yetwene and Luo concessions. According to DiamondWorks' 1998 annual report, paradoxically entitled 'Out of Adversity', the company's Angolan operations produced 28 600 carats in 1997 (average value of US $238 per carat) and 74 600 carats in 1998 (average value of US $173 per carat). The 1998 production was split between Luo (54 500 carats), Yetwene (19 500 carats), and sampling at Luarica (600 carats). As a result, net sales of production in 1997 were US $10,96 million, and US $5,16 million in 1998. In the first quarter of 1999, DiamondWorks produced approximately 8 000 carats only from Luo, 10 000 carats in the second quarter (split about evenly between Luo and the newly reopened Yetwene), and just over 30 000 in the third quarter, with Luo making up a slightly larger percentage of the production; no figures are given for the fourth quarter.[76]

Yetwene was the more profitable of the two mines when it was operational. Production at Yetwene commenced in July 1998, with an average monthly output of about 5 000 carats, but operations were suspended in November 1998 when the mine was overrun by UNITA, with several of the company's employees abducted or killed. DiamondWorks suffered major financial losses due to the termination of Yetwene's output. Although the mine was reopened in mid-1999, it was closed again at the end of the year.

Operations at the less profitable Luo mine began in July 1997 after Branch Energy had signed an agreement with an Angolan company, Tricorp,[77] which had been awarded the concession by Endiama. Production at Luo averaged about 5 000 carats per month, which remained constant throughout 1999 despite a few profitable periods. The Luo concession also includes the Camatchia and Camagico kimberlite pipes and at one stage plans were made to exploit the Camatchia pipe. Production at Luo was also terminated at the end of 1999.

Saurimo area

To the north-west of the FAA's major airbase at Saurimo in Lunda Sul is the Catoca kimberlite project between the Chicapa and Luachimo rivers. The Luo concessions held by DiamondWorks and SouthernEra were also to the north of Saurimo, about 50 km south of Lucapa.

Sociedade Mineira de Catoca (SMC)

The Catoca kimberlite pipe is the world's fourth largest in terms of surface area with reserves estimated between 2–300 million carats, but possibly more.[78] The Catoca project began in September 1997, and output was probably only 50 000 carats during the last four months of the year as mines take time to reach considerable volume. The mine produced about 100 000 carats per month in 1998, and increased to 120 000 per month in 1999. Presently, Catoca's production is above expectation, although more substantial increases in output will require a second phase of capital injection. Catoca's contribution to total formal sector production in 1999 was about 70% by volume, but approximately 40% by value[79] due to the kimberlite's lower quality diamonds.

The SMC joint venture consists of Endiama (33%), Almaazi Rossi Sahka (Alrosa) (33%), Odebrecht (16%) and Daumonty Financing (18%).[80] In the 1980s, Yakutalmaz, Alrosa's predecessor, conducted feasibility studies of the Catoca kimberlite. The Russian mining parastatal and De Beers both competed for the kimberlite concession in 1991, but SMC was formed in 1992 as a Russo-Angolan joint venture, with Odebrecht contracted for development and mining. Alrosa's entrance into the Angolan diamond sector was largely based upon deals concerning the repayment of Angola's debt to the Soviet Union for weapons procurement during the Cold War. Construction of Catoca was delayed by the Angolan war and only began in earnest in 1994, and was mostly completed by mid-1997.[81] Alrosa, however, was unable to finance the entire operation, putting up US $55 million out of a projected US $90 million. This necessitated the entry of Daumonty in 1997, run by Lev Leviev, to provide the remaining finances – after the participation of De Beers was again rebuffed.

Alrosa is Russia's major diamond producer and is responsible for almost all of the country's rough production, which accounts for nearly 20% of global output. The company's "chief goal [is] to meet the maximum demand of Russian diamond cutting facilities for raw diamonds."[82] Catoca is Alrosa's largest foreign mining project, although the company has also entered into negotiations with Namibia and South Africa, much to the consternation of De Beers.

