

CONNECTING COMPONENTS, DIVIDING COMMUNITIES

Tin production for consumer electronics
in the DR Congo and Indonesia

FinnWatch
December 2007



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This report is published as part of the makeITfair project, a European wide project on consumer electronics. makeITfair aims at informing young consumers about developmental, human and labour rights and environmental issues along the supply chain. It also addresses consumer electronics companies that can contribute to change.

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MAKEITFAIR

makeITfair is a European wide project on consumer electronics, aiming at informing young consumers about development, human rights and environmental issues along the supply chain. The work is co-ordinated by the Dutch organisation SOMO. Project partners are IRENE in the Netherlands; SwedWatch, Fair Trade Center and Church of Sweden Aid from Sweden; FinnWatch with Finnish Association for Nature Conservation from Finland; Germanwatch and Verbraucher Initiative from Germany; Karat from CEE; ACIDH from the DR Congo, CIVIDEP from India and Labour Action China from China. Website: www.makeitfair.org



FINNWATCH

FinnWatch is not only an information office but also a network of non-governmental organisations and trade unions behind it. FinnWatch observes and researches Finnish companies operating in developing countries, focussing on human and labour rights, the environment and social development. FinnWatch network consists of seven organisations: Service Centre for Development Cooperation (Kepa), Trade Union Solidarity Centre of Finland, Central Organisation of Finnish Trade Unions, The Consumers, Friends of the Earth Finland, The Finnish Confederation of Salaried Employees, and Finnish Association for Nature Conservation (FANC). FinnWatch is partly financed by the Ministry for Foreign Affairs Department for Communication and Culture, EU project even by Department for Development Policy. Website: www.finnwatch.org



FINNISH ASSOCIATION FOR NATURE CONSERVATION (FANC)

FANC is the largest non-governmental organization for environmental protection and nature conservation in Finland. Its objectives include the promotion of sustainable production and consumption patterns and the protection of biodiversity. FANC is the formal representative of FinnWatch, and supports coverage of environmental themes in its work. FANC participates in international cooperation especially with the environmental NGO's in the Baltic Sea area and in the European Union. The main emphasis has been on raising public awareness on global environmental issues and since 1995, when Finland entered the European Union, to influence European policymaking.

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FOREWORD

This report is part of the ‘makeITfair’ project to raise awareness about development issues in the production chain of the consumer electronics industry, with a special focus on products for young consumers, such as mobile phones, MP3 players, game consoles and laptop computers.

The focus of the project is on the consumer electronics industry, as this industry is growing rapidly and is facing or even causing many social and environmental problems throughout the world. The industry has only recently been the focus of public campaigns, and there is still limited awareness among the wider public. As the production chain of consumer electronic products is a truly global one, the sector is a particularly good example to discuss issues of globalisation with young consumers.

The three-year programme of ‘makeITfair’ concentrates on young consumers because they can play a decisive role in moving the industry towards more equitable and sustainable production methods. At the same time, dialogues will be initiated with electronic brand companies to encourage them to take responsibility for issues throughout their entire supply chain.

In the first year, the background reports illustrate examples of the conditions under which some raw materials for electronics are extracted. The production, retailing and eventual disposal of products in the last phase of the product life cycle will be researched in the second and third years of the project. Furthermore, the research investigates the situation in Europe itself: the first year the focus is on production in Poland, in the second and third years the consumer electronics industry in the Czech Republic and Hungary will be addressed.

The dissemination of the research entails the development of consumer guides, educational material, tool kits for campaigning organisations and web-based tools. Other activities in this project include capacity building sessions in Eastern Europe and organising an annual international Round Table to bring together electronics companies, NGOs and trade unions to discuss the various responsibilities for the environmental, human rights and labour conditions down the supply chain of consumer electronics.

This EU-funded programme is led by a consortium of NGOs from Europe that includes Germanwatch, Verbraucher Initiative, SwedWatch, Church of Sweden, Fair Trade Center, FinnWatch/Finnish Association for Nature Conservation, Karat, SOMO and IRENE, as well as NGOs in developing countries in Asia and Africa including SACOM for China, CIVIDEP for India and ACIDH for the Democratic Republic of Congo (DRC).

SUMMARY

News reports from North Kivu in the Democratic Republic of Congo (DRC) indicate, peace has not reached remote parts of the country, despite the peace accord of 2003 and consolidation process, not forgetting new mining laws. News from Congo may appear too distant to make us interested – and yet, we may be receiving those news with consumer electronics gadgets that might have something directly or indirectly to do with the far-off country: laptop computers or mobile phones, for instance.

Portable electronics have become an inevitable part of modern life. Inside your PC, your mobile phone, your MP3 player or game console, components are connected to the circuit board with solder containing tin. Currently the electronics industry accounts for 35 percent of the world's tin consumption as solder. Apart from solder, tin is used in the LCD screens found in many electronic products.

The electronics industry is a significant consumer of several metals, tin being only one example. For example, about a quarter of the world's cobalt consumption is used in rechargeable batteries in portable electronics such as mobile phones and laptop computers. More than half of this cobalt is extracted in the Copperbelt area in the DRC and Zambia.

Violation of human rights and environmental degradation are rampant in countries rich in minerals but in which democracy and good governance are absent. Having followed the discussion on coltan, and hearing news from the DRC about the ongoing conflict, FinnWatch decided to find out more about the dynamics of the mineral trade and local conflict. Tin ore, cassiterite (SnO_2), is one of the most important minerals mined in the eastern parts of the DRC, and part of the income thereof is still going in the pockets of armed groups.

Large amounts of cassiterite from the DRC originate from the province of North Kivu, in an area named Walikale, where the richest mine is Bisie. Three years ago, the mine was controlled by one of the most prominent warlords in the DRC, who then had to withdraw his troops and is now controlling other areas. Cassiterite from Bisie found its way to international markets during the period of his control, and the financial benefits and contributions to perpetuating the conflict must have been substantial. Up to the moment of writing this report (early Dec, 2007), Bisie has been under the control of a non-integrated brigade of the army, that has also committed many crimes against humanity.

Armed groups are not the only problem in Bisie. Artisanal miners live and work in dangerous conditions. In 2006 alone, ten fatal accidents were reported in Bisie. Some mine shafts are as deep as 200 meters, in contravention of national mine legislation. Most artisanal miners in the DRC earn just US\$ 1–3 per day no matter what mineral they are digging. The UN estimates that 75 percent of these miners are unable to cover minimum family needs with their earning. Because many people abandon farming for mining, local communities are suffering from a sharp increase in the price of food and increased inflation.

FinnWatch tracked the trade routes from the DRC's cassiterite mines to solder producers and towards component manufacturers and the big brand producers. We found out that a lot of cassiterite from North Kivu ends up in Asia via Kenyan and Tanzanian ports. In Asia, the world's largest tin producers buy Congolese tin concentrate from mainly Belgian and other international marketing firms. These producers are situated and have smelters in Malaysia, Thailand, China and Indonesia. They sell tin directly to several electronics solder manufacturers, who supply both component and contract manufacturers and brand companies of consumer electronic products.

Tin mining is also problematic in other countries. In Indonesia, the world's second biggest tin producer, tin mining has caused environmental destruction of the islands of Bangka and Belitung,

the country's main tin production area. The legacy of the sector is very long and obvious there. Much forest cover and many water sources, as well as species of flora and fauna, have been lost to tin mining. In places, what is left resembles a moonscape, with old, gaping pits littering the landscape.

When the news about problems related to tantalum metal used in capacitors in consumer electronics broke a few years ago, many companies rushed to say that their products were „clean“ and their tantalum originated from countries other than the DRC, where tantalum has been funding several rebel groups.

In April 2007, the makeITfair project contacted the 20 market leaders of consumer electronics. These companies asserted that they are marginal users of metals in general. Even if consumer electronics is just a part of this consumption, considering the consequences for the people and the environment, one may ask, whether a growing sector is marginal. One gadget may need only a small quantity of these minerals, but they are manufactured and sold in their billions worldwide.

Brand companies of consumer electronics could promote improvements by including the extractive industry level in their supply chain management. They often argue that it is difficult to trace metals and that they cannot influence the extractive industry since they, as individual companies, only use limited amounts of metals in their products. However, as this report shows, the electronics industry is a significant tin user. There is a direct link between their products and mining in the DRC, Indonesia and many other developing countries.

FinnWatch would like to stress that it is not suggesting that companies stop trading with African metal suppliers just because the risks can be very high. Instead, companies should engage in cooperation in order to influence their suppliers. For example, The OECD Guidelines for Multinational Enterprises state that multinational companies should encourage suppliers to respect human rights and protect the environment. The consumer electronics companies at the end of the production chain dealt with in the makeITfair project do not fully live up to these standards. Together with the tin and manufacturing industry, these profitable brand companies could influence different positive initiatives at various levels – if they choose to.

Helsinki, December 2007

1. INTRODUCTION

1.1 The Consumer Electronics Sector

The global market for consumer electronics is growing at an astonishing rate with brand companies competing against each other for bigger market shares. Consumers are eager to get their hands on the latest gadgets for communication and entertainment. They want to be able to work on the go, play the latest video games and be in contact at all times.

For instance, the global mobile phone market reached a milestone in 2006 with more than one billion units being shipped worldwide over the year.¹ The market for MP3 players in Western Europe increased by 125 percent in 2005², though it should be noted that mobile phones with music functions are rapidly encroaching on this part of the market. Annual webcam sales grew by an average of 44 percent, from 2.9 million units in 1999 to 18 million units in 2004.³ Industry analyst Gartner predicts that PC sales will increase by more than 12 percent during 2007.⁴

Brand companies have been profiting from the consumer electronics boom for years. At present they are both investing in new technologies for more appealing and exclusive products, as well as offering increasingly cheaper models to increase sales. Nowadays consumers only pay half as much for a Nokia phone as they did in 2002 and the average price of a Sony Ericsson phone has fallen by 20 percent during the last twelve months.⁵ To cut costs consumer electronics companies have outsourced either part or all of their production to low-cost countries, mainly in Asia, Latin America and Eastern Europe, which has resulted in complicated supply chains that are difficult to monitor.⁶

Right at the bottom of the supply chain, metals are being extracted to be used in products that form an essential part of our everyday lives. In fact, this extractive industry could be described as the “forgotten level” of the supply chain. So far, brand companies such as Apple, Motorola, Nokia, Philips, Sony, Acer and Nintendo, have not included the extractive industry in their supply chain management. Instead they have focused their Corporate Social Responsibility (CSR) work on first and sometimes second tier suppliers. The global market leaders do not even know where the metals that are used in their products are mined. Yet, as seen during fact finding conducted for this project, the consumer electronics industry utilises a significant proportion of the global supply of several metals that are an essential part of their products.