Lev Leviev is an Israeli/Russian *diamantaire* who joined the Catoca board of directors after his company, Daumonty Financing, invested US $25 million in the Catoca plant and injected more than US $5 million into the company's capital base.[83] He was subsequently awarded a deal, giving him first option to buy the company's production, although the actual percentage moving through Leviev at present is unclear. Leviev is quoted as saying: "nearly all of the Catoka [sic] production would go for his diamond-cutting factories in Israel, China, Russia, Ukraine and India."[84]

Leviev has a diverse array of diamond and real estate holdings through various companies under his control such as Leviev International Diamonds[85], which in turn reportedly owns Ruis Diamonds,[86] as well as Africa-Israel Investments Ltd.[87] Arkaday Gaydemak, the reputed French-Israeli arms dealer, reportedly bought a 15% interest in the latter. This association has led diamond industry insiders to conclude that the new Sodiam/Ascorp diamond monopoly in Angola, in which Leviev is the premier foreign partner, has just as much to do with arms payments and oil interests as it does with diamonds. Leviev is also expanding his participation in the formal sector through Welox Ltd, reportedly associated with his group of companies.[88] Welox recently entered into a deal to buy up to half of SouthernEra's shares in the Camafuca kimberlite pipe.

Cuango valley

Sociedade Desenvolvimento de Mineira (SDM) mines alluvial deposits in the southern, or lower Cuango valley, based around the town of Cafunfo and the airport at Luzamba. The International Defence and Security concession in the northern Cuango valley has remained inaccessible due to UNITA activity.

SDM

Odebrecht Mining Services and Endiama established SDM in June 1995 to mine the lower Cuango valley river basin. Ashton Mining Ltd was later incorporated in October 1996, with the three partners receiving equal shares in SDM. Ashton financed a large portion of SDM's development at a cost of well over US $100 million, and was awarded the right to market the project's output. Ashton sent the diamonds through De Beers' CSO from December 1998 to April 2000 when the marketing agreement was cancelled by the Angolan government. Ashton is a global diamond major, operating the Argyle mine in Western Australia while

Odebrecht also has previous mining experience from earlier operations in Luzamba.

SDM is based in Luzamba and exploits reserves within a radius of 25 km but the concession covers a massive 85 600 sq km spread over the Lunda Norte, Lunda Sul, Bie and Malange provinces, which includes some of Angola's richest alluvial fields. The Cuango's high quality gems fetch in excess of US $250 per carat on average, making SDM one of Angola's most promising alluvial operators. However, results have been poor.

SDM gained access to the concession in January 1998, but only commenced production in August, due to the need to rebuild infrastructure degraded by the rebels, as well as the continued insecurity in the Cuango. Production therefore only stated in the fourth quarter of 1998 with output probably around 60 000 carats, but with 100 000 carats cited by Terraconsult.[89] Output has since fluctuated enormously with production at 12 296 carats in the first quarter of 1999, 9 645 carats in the second, 32 786 carats in the third, 130 673 carats in the fourth, and 35 836 carats in the first quarter of 2000.[90] SDM therefore produced 185 400 carats in 1999, similar to estimates of an average 13–15 000 carats per month given by independent sources mining in the eastern Lundas. Such low production figures seem plausible in light of the UNITA attacks[91] and poor results from river diversions in the earlier portions of 1999. The fluctuations do seem a bit extreme when considering that the mine averaged about 2 000 carats per month during the second quarter of 1999, then 8 000 per month in the third quarter and 32 000 per month in the fourth, falling again to 9 000 in the first quarter of 2000. Heavy rains will reduce a mine's grade, in this case already lower than expected at the beginning of 2000, but such major alterations are uncommon.

Other alluvial mines, such as ITM's Calonda concession, must produce 7–8 000 carats per month to break even. SDM's large security payroll, including 700 Alfa-5 guards, the presence of sizeable FAA units, as well as massive infrastructure development (requiring more flights of diesel, machinery, spare parts, and miscellaneous equipment) at the concession would require a higher minimum production to break even. Thus, SDM should only be registering a marginal profit, an unlikely scenario for one of Angola's premier mining consortia with extensive mining acumen between the participants. One source cites the value of SDM's production at US $60 million in 1999[92] requiring an average value of US $323 per carat. Ashton only sold 86 084 carats in 1999 for US $24,2 million, averaging US $281 per carat,[93] with the remaining 99 000 presumably sold in early 2000. As a result, it is difficult to estimate the profit margin of the SDM project.

As a reference, mining conducted by RST until 1992 in the Cuango valley produced up to 90 000 carats per month with less comprehensive infrastructure developments and more obsolete machinery. Odebrecht also produced approximately 30 000 carats per month in 1991 and 1992. Since alluvial reserves were not exhausted during UNITA's occupation of the lower Cuango (contrary to several reports by the press), SDM's production should be higher than currently reported.

Conclusion

The discourse on the country's 'resource war' has largely neglected Angola's formal diamond production because of the low government revenue from this sector. Ironically, more substantial themes reoccur when analysing basic questions such as who is mining, where and in what quantity that have remained unanswered previously. Quantifying the more visible formal sector highlights the peculiarities of certain companies and individuals involved in diamond mining, helping to define the role of diamonds as an important resource base in Angola's limited economy. An analysis of the formal sector thus exposes the mass of conflicting or absent evidence, suggesting a certain degree of informal practices.

Discrepancies between what Angola is reported to have produced officially and what has actually been produced serve as the basis for other chapters that look at diamond smuggling and the informal diamond economy in the Lundas. Both thrive on the government's unwillingness to impose measures ensuring transparency and accountability on the formal diamond sector. Indeed, while the government may not fund its war through diamond sales, the informal arrangements and lack of reporting in the formal sector exemplify the even murkier informal and illicit diamond markets in Angola.

Diamond reforms instituted at the beginning of 2000 seek to alter the formal and informal diamond sectors drastically. Basically, the six licensed rough buying houses had their licenses revoked with Sodiam, a government monopoly, contracting Ascorp to market Angola's entire production, thus forcing mining companies to sell through the new system. Simultaneously, it was announced that all concessions were to be reduced to a maximum of 3 000 sq km. Companies such as SDM currently send their stones through Ascorp, but significant alterations in concession sizes seem unlikely and may be another method of forcing foreign joint venture partners to undergo the expensive process of renegotiation. The government is long overdue in auditing Endiama and rescinding the previous wholesale licensing of unsuitable Angolan companies during the mining rush between 1995 and 1998. However, it has yet to be seen whether current controls are to be implemented in the interest of the Angolan people or rather to the benefit of a smaller Luanda elite seeking to justify its domination of profitable diamond concessions for sale to foreigners. Given Angola's massive alluvial and kimberlite reserves, diamond mining alone could lead the country's development as witnessed in Botswana. However, the war is only partially to blame for the improper management of the resource and appallingly low official revenues derived from its mining.

Endnotes

1 The author would like to acknowledge the assistance provided by several persons presently or formerly mining in Angola.

2 The poor quality diamonds in Mbuji-Mayi, southern DR Congo are colluvial, meaning that many alluvial reserves to the north of the Angolan border have been transported from Angola's kimberlites.

3 Geographic origins usually cannot be determined from alluvial reserves, although features of specific kimberlite mines may serve as an indicator. Unfortunately, such distinctions are of little use if UNITA is mining in close geographical proximity to government-held territory; specific location cannot be determined in alluvial goods at this point in time. Moreover, one must wonder whether distinctions based upon generalisations would ever enable successful prosecution of suspected dealers in dirty diamonds.