1.2 Metals Used in Everyday Products

There are numerous ways in which metals such as platinum, tin and cobalt end up in consumer electronic products. Some trade is done via commodity exchanges and trade houses or agents, mostly in the developed world, in countries like the UK and the US. In other cases, the metals are exported directly by mining or processing companies to chemical companies that supply manufacturers of electronics components.

1 Svenska Dagbladet, Expansion krymper Motorolas vinst, 20 January 2007

2 IDC, MP3 Western Europe Portable Compressed Audio Player Forecast and Analysis, 2005–2010

3 IT Facts, \$1.2 bln of Webcams to be sold in 2005, 23 March 2005

4 IDG News, Global Chip Sales Remain Hot, 2 October 2007

5 Svenska Dagbladet, Nokia utklassar i telekomkampen, 18 October 2007 and Svenska Dagbladet, Prisras på mobiler slår hårt mot Sony Ericsson, 12 October 2007

6 ILO, The Production of Electronic Components for the IT Industries: Changing Labour Force Requirements in a Global Economy, Geneva, 2007

Products such as laptops, mobile phones, games, MP3 players and webcams contain a number of different metals. The main ones in terms of volume are aluminium, iron, copper, nickel and zinc. However, though only used in very small amounts, beryllium, indium, tantalum and the platinum-group metals to name just a few, are also essential to today's consumer electronics goods.⁷

It has been estimated that metals constitute 25 percent of a mobile phone's weight, not including batteries and battery chargers.⁸ The largest variety of metals is found in the circuit board. About one third of the circuit board is likely to be metallic, another third is made of glass and ceramic materials, and the remaining third is plastic.⁹

This study shows that the electronics industry is a significant consumer of some of these metals. In recent years, the global demand for metals has risen sharply and in many cases the consumer electronics sector has been the driving force behind the growth.

BERYLLIUM: As mobile phones and other electronic goods are getting increasingly smaller, stronger materials are required such as beryllium/copper alloys that are able to cope with higher temperatures. The US consumes 50 percent of the world's beryllium of which 45 percent is used in computer and telecommunications products. It is widely expected that these sectors will have the fastest increases in demand for beryllium alloys and oxides in coming years.¹⁰

COBALT: In 2006, rechargeable batteries used in portable products such as mobile phones, MP3 players, laptops, digital cameras, camcorders and game products accounted for a quarter of the world's total cobalt consumption and demand is expected to increase.¹¹ The increase in demand for cobalt in recent years has largely been driven by the consumer electronics sector. Cobalt is also needed in the production of magnets, speakers, headphones and media coatings for hard disc drives.¹²

GALLIUM: The behaviour of gallium prices has largely mirrored the mobile phone market during recent years, since mobile phones constitute the largest market for gallium/arsenic devices. In a mobile phone, the metal is used to make power amplifiers, keypad backlighting and camera flashes. It is estimated that more than 80 percent of all handsets will include a camera by 2011.¹³

INDIUM: World consumption of indium is growing significantly because of strong demand for consumer electronics such as laptop computers, flat screen televisions, and other devices containing flat panel displays, such as mobile phones.¹⁴ Indium is also used in high efficiency transistors, which are fundamental building blocks of the circuitry in many modern electronic devices.¹⁵

PALLADIUM: In 2006, the electronics industry accounted for 15 percent of the world's palladium consumption¹⁶ with mobile phone producers accounting for roughly half of this.¹⁷ Most of it was used in so-called multilayer ceramic capacitors. Palladium can also replace other more expensive or environmentally hazardous metals such as gold, lead and platinum.¹⁸ Smaller amounts of palladium are used for plating connectors and lead frames.¹⁹

PLATINUM: In 2006, the global consumption of platinum for electronics increased by 18 percent to 6

7 Behrendt, S. et al. (2007) Rare metals. Federal Environmental Agency (Umweltbundesamt) 23/07, p. 8–9

8 U.S. Geological Survey, Recycled Cell Phones – A Treasure Trove of Valuable Metals, Fact Sheet 2006–3097, July 2006

9 Earthworks et al. (2004) Dirty Metals – Mining, Communities and the Environment, p. 28.

10 Roskill Mineral Services, Beryllium and U.S. Geological Survey, Mineral Commodity Summaries on Beryllium, January 2007

11 Avicenne Développement, The Rechargeable Battery Market 2006–2015, 16th Edition, September 2007

12 Cobalt Development Institute, www.cdi.com and information from brand companies

13 U.S. Geological Survey, Mineral Commodity Summary on Gallium, January 2007

14 U.S. Geological Survey, 2005 Minerals Yearbook – Indium

15 Behrendt, S. et al. (2007) Rare metals. Federal Environmental Agency (Umweltbundesamt) 23/07, p. 57; <http://en.wikipedia.org/wiki/Transistor>

16 U.S. Geological Survey, 2006 Minerals Yearbook – Platinum Group Metals

17 Estimation based on figures in U.S. Geological Survey, Recycled Cell Phones – A Treasure Trove of Valuable Metals, Fact Sheet 2006–3097, July 2006

18 U.S. Geological Survey, 2006 Minerals Yearbook – Platinum Group Metals

19 Platinum Today, www.platinum.matthey.com

percent of the world total, owing to increases in hard drive manufacturing.²⁰ The metal is also needed to produce flat screens and liquid crystal display glass used to make laptops and some types of flat screen televisions, for example.²¹

RUTHENIUM: In 2006, the global consumption of ruthenium increased by 45 percent, owing to a 78 percent growth of the electronics industry. A new type of computer hard drive contributed significantly to this. Within the electronics industry, ruthenium is also used in chip resistors and flat screen displays.²²

RARE EARTHS: Rare earths are a group of 17 elements. Demand for rare earth products has become strong within the display, magnetics and electronics industries.²³ Miniaturisation of consumer electronic devices is one global trend that is strongly influencing the demand for rare earth elements. Neodymium and lanthanum, for example, are used in multilayer ceramic capacitors found in cell phones, laptop computers, cameras and automobile electronic controls, which also depend on high intensity rare earth magnets.²⁴

TANTALUM: Tantalum is used in the manufacturing of capacitors mainly used in mobile phones, computers, digital cameras, hearing aids, cardiac pacemakers and automotive electronics. Half of the world's tantalum production goes to make capacitors.²⁵ The trend towards miniaturisation significantly contributes to the increased demand for tantalum.²⁶

TIN: Tin is used for solder in printed circuit boards and in other components. It has become a hot commodity after new European environmental regulations came into force, which require the electronics industry to use tin instead of lead. This trend has significantly contributed to a rise in the global tin prices in recent years.²⁷ At present the global solder market accounts for almost half of global tin consumption. Seventy percent of solder sales goes to the electronics industry.²⁸

1.3 Metals Extracted in High Risk Countries

Metals are extracted all over the world, though often in high risk countries such as China, Russia as well as various African states. The so-called 'resource curse' describes the paradox that many countries rich in natural resources tend to have less economic growth and are more prone to conflict than countries without this natural wealth. This phenomenon can have several causes. Countries largely dependent on income from their mining sectors are in a vulnerable position due to fluctuating world prices. Many of them have failed to diversify their economies and large flows of revenue tend to fuel political corruption and internal conflict.

Specific problems connected to the extractive industries include violations of labour and human rights, as well as destructive environmental practices. Mining operations in high risk countries are often owned by foreign corporations that create jobs and bring in much needed investments and know-how. In some places, however, these activities contribute to ongoing tensions and conflicts. The income from the extraction and processing of minerals and metals may also fuel conflicts, as is currently the case in eastern parts of the Democratic Republic of Congo.

Moreover, poor communities often complain that mining companies do not contribute sufficiently to the welfare of the population. Several governments have granted certain tax benefits to these

20 U.S. Geological Survey, 2006 Minerals Yearbook – Platinum Group Metals

21 Platinum Today, Platinum, 2007 and U.S. Geological Survey, 2006 Minerals Yearbook – Platinum Group Metals

22 Ibid.

23 Micon International Ltd, Rare Earths.

24 Ibid.

25 Mining Journal Review (2006), Annual Commodity Report on Tantalum, p 2

26 Behrendt, S. et al. (2007) Rare metals. Federal Environmental Agency (Umweltbundesamt) 23/07, p. 22

27 AlterNet.org, War, Murder, Rape... All for your Cell Phone, 14 September 2006

28 ITRI, New ITRI Statistics Demonstrate Strength of Tin Demand, 2 Feb 2006; The Star, Strong Appetite for Tin in China, 14 May 2007; Kettle, P., Waiting for the Next Wave, Metals Yearbook 2006, London Metal Exchange Publication, p. 54

Table 1: Major producing countries of selected metals

METAL	MAJOR PRODUCERS LISTED IN DESCENDING ORDER
Beryllium	US, China
Cobalt	DRC, Zambia, Australia, Canada, Russia, Cuba
Gallium	China, Germany, Japan, Ukraine
Palladium	Russia, South Africa, Canada, US
Platinum	South Africa, Russia, Canada, US
Ruthenium	South Africa, Russia, Canada, Zimbabwe
Tantalum	Australia, Brazil, Mozambique, Canada, Ethiopia, Rwanda, DRC
Tin	China, Indonesia, Peru, Bolivia, Brazil /.../ DRC

Source: US Geological Survey.

companies, which tend to attract foreign investments, but reduce state revenue that could be spent on much needed development programmes. Salaries, especially those of temporary subcontracted workers, often do not cover basic needs. Health and safety problems are common.

According to Communities and Small-Scale Mining, a network of donors headquartered at the World Bank's Mining Department, small scale, often illegal, mining of minerals takes place in 50 countries around the world. The typical artisanal and small-scale miner is poor, has limited rights, and is exposed to harsh working and living conditions. Nonetheless, involvement in this activity continues to expand. Moreover, between 1 and 1.5 million children are estimated to be working in the mining industry at present, largely as a result of economic hardship.²⁹

1.4 Responsibility and Ethical Guidelines

Electronics companies are increasingly participating in branch initiatives. They subscribe to ethical guidelines and most of them have adopted individual codes of conduct. Most of these codes and guidelines address responsibility for the whole chain of production, yet the reality is rather different. As mentioned above, brand companies of consumer electronics only address problems related to the top of the supply chain. So far the industry has not taken any measures³⁰ to integrate mining of metals into their social or environmental responsibility efforts.

In recent years a wide range of initiatives has been developed within and around the mining sector. The Extractive Industries Transparency Initiative (EITI) is one example. It is a voluntary initiative trying to increase transparency within the sector. The initiative aims to ensure that revenue from extractive industries contributes to sustainable development and poverty reduction.³¹ The International Council on Mining and Metals (ICMM) is another example, an industry initiative for mining and metals companies that comprises ten principles including a requirement to engage in independently verified reporting about human rights and environmental conduct.³²

However, the realities facing mine workers and communities in developing countries show that there is much left to be done. This report takes a detailed look at the tin sector and the repercussions that mining operations have on workers and the environment in the DRC and Indonesia. As mentioned previously, an increasing number of circuit boards in contemporary consumer electronics contain tin instead of lead. This is due to the new environmental regulations in the European Union and

29 CASM referred to in Svenska Dagbladet, Guldrusch, 21 October 2007

30 Just before the publication of this report, Hewlett-Packard informed that, after having received questions about the extractive level from the research organisations of makeITfair, the company had conducted a survey of their Notebook suppliers on extractives. When this report was being finalised it was unclear how the company will proceed with the results. In November 2007, branch initiative EICC/GeSI also informed our project had led it to commissioned a study to further investigate how metals are extracted, purchased and used within the electronics industry.

31 For more information about EITI see www.eitransparency.org

32 The tenth principle on ICMM's website, www.icmm.com

elsewhere. Otherwise, tin is used in a wide variety of consumer goods, most obviously in tin cans. Over a fifth of the world's tin originates from Indonesia, where its mining has had negative effects on the environment. The DRC is a smaller producer, but tin ore constitutes a significant part of its economy, especially in eastern parts of the country. And as we hear often in the news, the trade in minerals is still fuelling regional conflicts. These two countries are examined in more detail in this report.

FinnWatch concludes that there appears to be a strong tie between the mining sectors in the DRC or Indonesia and tin used in consumer electronics. In recent years, the global tin market has been greatly affected by the increase in demand for lead-free solder for consumer electronics. Tin solder used in portable PCs, mobile phones, camcorders, games, MP3 players, digital cameras, and other electronics, corresponded for a third of the world's supply of tin in 2004.

2. GLOBAL TIN PRODUCTION AND CONSUMPTION

The World Bureau of Metal Statistics (WBMS) reported tin mine production at 343,000 tonnes in 2006, an increase of 3 percent compared with 2005, with China accounting for all of the increase. Reported world production of refined tin metal declined by about 1 percent to 373,000 tonnes compared with that of 2005. US Defense Logistics Agency deliveries totalled 9,300 tonnes, bringing total availability to 382,000 tonnes. Production has declined in Indonesia, world's second largest producer, after its government's clampdown on illegal mining at the end of 2006.³³

Recent years have been marked by a significant increase in production from small scale miners in Indonesia and Africa in response to higher tin prices. Unlike other metals, the majority of the world's tin is derived from small scale mining operations, susceptible to social and environmental issues.³⁴ The drop in Indonesian supply might be offset by small production increases elsewhere, like in Africa.

The top 5 tin mining countries account for more than 90 percent of world production. China is the leading producer (1/3 of world output) and is followed by Indonesia, Peru, Bolivia and Brazil. Estimated world tin reserves are set to last 17 years.³⁵ The US Geological Survey gives the following figures for world mine production of tin³⁶:

Table 2: World mine production of tin 2004–2006 (tonnes)

COUNTRY	2004	2005	2006 EST.
China	118,000	120,000	100,000
Indonesia	65,800	80,000	85,000
Peru	67,700	42,100	42,200
Bolivia	17,600	18,700	18,400
Brazil	12,500	12,500	11,800
Russia	2,500	3,000	3,400
Malaysia	2,700	3,000	3,100
DRC	80	80	2,100
Other countries	10,800	11,100	7,400
World total	298,000	290,000	273,000

Source: US Geological Survey

It is difficult to obtain real production figures when it comes to some countries in Africa. Global Witness -organisation has estimated that output from the DRC of the tin mineral, cassiterite, rose to 8,300 tonnes or 3 percent of the world's total production in 2004, from 2,900 tonnes in 2003, with a significant proportion of production exported illegally via neighbouring Rwanda.³⁷ A current estimate by a Belgian trader is that the DRC accounts for some 6,000 tonnes of tin metal and Rwanda for some

³³ U.S. Geological Survey, Tin in February 2007, Mineral Industry Surveys, May 2007

³⁴ Malaysia Smelting Corporation Annual Report 2005, p. 22–23

³⁵ U.S. Geological Survey, 2005 Minerals Yearbook – Tin

³⁶ U.S. Geological Survey, Mineral Commodity Summary on Tin, January 2007

³⁷ Global Witness (2005), Under-Mining Peace: The Explosive Trade in Eastern DRC, p. 27

2,000 tonnes.³⁸ These figures are also supported by the British Geological Survey, which has estimated that the DRC produced 7,000 tonnes of tin in 2005.³⁹

Tin production is concentrated in South East Asia, Latin America and China, with most smelters close to the mining regions. China has a strong position in the world's tin market as reflected by four Chinese smelting companies on the list of the world's top tin groups. Other big tin producers come from Indonesia, Peru, Thailand, Malaysia and Bolivia. These big producers have a remarkable role in the world's tin market, several of them processing ore originating from the DRC, as shown later in this report.

Table 3: Top ten tin producing companies 2006 (annual production, tonnes refined tin)⁴⁰

COMPANY	2004	2005	2006	CHANGE (%)
Yunnan Tin (China)	36,321	42,720	52,399	22.7
PT Timah (Indonesia)	34,764	41,799	44,689	6.9
Minsur (Peru)	40,222	38,180	40,977	7.3
Thaisarco (Thailand)	20,651	31,539	27,828	-11.8
Malaysia Smelting Corp (Malaysia)	33,914	37,782	22,974	-39.2
Yunnan Chengfeng (China)	13,257	12,616	21,765	72.5
PT Koba Tin (Indonesia)	23,530	21,380	20,930	-2.1
CM Vinto (Bolivia)	11,330	11,826	11,804	-0.2
Liuzhou China Tin (China)	11,834	11,373	10,927	-3.9
Gejui Zi-Li (China)	11,858	10,384	8,990	13.4

Source: ITRI

These tin producers have responded to higher prices and strong demand in recent years with tin mine and smelter expansions. China's tin imports in particular are rising as the supply of domestic concentrate remains tight. Chinese tin smelters were reportedly importing tin mainly from Indonesia and Malaysia.⁴¹ For example, Yunnan Tin is investing in a joint venture in Indonesia, which they say will be the third largest on Bangka island, the country's tin production centre.⁴²

WBMS calculated global tin consumption to have been 386,000 tonnes in 2006, a rise of 11 percent compared with that in 2005 – and a new record level. China and Japan each recorded a 16 percent increase. China now consumes a third of the world total.⁴³ The electronics industry is one of the most rapidly developing sectors in China. Xiao Jianming, chairman of Yunnan Tin, a leading tin producer, has anticipated that Chinese tin demand will grow by as much as 30 percent in 2006. China's tin consumption has already exceeded domestic production.⁴⁴

Tin industry organisation ITRI has released new data regarding world tin consumption. Solder and tin plate have long been considered the 'big two' applications for tin, but new data indicates that the global solder market is now more than twice the size of the tin plate market. Solder was found to account for almost half of global consumption in 2005, up from 46 percent in 2004. Tin usage in solder has grown tremendously. Solder is used among others in the electronics industry.⁴⁵ Seventy percent of

38 Freddy Muylaert, Director, Trademet, phone interview on 13 November 2007

39 Benham, A. & Brown T. (2007) African Mineral Production 2001–2005, British Geological Survey

40 ITRI Information: Top Ten Tin Companies, 2006. <http://www.itri.co.uk>

41 U.S. Geological Survey, 2005 Minerals Yearbook – Tin

42 ITRI News: YTC confirms Indonesian investments, 4 June 2007

43 U.S. Geological Survey, Tin in February 2007, Mineral Industry Surveys, May 2007

44 Fortis Metals Monthly, July 2006, p. 17

45 ITRI Information: Tin Market Statistical Summary – Feb 2007. <http://www.itri.co.uk>

world solder sales went to the electronics market already in 2004, meaning that the electronics sector uses 35 percent of world tin.⁴⁶

The rapid growth in global tin usage since 2000 has been driven mainly by the solder sector, particularly that part of the industry serving the Asian electronics business. The increasing importance of the solder business reflects both the strong growth of the Asian electronics sector and the successful implementation of lead-free technology, estimated to have reached a high level of global penetration (59 percent of electronics solder production by surveyed companies) in 2005. The proportions rose further in 2006. The companies surveyed forecast sales increases for lead-free solders in 2006 with an average of 42 percent.⁴⁷