4 This is a simplification because the geometrical structures in kimberlite goods are also beneficial for cutting while the higher proportion of odd shaped alluvial goods are often 'makeables' and are not sawed.

5 C Muller, Angola Kimberlite Mining Seen Operational September, *Reuters News Service*, 24 August 1995.

6 H Ashton, The Diamond Industry's Awakening Giant – Angola, *SMK Securities Investment Research*, 11 June 1997, citing 1983 Diamang figures. Ashton can be reached through BOE Securities in Johannesburg, South Africa.

7 Diamang, owned by Portuguese and Belgian interests, had formed a joint prospecting company, Condiama, which operated from 1970–1975.

8 I Kaplan, *Angola: A Country Study*, The American University, Washington, 1979, p 222.

9 Ibid p 223.

10 UNITA began seeing the government controlled mines as legitimate military targets and overran the Andrada sorting centre in March 1986, taking two hundred foreigners prisoner.

11 Dos Santos Reiterates Intention to Boost Non-Oil Sector, but Improvement in the Security Situation Needed First, *Gas Daily Risk Monitor*, 17 March 1987 from Reuters Business Briefing.

12 Endiama Wins 'Significant Premium' for Diamonds, *Financial Times*, 29 November 1988 from Reuters Business Briefing.

13 Much of SPE's staff was comprised of former Diamang employees who had been involved in Angola's diamond production and marketing before independence. SPE has also been spelled *Sociedade Portuguesa de Empreendimentos*

14 Endiama Wins 'Significant Premium' for Diamonds, op cit.

15 Diamond Export Deal with USA Company, *Business Day*, 10 March 1989, from Reuters Business Briefing.

16 Belgian Companies Buy 90% of Angola's Diamonds, *De Financieel Ekonomische Tijd*, 27 September 1990 from Reuters Business Briefing.

17 SPE was awarded an 84 000 sq km concession surrounding Lucapa in partnership with Endiama in the beginning of 1990. Source: Portuguesa de Empreendimentos (SPE) Invests in Angola, *Diario de Noticias*, 12 January 1990 from Reuters Business Briefing.