Figure 1: World tin use by application, 2005⁴⁸

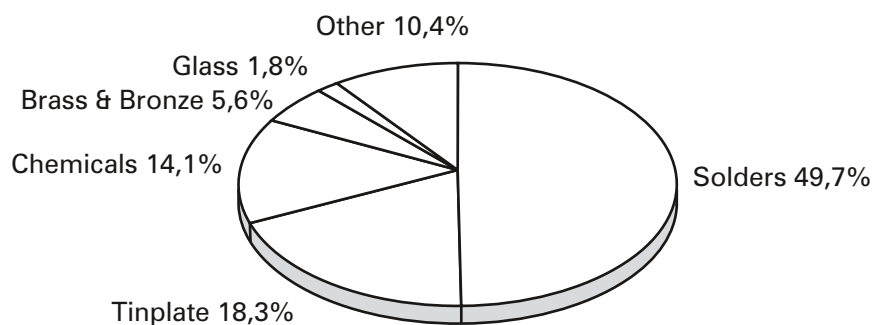


Table 4: World consumption of refined tin by end-use, 2005⁴⁹

<i>Tonnes</i>	Total	Solder	Tinplate	Chemicals	Brass & Bronze	Glass	Other
Asia	198,600	127,900	23,300	18,600	11,200	5,100	12,500
Americas	58,700	17,700	13,445	15,500	2,500	100	9,500
Europe	68,200	17,400	21,630	12,500	4,500	800	11,400
Rest of world	4,800	1,300	2,025	0	300	100	1,000
World	330,300	164,300	60,400	46,600	18,500	6,100	34,400
<i>Product as % of regional total</i>							
Asia	100.00%	64.4%	11.7%	9.4%	5.6%	2.6%	6.3%
Americas	100.00%	30.2%	22.9%	26.4%	4.3%	0.2%	16.2%
Europe	100.00%	25.5%	31.7%	18.3%	6.6%	1.2%	16.7%
Rest of world	100.00%	27.1%	42.2%	0.0%	6.3%	2.1%	20.8%
World	100.00%	49.7%	18.3%	14.1%	5.6%	1.8%	10.4%

Source: ITRI

46 Kettle, P. (2006) Waiting for the next Wave, Metals Yearbook 2006, London Metal Exchange Publication, p. 54

47 ITRI Information: Tin Market Statistical Summary – Feb 2007. <http://www.itri.co.uk>

48 Source: ITRI

49 Source: ITRI

TIN IN ELECTRONICS

Tin is used in electronics primarily for solder in printed circuit boards. It has become a hot commodity after environmental regulations have forced the global electronics industry to use tin instead of lead. The EU directive on the use of hazardous substances in electronic products (RoHS) came into force on 1 July 2006. Traditional solder is an amalgam of about 40 percent lead and 60 percent tin, but lead-free solder is composed of more than 95 percent tin.⁵⁰

According to tin industry organisation ITRI, tin usage for solder in 2005 accounted for almost half of global consumption. Electronics solder accounted for 35 percent of global consumption. Asian producers of solder dominate the global solder sector. About 128,000 tonnes of tin went into solder making in Asia, and about half of that went to China. Asia consumed 78 percent of the tin in solder, Europe consumed 11 percent.⁵¹

Solder consists of metal alloys with low melting points that are used to join metals together and to attach components to printed circuit boards. Lead-free solder is increasingly dominating the market. Examples are alloys comprising 95 percent tin and 5 percent antimony, as well as 96.5 percent tin and 3.5 percent silver. Solder is available as paste, powder, preformed, and as solid wire, each of which has advantages in different soldering processes.⁵²

Indium-tin oxide is a vital component in computer display panels. A rapid expansion in the market for display technology using liquid crystal displays in laptop computers and televisions has increased the demand for tin.⁵³

Recycled tin is also an important source of tin for the manufacture of solder.⁵⁴

50 Minerals and Metals Sector of Natural Resources Canada, 2005 Canadian Minerals Yearbook – Tin

51 ITRI News: New ITRI study illustrates the reasons behind the continued boom in tin use, 8 February 2007

52 http://process-equipment.globalspec.com/LearnMore/Manufacturing_Process_Equipment/Industrial_Assembly/Solder

53 Minerals and Metals Sector of Natural Resources, 2005 Canadian Minerals Yearbook – Tin

54 U.S. Geological Survey, 2005 Minerals Yearbook – Tin

3. FROM MINES TO ELECTRONICS SOLDER

The exact route from a tin mine to the solder used in a computer or MP3 player is very difficult for outsiders to track. End producers of consumer electronics, such as Sony Ericsson, Acer, HP, Lenovo, Nintendo, and so on, state that they do not know from which mines or even which countries the metals used in their products come from. Procurement of these metals takes place further down their supply chains and end producers have not requested this kind of information. So far, such companies have mainly focused on first and second tier suppliers with regards to CSR (Corporate Social Responsibility).⁵⁵

However, more information can be found when looking at the trade flows from the other end of the supply chain. Vast quantities of tin ore are exported from Africa and Indonesia to big Asian tin producers, who in turn sell their tin directly to end users such as solder manufacturers around the world. FinnWatch's research shows that some of the Congolese cassiterite ends up in solder, connecting components in consumer electronics that form such an integral part of our daily lives.

3.1 Global Tin Trade

The major base metals, including tin, are traded on open markets, of which the best known is the London Metal Exchange (LME), which posts an 'official' daily price based on trading activity and the range of prices agreed. Most trade is through private contracts, but open market prices are very important price indicators used by all parties concerned.⁵⁶

All metals prices have increased greatly since the all-time low point reached in 2001. The price of tin has quadrupled since the depth of the recession of 2001.⁵⁷ The price jumped from US\$ 8,700 per tonne in mid-2006 to US\$ 13,000 per tonne by mid-2007. Recently, the LME price for tin has reached US\$ 17,000 per tonne, a new record since the 1980s. The latest spot price in China hit just US\$ 20,000 as a result of strong demand from the electronics and glass industries.⁵⁸

High tin prices have channelled money to big tin producers. According to ZJ Research, the current strong tin price is expected to augur well for major tin companies, especially those involved in upstream to midstream activities such as tin mining and smelting. Among the world's top tin players that should benefit from the strong tin price are the Malaysia Smelting Corporation (MSC), Minsur SA, Yunnan Tin Co and PT Timah Tbk. The share prices of Minsur, Yunnan Tin and PT Timah increased from 10 to 30 percent over three months in late 2006.⁵⁹

As a result of the price depression over two decades, tin supply became increasingly dependent on production by very small scale producers with minimal capital requirements and low safety or environmental standards. According to ITRI, now however, many governments around the world are clamping down on such operations, resulting in reduced supplies and increased prices. Until recently more than half of world mine production came from semi-legal artisanal workings in Asia, Africa and South America. But this structure is changing.⁶⁰

Tin trade takes place either on the basis of contract sales negotiated between sellers and buyers or by bidding on 'resort' markets such as the LME. Due to the structure of the tin industry, tin traders

55 Responses to questionnaire sent by SOMO, SwedWatch and FinnWatch to 22 global brand companies in 2007

56 British Geological Survey (2005), Minerals Trade – A Global Picture. Mineral Matters.

57 Kettle, P. (2007) Is Tin Heading for a Crisis? (part two), Global SMT & Packaging – June 2007, p. 26–27

58 ITRI News: Chinese tin prices soar, 29 August 2007

59 The Star Online, Strong demand to keep tin prices high, by Hanim Adnan, 13 November 2007

60 Kettle, P. (2007) Is tin Heading for a Crisis? (part two), Global SMT & Packaging – June 2007, p. 26–27

play an important role in the marketing of tin. Like other non-ferrous metals, contract sales are mostly short-term, not exceeding one year. Big tin producers and smelters sell their products directly to tin traders or industrial end users.⁶¹

LONDON METAL EXCHANGE (LME)

The LME is the world's premier non-ferrous metals market for aluminium, copper, nickel, tin, zinc and lead. While the physical spot market for tin is still centred in Kuala Lumpur, the LME contract has become the internationally accepted hedging tool, as it provides the forward reference price for the industry.⁶²

The LME is not the natural source for physical tin metal and thus does not replace the normal channels for the buying and selling of material. Only 1–2 percent of contracts actually result in delivery. The LME is rather, a financial market, used mainly for limiting future price risk, supported by a delivery of last resort. Companies wishing to buy physical metal normally do so directly from producers or through merchants.⁶³

Metal to meet deliveries of LME contracts, that do go to delivery, must be an LME-approved brand and stored in LME-approved warehouses.⁶⁴ Large stocks of material are held in these warehouses around the world.⁶⁵ Among tin warehouses are such cassiterite and coltan freight forwarders from the DRC, which have been listed by the UN Panel of Experts (see Chapter 5.1), namely Belgo-Dutch venture C. Steinweg and Hollands Veem. For tin, there are 17 approved brands. All of them are produced by big producers such as Yunnan Tin, PT Timah, Thaisarco and MSC.⁶⁶

LME refrains from giving any information on the clients, buyers, sellers and sources of tin.⁶⁷

3.2 From Producers to Solder Manufacturers

Eleven major electronics solder manufacturers have been contacted by FinnWatch. Most of them answered the questions, but some regarded information about traceability and customers to be confidential. Solder manufacturers know usually where their tin has been smelted, because they buy directly from the big tin producers. However, they do not know where the tin originates, as a Japanese solder manufacturer explains: “We do not know where our tin has been extracted, because the smelters in Thailand (Thaisarco) and Malaysia (MSC) source their raw material not only from the countries in which they are located but from multiple sources all around the world”.⁶⁸

Some solder manufacturers also buy tin from traders or dealers. One American solder manufacturer interviewed by FinnWatch said it buys tin only from an American dealer. This dealer in turn said that they buy tin from South America and Asia, but refrained from answering further questions. However, based on the interviews, it can be concluded that solder manufacturers buy most of their tin directly from big producers, of which they mentioned Minsur (Peru), Thaisarco (Thailand), MSC (Malaysia), Yunnan Tin (China) and PT Koba Tin (Indonesia). Many solder manufacturers buy only from one

61 <http://www.msmelt.com/products/index.html>

62 <http://www.lme.com>

63 <http://www.metabrick.com/clients/blade/metals/faq.html>

64 <http://www.metabrick.com/clients/blade/metals/faq.html>

65 http://market-metal.com/pages/page_421

66 <http://www.lme.com>

67 LME representative, phone interview on 1 October 2007

68 FinnWatch has contacted AIM (US), Amtech Inc. (US), Avantec (France), Cookson Electronics Assembly Materials (US), Henkel Technologies (US), Kester Solder (US), Koki Company Ltd. (Japan), Nihon Genma (Japan), Nihon Superior Company Ltd. (Japan), P. Kay Metals (US) and Qualitek (US).

producer at a time.

Solder manufacturers in general do not attach social or environmental criteria to the purchase of the metals used in their products. For example, Kester Solder, with a share of 7 percent in European solder market, says they do not know the environmental criteria of the suppliers but they assume that their suppliers are conducting their business ethically. “In general, as our customers are price driven, we therefore are required to select our suppliers heavily on price as well.” Kester’s clients are contract manufacturers Solelectron and Flextronics and Sony and Siemens. They make everything from TVs to computers and printers.⁶⁹

The Japanese Nihon Superior Company, which has a share of 30 percent of the global lead-free solder market, says that in principle they attach social and environmental criteria to their purchases because they have corporate policies covering these areas, but as a relatively small company they do not have the resources to pursue the supply chain. “Where there are opportunities, however, the company has made an effort to make some contribution back to the community. For example after the South East Asian Tsunami the company funded the construction of several houses in Phuket (where Thaisarco is located).”⁷⁰

When asked, solder manufacturers did not think that the extraction of metals is within their sphere of influence.

The electronics industry currently consumes over a third of tin, mainly for solder. Yet, it is difficult to estimate what percentage of the world’s tin and tin solder goes to mobile phones, computers, MP3 players and game consoles. A Japanese solder manufacturer, which buys its tin mainly from Yunnan Tin Company and sells to Panasonic, Sony and Samsung, estimated that 5 percent of its solder end up in computers. Moreover, many of the solder manufacturers interviewed supply contract manufacturers such as Foxconn, Flextronics and Solelectron.

Taiwanese Foxconn is one of the largest manufacturers of electronics and computer components worldwide. Among other things, Foxconn produces the iPod for Apple Computers and motherboards for Intel Corp. Other customers include Dell, Hewlett Packard, PlayStation 2, Sony, Nintendo, Nokia and Motorola. Flextronics have manufacturing operations in over 30 countries. On 4 June 2007, Flextronics offered to purchase Solelectron. Flextronics has the contract from companies like Microsoft.⁷¹ Flextronics and Foxconn take care of a significant part of Sony Ericsson’s production of mobile phones.⁷²

3.3 From Congolese Mines to Producers

The problems with coltan (a tantalum-bearing mineral) in the DRC have been well documented. In 2000 demand soared, the price rocketed and military groups in the DRC responded by funding coltan exploitation, which exacerbated the conflicts in the war-torn country. The most well-known use of tantalum is in capacitors required for electronics goods such as mobile phones and computers. Coltan trade eventually slowed down, not because of any substantial action by the DRC government or the international community, but simply because the price of coltan fell.⁷³

Throughout the war, Rwanda benefited directly from coltan exploitation in eastern DRC and it has been suggested that between late 1999 and late 2000 the Rwandan army alone reaped revenues of at least US\$ 20 million a month.⁷⁴ It can be calculated that the DRC’s coltan export earnings can no longer be much more than 1 percent of those in 2000. The country has been largely pushed out of the tantalum trade, at least officially.⁷⁵

69 Chad Showalter, Kester Solder Germany, e-mail on 16 November 2007

70 Keith Sweatman, Nihon Superior Co., e-mail on 16 November 2007

71 <http://www.wikipedia.org> (28 November 2007)

72 Var tolfte SonyEricsson kommer at göras i Indien, by Lars Anders Kalberg. Article at Ny Teknik, 31 January 2007

73 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 13

74 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 13

75 Tegera, A. & Johnson, D. (2005) Digging Deeper: How the DR Congo’s mining policy is failing the country, Pole Institute report, p. 11–12

It has been repeatedly asserted that the extraordinary natural wealth of the DRC has never been used for the benefit of the Congolese people. The country is currently emerging from one of the world's worst conflicts, which has resulted in the deaths of 3.5 – 4 million people. Numerous rebel groups funded their occupation of eastern DRC through the exploitation of minerals, such as diamonds, coltan and cassiterite. Despite reunification of the country, much of the North Kivu province in the eastern part of the country still remains unstable and violent.⁷⁶

A massive demand for tin caused tin prices to rise as stated before. Cassiterite (tin ore) is found in the same areas as coltan and is being traded partly by the same networks. Walikale in North Kivu, unstable and partly under military control, is one of the country's richest cassiterite mining areas.⁷⁷

Eyewitness accounts from several reports show that the situation denounced by the international community regarding coltan – mining in bad working conditions, accompanied by military force, unclear ownership of mining interests leading to violent struggles, power-related trading structures, and lack of benefits for the local community – remains in place. Most cassiterite production in North Kivu comes from Walikale territory and its busiest mine Bisie, which has been a continuous war zone longer than any other part of the DRC.⁷⁸

According to the Goma-based intercultural Pole Institute involved in research work, cassiterite from Bisie and elsewhere is bought by numerous local traders (comptoirs), who in turn sell it to numerous international, mainly Belgian, marketing firms.⁷⁹ FinnWatch interviewed the largest companies for this report. The interviews show that they transport Congolese cassiterite mainly via Uganda to the ports of Mombasa (Kenya) and Dar es Salaam (Tanzania). From there cassiterite is shipped mainly to Asia: Thailand, Malaysia, China and Indonesia. When asked if cassiterite is ending up with the big producers such as Thaisarco, MSC or Yunnan Tin, one Belgian international marketing firm told FinnWatch: „There are no others“.

CASSITERITE MINERS OF WALIKALE, 2005

„I'm exhausted. I am carrying 50 kilos. I have a wife and two children. But we don't earn much and we endure many hardships. Sometimes you end up with no pay at all. You could die along the way too. When you reach Bisie, you will see the graves of porters like me.“ – Prince, porter⁸⁰

„The tunnels in Walikale are not safe. There's no space to breathe. The mines collapse every few days, and miners die. Their graves are in the forests.“ – Pascal, 16-year-old miner⁸¹

„As you crawl through the tiny hole, using your arms and fingers to scratch, there's not enough space to dig properly and you get badly grazed all over. And then, when you do finally come back out with the cassiterite, the soldiers are waiting to grab it at gunpoint. Which means you have nothing to buy food with. So we're always hungry.“ – Muhanga, miner⁸²

Some of these big producers have confirmed to FinnWatch that they buy cassiterite from traders in Africa and the DRC. For example, Thaisarco annually buys 15,000 tonnes of the raw material and parts of it come from the DRC. Thaisarco produces also solder to customers such as Samsung, Motorola and LG.⁸³

76 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 4

77 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 4, 16

78 Tegera, A. & Johnson, D. (2005) Digging Deeper: How the DR Congo's mining policy is failing the country, Pole Institute report, p. 26

79 Tegera, A. & Johnson, D. (2007) Rules for Sale: Formal and informal crossborder trade in Eastern DRC, Pole Institute report, p. 22–28

80 Channel 4 News, Congo's Tin Solders, by Jonathan Miller, 30 June 2005. <http://www.channel4.com>

81 Fortune, Congo's Tin Men, by Sundaram A., 27 April 2006

82 AlterNet.org, War, Murder, Rape...All for Your Cell Phone, 14 September 2006

83 Somchai Thamprasertwong, Thaisarco, phone interview on 23 November 2007

A rough estimate is that solder manufacturers buy 60 percent of tin directly from big producers and 40 percent from tin traders or dealers. Of the total of world cassiterite production, 65 percent might be smelted by big producers, 35 percent by small smelters. Big producers re-refine 15 percent of the latter. Thus around 20 percent of cassiterite is going to the market from small smelters.⁸⁴

Global Witness already reported in 2005 that much of the cassiterite from the DRC was transported through Mombasa (Kenya) or Dar es Salaam (Tanzania), ending up in two major processing plants, Thaisarco in Thailand and MSC in Malaysia.⁸⁵ FinnWatch's study supports this information, but there are even other Asian producers buying Congolese cassiterite.

STATISTICS

Many big solder manufacturers are American or Japanese companies. Many of them have subsidiaries in Europe. There are also large Chinese companies that produce electronics solder, but they are not easy to track down.

The US and Japan do not have any tin assets of their own. Tin has not been mined or smelted in the US since 1993 and 1999, respectively. The US imported 43,300 tonnes of refined tin and produced about 15,000 tonnes of recycled tin in 2006.⁸⁶ The most important source was Peru, accounting for half of tin imports (probably Minsur). Other important sources were Bolivia (probably CM Vinto), Indonesia (probably Koba Tin and Timah) and China (probably Yunnan Tin, Yunnan Chengfeng, Liuzhou China and Gejui Zi-Li).⁸⁷

In 2005, Japan was one of the world's top importers and consumers of tin metal. It imported 34,204 tonnes of unwrought tin metal out of which almost half came from Indonesia. Other sources were China (31 percent) and Malaysia (11 percent).⁸⁸

The UN Commodity Trade Statistics Database does not include data on cassiterite exports from the DRC. But when examining data from other countries, some imports from the DRC are found. Malaysia and Thailand reported imports of 842 and 3,968 tonnes of tin ores from the DRC in 2006. Malaysia also reported tin ore imports of 3,259 tonnes from South Africa; 1,091 tonnes from Kenya; and 1,057 tonnes from Belgium. Belgium did not report any tin ore imports from Africa, neither did China nor Indonesia.⁸⁹

This report describes the power struggles and corruption around one of the richest cassiterite mines in the DRC called Bisie. It also looks at the working conditions of artisanal miners, as well as the comptoirs and international traders involved, and export routes and destinations of these traders.