18 Diamond Deal with De Beers, *Africa Economic Digest*, 21 January 1991 from Reuters Business Briefing.

19 Angolan Diamond Output Hit by War and Rainy Season, *Reuters News Service*, 9 March 1993.

20 C Muller, De Beers, Brazilians in Talks on Angola's Diamonds, *Reuters News Service*, 11 October 1995.

21 Diamond Losses – Endiama Loses Over $100M in 1990 due to Smuggling, *Africa Economic Digest*, 9 September 1991 from Reuters Business Briefing
22 Economist Intelligence Unit (EIU), *Angola Country Report 2nd quarter 1994*. EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000. However, the EIU Country Report Angola 2nd quarter 1995, cites 295 000 carats worth US $63 million, as taken from World Bank statistics.
23 IPE (Portugal) May Move out of SML, *Expresso*, 22 May 1993 from Reuters Business Briefing. The article cites SML's production in kilos of diamonds that the author believes was mistakenly inserted for carats.
24 Diamonds Stolen at Minas do Lukapa, *Diario de Noticias*, 14 October 1993 from Reuters Business Briefing.
25 N Shaxson, Angola: Diamond Production Seen Up in Angola's Lucapa Area, *Reuters News Service*, 14 March 1994.
26 Angola's Minerals – Miner Attraction, *The Economist*, 1 July 1995 from Reuters Business Briefing.
27 The diggers were to be licensed and allowed to work in 'restricted zones' adjacent to commercial mining activity in 'protected zones'. Licenses were to be granted to those residing in the diamond fields for at least five years, with access by unlicensed diggers prevented. A third tier were 'reserve zones' on the periphery of formal and informal mining and that were to be exploited in the future, with access to the areas also restricted. EIU, *Angola Country Report 3rd quarter 1994*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.
28 Angola's Minerals – Miner Attraction, op cit.
29 By October 1996, LKI after several years' absence from Luanda, signed a five-year agreement to buy rough from Angola with the agreement concluded between Endiama and Sociedade Angolana, described as a "consortium of Angolan investors". Source: Lazare Kaplan Announces a New Diamond Venture in Angola, *New York Business Wire*, 11 October 1996 from Reuters Business Briefing.
30 EIU, *Angola Country Report 1st quarter 1996*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000, according to the journal Africa Energy and Mining.
31 According to John Liebenberg, two South Africans, Gert Potgieter and Cicero Combrink, mined in Dundo under a company named Esperanze Group in 1995. Combrink then started Cacom Diamonds but was arrested when entering Angola from Namibia in 1996 during the Cancer 2 operations. Cacom was in partnership with an Angolan company Sicofal with an FAA general as one of its directors. J Liebenberg, Treasure-Seekers Find Only Trouble, *Mail and Guardian*, 20 September 1996, www.sn.apc.org, 26 June 2000.
32 EIU, *Angola Country Report 2nd quarter 1996*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.
33 EIU, *Angola Country Report 4th quarter 1996*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.
34 EIU, *Angola Country Report 1st quarter 1998*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.
35 The International Institute for Strategic Studies cites De Beers figures of "non-conflict" diamonds from Angola accounting for US $468 million in 1999. This is ironically US $109 million *below* government figures from the formal and informal sectors for the same year suggesting a massive discrepancy or the lack of confidence in the Angolan government's diamond sector. International Institute for Strategic Studies,

Diamonds and conflict: strategies for control, *Strategic Comments*, International Institute for Strategic Studies, vol 6 no 4, May 2000.

36 Dividing US $150 million by an average stone price of US $250 in the Lundas gives a total of approximately 600 000 carats mined by the rebels in the Lundas if the De Beers figures are accepted. However, it has yet to be proven that UNITA's mining operations in the northern Cuango valley and scattered portions of the eastern Lundas are as marginal as the diamond industry would like to assume. Savimbi's troops maintain a vast and organised presence in portions of the diamond fields and, while smaller UNITA bands probably do not send much of their production back to central commanders, the presence of the Angolan military extends only a few kilometres from towns, mine concessions and roads, leaving a no-man's-land where guerrilla activity does not prevent diamond mining. Thus, given the reality of the Lundas, an estimate of UNITA's true production in the Lundas could be 900 000 carats alone. Moreover, operations in the central highlands before UNITA lost Andulo/Bailundo as well as alluvial and reported kimberlite mining near Mavinga may have produced substantial quantities especially since UNITA dominates the Cuando Cubango diamond fields. Thus, other mining areas could have bolstered UNITA output by another 300 000 carats, valuing the rebel gem output at closer to US $300 million in 1999 – a high yet not unreasonable figure.

37 Government of Angola statistics supplied to the Antwerp Diamond High Council (HRD). Despite the government's recent attempts to clean the image of the Angolan diamond trade, Angolan statistics have only been recently released through HRD officials, which allows the government to defer criticism.

38 According to the government figures, the informal market accounted for an average carat value of US $274 in 1995, US $292 in 1996, US $270 in 1997, US $202 in 1998 and US $219 in 1999. The formal market apparently produced much higher quality stones at US $509 in 1995, US $1 163 in 1996, US $880 in 1997, and only declining to realistic levels, at US $293 in 1998 and US $132 in 1999. Catoca's increased proportion of total formal production in 1999 according to the author's estimates could have reduced the average carat value, and the 1998 figures can be discarded due to under reporting of formal production by the government. Nor can the figures for 1995 to 1997 be justified, especially the carat value in 1996. A number of exceptional stones were recovered by SAA Distributors in 1996 and 1997, but the maximum value for the company's entire production was still below US $1 000 per carat. Carat values for the informal market are also probably too low and may be deflated by under-reporting by rough purchasing operations.

39 The value of the formal market from 1995 to 1998 is identical to the total value of diamond production, disregarding the value of the informal market; the total value of production is equal to the sum of both the formal and informal markets only in 1999.

40 Government of Angola statistics supplied to the Antwerp Diamond High Council (HRD). The last figure of over US $20 million in revenue from tax is disputed by another set of statistics provide by Antwerp's High Diamond Council which cites revenue in 1999 from taxation as nearly US $22 million.

41 Operations by *garimpeiro* generals or Luanda businessmen mining under semi-formal arrangements with foreigners cannot be quantified due to the low profile of these activities. As they are not major diamond producers (presumably) and do not adhere to even a minimal degree of transparency, they are not included in the formal sector despite the fact that these less visible producers may indeed have some form of state licensing.

42 These figures are only based upon recorded production from formal mines. Mining by UNITA, *garimpieros* or even FAA generals is not recorded.
43 IPE subsequently bought this debt and also made plans to invest in further mine development. Diamond Build-up for SPE, *Africa Energy and Mining*, p 5, 27 March 1996, Indigo Press, Paris.
44 EIU, *Angola Country Report 2nd quarter 1996*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.
45 Diamond Build-up for SPE, op cit.
46 The SPE-Endiama row apparently began in 1993 when SPE proposed to take over SML's operations. Endiama conversely proposed that ITM take over the operations and SPE relinquish its active role. SPE then sought to recover its debts from Endiama listed at US $15 million to SML. Endiama then countered by suspending salaries to Portuguese employees of SML, who then went on strike. IPE (Portugal) May Move out of SML, *Expresso*, 22 May 1993 from Reuters Business Briefing; and EIU, *Angola Country Report 4th quarter 1993*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.
47 SPE produced about 8–10 000 carats per month from three different mine plants in Lucapa, Calonda and Mafutu. Such poor returns only exacerbated poor management.
48 Lumanhe is an Angolan company owned by former FAA generals, with its major stakeholders reportedly including generals Carlos Val, Luis Faceira and João Baião. The generals apparently employ former FAA officers as observers at the mine sites.
49 Uari and Lucapa are essentially counted together in terms of carat production. Uari is a smaller concession to the east of the Luachimo river while the Lucapa concession extends north from Lucapa between a road to Camissombe to the west and the Luachimo to the east.
50 In 1999, the prices of ITM stones were approximately US $200 per carat from Calonda and Lucapa while those from Mafutu fetched US $280–$300 due to the recovery of a high percent of fancy pink stones. Running these estimates through Table 3 (and assuming that Chitotolo production was around US $225 per carat) ITM produced nearly US $110 million while Catoca produced a higher volume with a similar value.
51 RST produced up to 900 000 carats per year from its Cuango operations.
52 As opposed to the original ITM Group of which RST and Meridian Bank Group were reportedly subsidiaries.
53 Hellinger was reportedly the owner of Intraco Services Ltd that maintained the Endiama caterpillar fleet in Andrada in the 1980s when the De Beers company, MATS, was contracted to mine. When the Intraco contract ended in 1985, Endiama was in debt to the company, allegedly leading to the awarding of diamond concessions in the Cuango valley to RST. Andy Smith, the technical director of ITM, reportedly worked as a metallurgist for MATS and then General Manager of the Cuango mine for Hellinger.
54 Sardanis went on to operate several businesses in Zambia, among which was the notorious Meridian bank, which collapsed in a scandal involving prominent Zambian officials in 1995. Sardanis reportedly offered Ben Mwila, the former Zambian Minister of Defence, a controlling interest in ITM International in 1992. The Zambian *Times* notes that Mwila borrowed money from Meridian for this acquisition but then lost many of his companies when Meridian BIAO Bank collapsed. ITM International reportedly managed Chibote Ltd and Meridian BIAO Bank. Ben Mwila loses 30 companies, *Africa News Service* from the *Times* of Zambia, 27 October 1999, www.newsline.dialog.com, 27 January 2000.