84 Kay Nimmo, Environmental Manager, ITRI, phone interview on 4 December 2007

85 Global Witness (2005), *Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC*, p. 24, 27

86 U.S. Geological Survey, *Mineral Commodity Summary on Tin*, January 2007

87 U.S. Geological Survey, *Tin in February 2007, Mineral Industry Surveys*, May 2007

88 U.S. Geological Survey, *2005 Minerals Yearbook – Japan*

89 UN Commodity Trade Statistics Database, <http://comtrade.un.org/>

4. METHODOLOGY

On behalf of FinnWatch, a Congolese human rights organisation based in Goma, provincial capital of North Kivu, and an Indonesian non-governmental network have contributed to part of this report in August and September 2007.

The Congolese centre for research on the environment, democracy and human rights, (Centre de Recherche sur l'Environnement la Démocratie et les Droits de l'Homme, Creddho) conducted a field visit in Walikale. Many actors were interviewed in Walikale and in Goma city. The information focused on Bisie, the richest cassiterite mine in North Kivu and its implications on miners and local communities, and enrichment of local actors.

In Indonesia a desk study was made by Jatam Mining Advocacy Network. The study focused on the world's largest tin mining area, the Bangka Belitung Province.

Information from both studies have been compared with and added to a wide range of already existing written sources that are being referred to in the report.

This report does not present full analysis of any single company, nor is it maintaining that any of them act illegally. Instead, it is trying to describe trade flows from mines towards solder, component and contract manufacturers. The views and descriptions of workers and local communities should be seen as indicators of what problems need to be addressed in general. Company representatives directly quoted in the report have had the opportunity to comment; not all of them have responded.

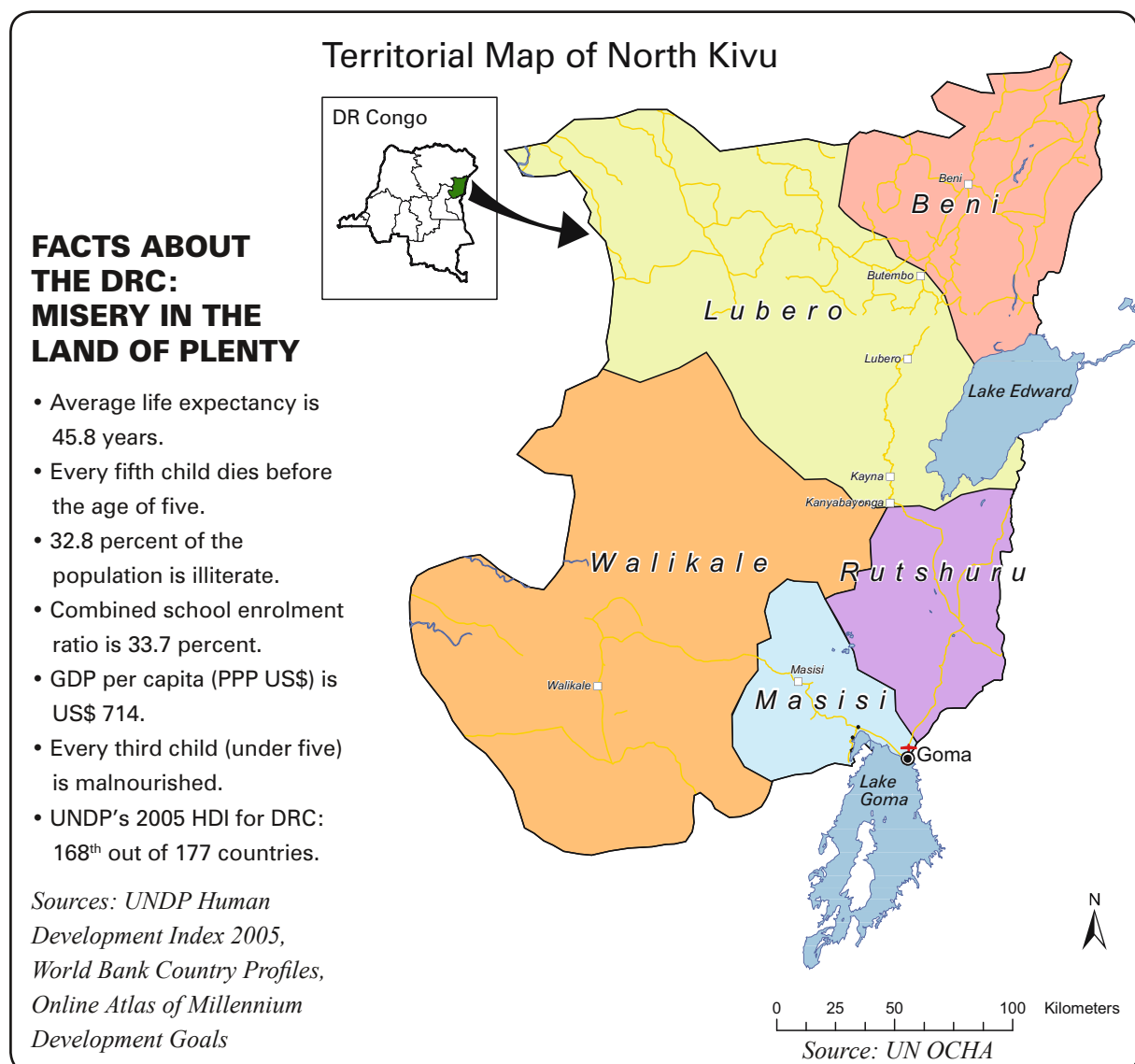
FinnWatch is grateful to organisations and other instances for earlier reports that we have found useful. Due to the nature of the makeITfair project, Chapters 1 and 7 are shared with SOMO and SwedWatch.

More research is needed in order to gain knowledge about companies' impact on human rights, the environment and development.

5. THE DR CONGO'S WEALTH – BLESSING OR CURSE?

The DRC is a country where a lot of people are starving and suffering in a land plentiful in natural resources. Plundered during the colonial era and ravaged by several wars since independence in 1960, the majority of the Congolese people have never really benefited from the country's abundance of mineral resources. What could have been the foundation of welfare and development has so far been little more than a curse on the country. The mineral resources of the DRC have almost always played a central role in the conflict. However, it is important to stress that the natural resources of the DRC have been but one of many factors driving the conflict. The colonial heritage (1885–1960), the destructive corrupt rule of Mobutu Sese Seko (1965–1997), power balances within the region, corruption and polarisation along ethnic and linguistic lines are other factors that have created a breeding ground for conflict.

Several researchers, as well as the UN's Panel of Experts on the Illegal Exploitation of Natural Resources and Other Forms of Wealth in the DRC, have described the intricate relationship between conflict, mineral resources, and the convergence of domestic and international economic interests.



This was again the case during the last war, ‘Africa’s world war’ (1998–2003), that involved seven countries in the region. So-called elite networks that consisted of political and military elites as well as business persons, rebel leaders and administrators looted the DRC’s natural resources, especially in the east of the country that was most affected by the conflict. According to the UN Panel, these networks monopolised production, commerce and fiscal functions and built up a self-financing war economy centred on mineral exploitation.⁹⁰ Around four million people are estimated to have died due to violence, war-related disease and hunger, which make it the most devastating conflict in terms of deaths since World War II.⁹¹

Coltan used in mobile phones was highlighted in the media, but cassiterite was also included in the UN Panel of Experts’ fact finding missions. The Panel was set up at the request of the UN Security Council in 2000, due to widespread concern at the link between the war and the exploitation of resources in the eastern DRC. Ownership of the country’s most valuable mineral assets was transferred to joint ventures controlled by private companies owned by a network of elite individuals. The state mining company’s revenues did not primarily come from actual metal production, but from the granting of concessions. Social and environmental aspects were not taken into consideration when these valuable assets were sold off.⁹²

One of the accomplishments of the reports was that the Panel highlighted the responsibility of companies active in conflict-ridden countries like the DRC. Supply chain management in relation to raw materials, specifically coltan, was discussed and according to the Panel, companies started to realise that their responsibilities extended further than they had previously acknowledged.

5.1 Exploitation of Congo’s Wealth Led to UN Investigations

A lot of material has been written about the illegal exploitation of the natural resources of the DRC. It has occurred both in the form of massive looting and systematic and systemic exploitation.⁹³ In 2000, the UN Security Council appointed a Panel of Experts to investigate the illegal exploitation of the natural resources and other forms of wealth of the DRC. Its reports, published in October 2002 and a final report a year later, caused a lot of controversy and irritated many of the 85 companies listed in it. A great number of companies and individuals were seen as involved in exploiting natural resources in a manner which could be linked directly with funding the conflict and leading to human and economic disasters. Others had allegedly violated the OECD Guidelines for Multinational Enterprises.

The Panel reported: „...exploitation was often carried out in violation of the sovereignty of the DRC, the national legislation and sometimes international law, and it led to illicit activities. Key individual actors including top army commanders and businessmen on the one hand, and government structures on the other, have been the engines of this systematic and systemic exploitation.“⁹⁴

The final report irritated several international developmental organisations: the Panel’s Final Report listed many company cases as resolved, without published reasons. Eleven cases were forwarded to governments for investigation under the OECD Guidelines. In its report of April 2004, RAID had gone through all the companies included in the Panel reports, and found the clearing process unsatisfactory for a number of them. Contradictions, inconsistencies and unanswered questions remain.⁹⁵

A number of companies dealt with in the Panel reports are mentioned in this study, namely Afrimex, Belgo-Dutch venture C. Steinweg-Hollands Veem⁹⁶, Finconcord and Finmining, Trademet

90 The concept of elite networks was developed by the UN Panel of Experts, for more information see the report dated the 16th of October 2002, S/2002/1146, Chapter II.

91 International Rescue Committee, referred to on Reuters Alertnet Congo (DR) conflict – At a glance.

92 UN Panel of Experts, report dated the 16th of October 2002 (S/2002/1146), Chapter III and the Panel’s report dated the 13th of November 2001 (S/2001/1072), paragraph 30–35 about copper and cobalt.