55 TransAfrik is one of the largest non-military operators of C-130s in the world, boasting several UN contracts and supplies ITM mines in Angola. The two UN aircraft shot down, presumably by UNITA, at the end of 1998 and beginning of 1999 were reportedly leased from TransAfrik.

56 According to one source close to the company, the main shareholders at present are Renato Herminio (Mozambican), Andy Smith, (South African), Silverio Monteiro (Portuguese) and Sergio Costa (Portuguese or Angolan). Herminio is reportedly the CEO of ITM, also holding management positions in TransAfrik, Cater Trade and Intraco, with shareholding in Global Mining Support Group.

57 For example, production was delayed at Mafutu and Chitotolo after several ITM employees were killed, presumably by UNITA.

58 Another source puts the average monthly production for Mafutu at 12 000 carats in 1999.

59 ITM was reportedly retreating old piles from late 1996 but output from this activity was very low.

60 The special packet would be comprised of the lower quality goods that stuck to the grease of the sorting machines.

61 On April 13, 1998 Alpha Diamond Corporation of Nevada, USA announced that it had acquired approximately 30% of Angola Diamond Corporation's common stock. The press release cites ADC as operating several diamond concessions in Angola and South Africa. On 7 July 1998, Alpha announced that it had rescinded its merger. Alpha Diamond Announces Completion of Merger, *Business Wire*, 13 April 1998, www.newsline.dialog.com 27 January 2000.

62 Portuguese Pique, *Africa Analysis* 19 February 1999, www.africaanalysis.com, 25 May 2000.

63 Curbs on Trade in 'conflict diamonds', *Africa Analysis*, 21 April 2000, www.africaanalysis.com, 25 May 2000. According to this article, Terramina is also reported to have a concession near Nharea in Bie province.

64 The distinction between these companies is impossible to ascertain and the author will use SAA Distributors interchangeably with the other companies since little evidence suggests which company was actually mining.

65 Presumably the man erroneously referred to as Piet 'Hand' in the Fowler report.

66 The exact relationship between Southern and SAA is difficult to ascertain due to present animosity between the two companies, making it unknown whether SAA or Southern controlled the mine site and which company acted as the contractor and which the contractee.

67 In Randsburg International's bid to acquire Sphere, the company cites Sphere's US $24 million in revenues from mining in Angola in 1998, the year that Southern was mining Cassanguidi with SAA Distributors. It also noted that Sphere employs 200 workers, has US $4,6 million in machinery in Angola, and has been diamond mining in Angola since 1992. Randsburg International Gold Corp, *Randsburg to acquire Sphere Mining Development*, press release from Randsburg, 6 March 2000, www.infomine.com/news/releases/welcome.asp?13816, 6 September 2000.

68 Randsburg International's planned acquisition of Sphere fell through by the end of March 2000. Randsburg had previously entered in talks with Gema Dourada for a concession already awarded to Botswana Diamondfields in 1998.

69 SouthernEra Finalizes Agreement for Angola Alluvial Diamonds, *SouthernEra Press Release*, 19 November 1996, www.pathcom.com, 4 November 1999.

70 When SouthernEra vacated Luo, it brought the mining equipment and personnel to Camafuca.

71 When SAA began to work Cassanguidi in 1999, some of the staff at Camafuca reportedly returned to SAA.

72 SouthernEra Finalizes Agreement over Camafuca Pipe, SouthernEra press Release, 22 May 1997, www.pathcom.com, 12 February 2000.

73 Ibid. Since SouthernEra's partners were SAA Distributors and COMICA, Southern Era's share was effectively 65% but with 14% held by SAA and COMICA. It is not certain what role Antigua Combatants plays in the concession since the company basically owns the Calonda Sul concession.

74 IRIN, Integrated Regional Network, *Suspected UNITA insurgents raid diamond mine*, 10 August 2000, www. reliefweb.int/IRIN/sa/countrystories/angola, 11 August 2000.

75 Ibid, according to a spokesman for Gray Security Services.

76 As taken from the DiamondWorks chart of production, www.diamondworks.com, 28 June 1999.

77 Tricorp SARL is reportedly an Angolan law firm. EIU, *Angola Country Report 1st quarter 1997*, EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.

78 Diamond Visit, *Bizekon Ekspert* (Business and Economic Daily Report), 29 June 1998, from Reuters Business Briefing; Catoka Diamond Mine Said to Yield 50 pct Margins, *Reuters News Service*, 24 June 1998.

79 Roughly calculated by multiplying Catoca's production in 1999 by US $75 per carat, and determining this total as a proportion of Angola's total revenue from the formal sector as cited in government statistics in Table 1.

80 Other figures have given small variations of these percentages.

81 Diamond Visit, op cit.

82 Alrosa to Receive US$ 80-to-85 mln Worth of Diamonds from Angola, *Prime Tass*, 12 October 1998, from Reuters Business Briefing.

83 Leviev Investing $30m in Angola, *IPR Strategic Information Database*, 14 April 1998, from Reuters Business Briefing

84 Catoka Diamond Mine Said to Yield 50 pct Margins, op cit.

85 LID of Ramat Gan, Israel, split in early 1998 and the former manager, Moshe Leviev, formed LLD, presumably Lev Leviev Diamonds, and is also based in Ramat Gan. LLD was expected to market all polished diamonds from Ruis that was a supplier to LID. Diamonds – new company opens from partnership split, *Jewellery News Asia*, 18 February 1998, from Reuters Business Briefing. Leviev is also trying to get into Armenia's fledgling diamond cutting industry after the government approved the sale of Shogakn, Armenia's largest cutting company, to Leviev International Diamonds. Armenia to sell biggest diamond cutting plant to Israeli firm, *Interfax News Agency*, 21 October 1999, from Reuters Business Briefing.

86 Armenia to sell biggest diamond cutting plant to Israeli firm, op cit. Ruis is reportedly owned by an Irish form "which is a member of a group of other firms representing the businessman Lev Levayev". Moscow may gain large jewelry center, *IPR Middle East News*, 5 January 1999, www.newsline.dialog.com, 9 November 1999. Ruis is one of Russia's largest polishing factories.

87 Africa-Israel has expanded into various businesses in Eastern Europe, the true extent of which is not known, but can be witnessed through the company's activities such as hosting the eighth anniversary of Kazakhstan's independence in Tel Aviv

in 1999. See GF Cashman, Grapevine, 2 November 1999, *Jerusalem Post* from www.newsline.dialog.com 9 November 1999.

88 Leviev to buy into Camafuca, Extracts from Mining Week, *Mining Journal*, 15 August 2000, www.mining-journal.com.

89 The *Angola Country Report 4th quarter 1999* notes that SDM produced just over 60 000 carats in the quarter after the mine's opening. The *3rd quarter Report*, however, cites the Terraconsult figures but does not discuss the divergence with the previously cited figures. EIU Ltd, London, www.webspirs4.silverplatter.com, 29 June 2000.

90 Cuango River Project, Angola, www.ashton.net.au, 31 August 2000.

91 UNITA killed four company employees on 6 January 1999 only 7 km from Luzamba and forced the evacuation of mine personnel in October 1999 and again in May 2000. UNITA has maintained a sizeable force in the environs of the Cuango valley despite FAA offensives in late 1999. SDM's Afa-5 security providers and the FAA have been capable of keeping larger rebel forces away from the mine, but smaller rebel groups pose a constant threat to SDM convoys within several kilometres of the main mining operations.

92 S Solomon, De Beers says will force Angola to supply diamonds, *Reuters News Service*, 23 March 2000.

93 Cuango River Project, Angola, op cit.