93 <http://www.un.org/News/dh/latest/drcongo.htm>

94 <http://www.un.org/News/dh/latest/drcongo.htm>

95 RAID (Rights & Accountability in Development) (2004), Unanswered Questions: Companies, Conflict and the Democratic Republic of Congo

96 Cuvelier, J. & Raeymaekers, T. (2002), European Companies and the Coltan Trade: An update, IPIS report

and Malaysia Smelting Corporation. All of these companies were seen to be in violation of the OECD Guidelines for Multinational Enterprises. After negotiations, the Panel considered cases with Afrimex, Trademet, MSC and Finconcord as solved. Finmining and C. Steinweg did not respond to the Panel.⁹⁷

However, an OECD complaint against Afrimex, a UK-based trader of cassiterite from the Kivus, has been filed with the British National Contact Point, on grounds of funding one of the foremost rebel groups (cf. Box below).

Belgian metals forwarder and warehousekeeper C. Steinweg is reported to export cassiterite from North Kivu to Hong Kong and Finconcord is reportedly exporting cassiterite to Russia.⁹⁸

AFRIMEX – EXAMPLE OF TRADER IN REBEL-CONTROLLED MINERALS

Afrimex is an illuminating example of concerns held by some developmental NGOs like Global Witness with regard to the UN-listed companies and investigations. In February 2007, Global Witness placed a complaint about Afrimex with the British OECD National Contact Point. Afrimex's trading has reportedly perpetuated the conflict in the DRC⁹⁹, as it has directly contributed to funding armed rebel groups in eastern parts of the country. Afrimex is still exporting some cassiterite from North Kivu, but in 2004–2005 it was even the second largest cassiterite exporter from South Kivu.

Afrimex is a mineral trading company, based in London. It employs four people.

Sourcing of the company has been happening even from mines where forced labour has been used and working conditions been life threatening. The eastern provinces like North and South Kivu have been partially or wholly controlled by rebel groups such as RCD-Goma during most of the conflict. It seized control of large parts of the Kivus in 1998. The area has been facing killings, rape, war crimes and crimes against humanity by these groups. Control of cassiterite and coltan resources and their exploitation ensured funding the rebel group RCD-Goma for keeping the Kivus under occupation.¹⁰⁰ (cf. Chapter 5.6).

From mid-1998 to late 2000, Afrimex was trading mostly coltan through its Société Kotecha's ore marketing arm. It exported 165,000 kg of coltan, more than any other company in terms of volume, and worth US\$ 2.47 million. A tax to RCD-Goma was estimated at 8 percent of the value of exports of all coltan traders. On top of this, the company paid US\$ 15,000 as an annual licence fee to RCD-Goma. Afrimex submitted a written testimony to the Select Committee on International Development of the United Kingdom Parliament, confirming that these taxes were paid to RCD-Goma officials.¹⁰¹

In 2000, RCD-Goma awarded itself a monopoly on the coltan trade. Traders had to pay it US\$ 10 per kg of coltan in tax. The money was then spent on funding the war, but none on the huge displaced population in extreme poverty. Cassiterite trading replaced coltan when the market for the latter collapsed. It has followed the same pattern and trade routes as coltan. Trade has remained highly militarised. Illegal taxing of miners, killings, intimidation and fighting for control of resources by the military have been common.¹⁰²

97 UN Security Council, S/2003/1027, Annex I, p. 8

98 Tegera, A. & Johnson, D. (2007) Rules for Sale: Formal and informal crossborder trade in Eastern DRC, Pole Institute report, p. 24

99 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Cassiterite in Eastern DRC, p. 23

100 Complaint to the UK National Contact Point under the Specific Instance Procedure of the OECD Guidelines for Multinational Enterprises, Afrimex (UK) Democratic Republic of Congo, 20 February 2007, Global Witness.

101 *ibid.*

102 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Cassiterite in Eastern DRC, p. 13



Artisanal cassiterite mining in Bisie, Walikale area, in North Kivu 2007. © Nicholas Garrett

5.2 Cassiterite Mining

The DRC is a country of extraordinary mineral wealth, as already stated. In 1985 the export orientated economy relied on mining which accounted for 75 percent of fiscal revenues and 25 percent of GDP. Over two decades later, the DRC is once again in the spotlight of the international mining industry and large scale mining companies are showing increasing interest in the DRC. However, the often overlooked fact is that 80 percent of Congolese mineral production is still undertaken by vulnerable, impoverished and largely illegal artisanal miners.¹⁰³

The DRC is also host to one of the world's worst conflicts, which has resulted in the deaths of up to four million people between 1997 and 2004. The International Rescue Committee estimates today, three years later that 38,000 people still die each month.¹⁰⁴ This conflict has been fuelled by the (mainly) illicit trade in natural resources. During the war, numerous rebel groups funded their occupation of eastern DRC through the exploitation of minerals, such as diamonds, coltan and cassiterite (tin ore). This wealth has never been used for the benefit of the Congolese population.¹⁰⁵

Despite reunification of the country, much of the east of the DRC still remains insecure. Much of the fighting that is still occurring is driven by the desire to control natural resources. Besides other minerals such as gold and diamonds, staniferous minerals coltan and cassiterite are widely distributed in the Eastern DRC, particularly throughout the provinces of North Kivu, South Kivu and Maniema. In the DRC, cassiterite tends to be found in exactly the same places as coltan. These minerals occur in streambeds, alluvial deposits and in soft rock, and are easily extracted by artisanal mining methods.¹⁰⁶

Cassiterite was first discovered in the Kivus in 1910, and in the 1940s the DRC was the second largest global producer. Société Aurifère et Industrielle du Kivu et du Maniema (Sakima) formed by the Canadian junior Banro Corporation in 1995, was formerly in charge of cassiterite concessions, however since 2002 they have 'lost control'. Since the end of the coltan boom, North Kivu has experienced a similar situation with cassiterite; the difference being that cassiterite is a less contentious mineral than coltan, with fewer technical and industrial applications, and therefore caused much less international interest.¹⁰⁷

World cassiterite consumption soared in 2004, and the DRC produced 3 percent of global

¹⁰³ D'Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing Note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 1

¹⁰⁴ Democracy Now, *Rape as a Weapon of Power and Domination: Congo's Plague*, 8 October 2007

¹⁰⁵ Global Witness (2005), *Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC*, p. 4

¹⁰⁶ Global Witness (2005), *Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC*, p. 14–20

¹⁰⁷ D'Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing Note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 16

cassiterite production, with revenues around US\$ 46 million. Most artisanal mining activity is currently focused on cassiterite in both North and South Kivu and miners work in teams overseen and ‘managed’ by their supporter. The trade is characterised by debt bondage, indiscriminate and capacious taxation and extortion from local chiefs, the national army FARDC, the Police des Mines and in some remote mining sites remnants of the Rwandan Liberation Forces (FDLR) and other armed groups.¹⁰⁸

Cassiterite exploitation in North Kivu is 100 percent artisanal, with exports from Goma valued at around US\$ 115 million on the world market.¹⁰⁹ Even if the DRC does not account for a large share of the world tin production, the country is relevant for the electronics industry as some of the the cassiterite mined there ends up in tin solder for electronics. Besides, the mining conditions are often dangerous and even inhuman. This report focuses on North Kivu and one of its mineral richest mines.

5.3 Control Over the Richest Mine

Most cassiterite in North Kivu comes from Walikale Territory, the westernmost part of the province. Walikale is estimated to account for up to 70 percent of cassiterite exported from Goma.¹¹⁰ The most important mine is Bisie, with 57 different pits¹¹¹, located north of Walikale town. Bisie contains diamonds, uranium, cobalt, cassiterite, coltan and bauxite deposits. There is a 35 km path from Walikale town into the forest where the mine is located and it often takes two days to get there by foot.¹¹²

Mining activities in the Eastern DRC have been, and remain, highly militarised. Until December 2004 when FARDC took over Walikale, pro-Rwandan RCD-Goma troops controlled cassiterite production and trading in the province and fighting has plagued this resource-rich area (cf. Chapter 5.6).¹¹³ Nowadays, there are said to be 29 more mine workings in Bisie controlled exclusively by the military or other security organs under the control of known senior commanders.¹¹⁴

The Walikale cassiterite region has been the object of an intractable ownership dispute. The leading cassiterite exporter and buyer in Goma, Mining Processing Congo (MPC), and the local firm Groupe Minier Bangandula (GMB) have been battling over the legal right to mine Bisie until recently. MPC holds a prospecting permit from the Ministry of Mines, but GMB has a leasing agreement for the concession with Sakima, which used to hold vast mining areas in the Kivu provinces. MPC insists Bisie does not form a part of the concession GMB is leasing. The situation deteriorated to the point where an MPC employee was wounded by firing in the company’s camp on 29 October 2006.¹¹⁵

GMB consists of land owners grouped in the Bangandula clan. One of them, through the firm Saphir, is Alexis Makabuza, now a target of UN sanctions because of his supposed links to illegal arms imports. South African MPC has close links to Rwanda and sells cassiterite to its sister firm MPA (Metal Processing Association) in Gisenyi just across the Rwandan border for processing. MPC was already well established in Bisie before the concession permit as a buyer of artisanally mined cassiterite.¹¹⁶

It is believed that GMB works closely with FARDC’s non-integrated 85th Mai-Mai brigade which controls access to the mine. The 85th brigade has stolen large quantities of bauxite from other miners in the area, intimidated tradesmen in the area, illegally taxed local miners, and raped women and tortured

108 D’Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing Note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 17

109 Garrett, Nicholas (2007), *The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM)*, Report following a mission to North Kivu, EITI, p. 20

110 Garrett, Nicholas (2007), *The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM)*, Report following a mission to North Kivu, EITI, p. 24

111 Tegera, A. & Johnson, D. (2007), *Rules for Sale: Formal and Informal Crossborder Trade in Eastern DRC*, Pole Institute report, p. 25

112 Zmag.org, ‘Blood Minerals’ in the Kivu Provinces of the Democratic Republic of Congo, by David Barouski, 1 June 2007

113 Global Witness (2005), *Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC*, p. 16

114 Credhho report.

115 *In North-Kivu: The Argument Between Two Mining Companies is Likely to Divide the Population of Walikale*, L’Avenir, 20 November 2006

116 Tegera, A. & Johnson, D. (2007), *Rules for Sale: Formal and Informal Crossborder Trade in Eastern DRC*, Pole Institute report, p. 26

the husbands of the rape victims if they resist. They also force the locals to mine for them. The 85th brigade even fought amongst each other for total dominance over the mine. Its commander, colonel Samy Matumo, denies all wrongdoings despite the admittance of colonel Kahimbi, deputy commander of the 8th Region.¹¹⁷ Some reports assess that the value of GMB's and the 85th brigade's "tax collection" is US\$ 350,000 per month.¹¹⁸

The district administrator Dieudonné Tshishiku Mutoke is a major contributor to the Bisie conflicts. He is at the heart of the problems surrounding the exploitation of cassiterite, especially as he occupies the office that facilitates and implements physical installations, be they of a company, a mining cooperative or even a governmental department at Bisie mine or elsewhere. At the height of the conflict between MPC and GMB, the district administrator approved a secret agreement with the latter company that allocates 10 percent of GMB's daily production to Mutoke.¹¹⁹

GMB agreed to hand over US\$ 0.05 per kg of cassiterite bought from Bisie/Mpama to Mutoke, in exchange for which he agrees to guarantee the security of the company's activities throughout the district. This leonine agreement was made in August 2006.¹²⁰ The cassiterite production of GMB is not known, but it has been estimated that the maximum capacity of Bisie is some 10,000 tonnes per year. If GMB digs a fourth of that amount, Mutoke earns US\$ 125,000 per year.

To win over the local mining population, MPC promised to build industrial mining units. The GMB actors and the traditional landowners reacted by forming the Coopérative Minière de Mpama Bisie Comimpa to defend their interests against MPC.¹²¹ MPC seems to have won the day, however. In December 2006, a development pact for Bisie was signed between the traditional chiefs and MPC. It says that for each ton of cassiterite bought by MPC, US\$ 90 will be paid to Walikale district. MPC also agreed to let each grouping operate an artisanal pit. In each grouping, MPC would build houses for the chiefs, schools and other buildings, as well as transporting basic goods into the area.¹²² MPC has also agreed to buy 50 percent of Comimpa's production.¹²³

In Bisie the FARDC's non-integrated 85th brigade has a firm grip on the mine and the trade of goods and minerals coming in and out.¹²⁴ The commander of the 85th brigade, Samy Matumo, has taken possession of a number of workings at Bisie, confiscated from various artisanal miners, which he exploits by proxy. He makes use of his friends and brothers to manage the shafts and act as tax collectors, especially at the Bisie exit point. Famous for his wealth, Samy Matumo and another chief of the 8th military region are said to have interests at the heart of the Comimpa cooperative, which they have always supported.¹²⁵

The GMB contract is now on the list of mining contracts to be reviewed by the inter-ministerial commission set up by the Kinshasa government on 20 April 2007. MPC does not figure on the list. This indicates that the ownership wrangle between GMB and MPC has been resolved in favour of MPC, but it does not mean that the local population has accepted the activities of MPC.¹²⁶

The 85th brigade is still present in the area but a compromise has been reached between the companies competing for the concessions, MPC and Comimpa. This means conflict between the 85th and MPC has stopped, but the 85th brigade is reportedly still taxing civilians and committing rights abuses.¹²⁷

117 United Nations Security Council. Letter dated 25 January 2007 from the Chairman of Security Council Committee Established Pursuant to the Resolution 1533 (2004) Concerning the DRC Addressed to the President of the Security Council. S/2007/40. 31 January 2007. p. 7–8

118 Garrett, Nicholas (2007), The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM), Report following a mission to North Kivu, EITI, p. 30

119 Creddho (2007), background report

120 Creddho (2007), background report

121 Creddho (2007), background report

122 Tegera, A. & Johnson, D. (2007), Rules for Sale: Formal and Informal Crossborder Trade in Eastern DRC, Pole Institute report, p. 27

123 Creddho (2007), background report

124 Garrett, Nicholas (2007), The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM), Report following a mission to North Kivu, EITI, p. 30

125 Creddho (2007), background report

126 Tegera, A. & Johnson, D. (2007), Rules for Sale: Formal and Informal Crossborder Trade in Eastern DRC, Pole Institute report, p. 27

127 David Barouski, Researcher, e-mail on 25 November 2007

Coerced by various manipulative tendencies, the people of Walikale are divided and derive no benefit from mineral exploitation that could aid their development. This has led one activist from a local farming association (Greadi) in Walikale to declare exasperatedly: “Walikale would be at peace with itself if it only had its palm oil; cassiterite spells nothing but trouble for our district.”¹²⁸

5.4 Situation of Artisanal Miners and Child Labour

Economic collapse, social instability, and resource plunder have resulted in a proliferation of clandestine artisanal mining activity in the DRC, and today the situation in the sub-sector could be described as utterly chaotic with little respect for law and order in almost all mining areas in virtually all provinces. In addition, the two wars, foreign military intervention and occupation, militia activity, and ethnic conflict have created large numbers of internally displaced people and ex-combatants who have few livelihood options.¹²⁹



Young cassiterite miners in a pit in Bisie, North Kivu 2007.
© Nicholas Garrett

Conservative estimates indicate that there are at least two million people, perhaps 3 percent of the population, directly dependent on this extremely arduous, hazardous, and precarious activity for their livelihood. Allowing each miner five dependents, it can be assumed that up to one fifth of the population probably survive through artisanal mining. In North Kivu alone perhaps 200,000 artisanal miners spread across a variety of minerals.¹³⁰

Despite the richness of many mining sites and the apparent productivity of some miners, the vast majority continue to live in poverty. Most Congolese artisanal miners earn between US\$ 1–3 per day irrespective of whether they mine diamonds, gold, copper, coltan, cobalt or cassiterite. The UN has noted that around 75 percent of artisanal miners are unable to cover minimum family needs with their earning. Most also become trapped, either through debt bondage, or because they have travelled far and abandoned their homes and farms and have no means to return to their previous livelihoods.¹³¹

Artisanal mining in the DRC encompasses a range of typical dangerous practices such as unstable open pits, poorly supported or unsupported deep shafts and galleries where diggers may remain

128 Creddho (2007), background report

129 D'Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 4

130 D'Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 4

131 D'Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 4, 10

underground for days, child labour, rapid and high levels of migration between sites with significant community impact, social disruption, environmental devastation, health concerns, debt-bonding, etc. Despite these challenges, the artisanal mining sector does have the potential to economically empower disadvantaged and vulnerable groups and contribute to Congolese development strategies.¹³²

Bisie has around 15,000 inhabitants. The pits employ between 15 and 17 people each, giving a total of around 1,000 miners, including those working clandestinely. They dig tunnels up to 200 metres deep to find cassiterite-rich streaks. The miners may shift between pits depending on where major finds are being exploited. Maximum production capacity in all pits together is 29.7 tonnes per day when it is not raining and no major earthworks are needed, giving up to more than 10,000 tonnes per year.¹³³

All piecemeal exploitation of the Bisie deposit should cease forthwith in view of the presumed size of the deposits remaining compared to the tonnage already extracted, and because of the technical conditions surrounding the current activities, which are in violation of the law governing the conduct of small-scale artisanal miners (Code de conduite de l'exploitant artisanal). Article 9 stipulates that artisanal miners may not dig tunnels nor carry out excavations exceeding 70 metres in depth. Despite this, Bisie has some 60 shafts averaging 70 metres in depth, with some reaching 200 metres. Some of these workings – none of which have any proper supports or ventilation – are flooded by underground water, are prone to immense heat and give off stinging gas that causes nosebleeds, even fainting.¹³⁴

The labour conditions of virtually all artisanal mines in the DRC is appalling and miners are generally completely unaware of basic occupational health and safety, many injuries and fatal accidents caused by shafts collapsing, as well as lack of knowledge or resources. Most incidents are caused by the widespread appalling and unsafe working conditions, dust, fumes, rock falls, landslides, underground stope collapses and ground failure. There are also the effects of poor ventilation and lighting, overexertion and inadequate work space.¹³⁵ There have been several incidents and 10 reported fatal accidents in Bisie in 2006 alone.¹³⁶

Poor health results from occupational hazards, poverty, poor sanitation and a lack of access to protection and health support. Examples are high HIV/AIDS prevalence, TB, malaria, cholera, verminosis, dysentery, diarrhea etc.¹³⁷ There is no sanitary system at the Bisie site. No toilets – people defecate everywhere, hence the prevalence of water-borne diseases. Bisie possesses just one viable health centre, and little pharmacies are often the setting for self-medication.¹³⁸

Children proliferate at Bisie mine. It is difficult to pin down the exact number in view of the anarchy reigning at the entrances and exits, though hundreds have been observed on a daily basis. Their job is to shovel and transport the cassiterite. Shovelling consists of clearing the debris from the underground shafts and sieving it to extract the last trace of mineral. As for transportation, the minerals are carried on the backs of carriers through dense jungle from Bisie to Njingala. The trip is very arduous and takes around 15 hours to complete. The cassiterite packs are estimated to weigh 50 kg and the carriers receive US\$ 30 per pack. The smaller children split the packs up into two, thereby earning US\$ 15 each on arrival. These children come from all parts of the district, though most originate from villages including Mubi, Njingala, the district's main town and Bisie camp.¹³⁹

The district's public administration allows the situation to continue and takes no steps to prevent children being involved in mine work. Also, many poor parents take advantage of school holidays to

132 D'Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 4, 10

133 Tegera, A. & Johnson, D. (2007), *Rules for Sale: Formal and informal crossborder trade in Eastern DRC*, Pole Institute report, p. 25

134 North Kivu Mines Division, *Annual Report 2006*, p. 23, 24

135 D'Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 5

136 Credhho (2007), background report

137 Garrett, Nicholas (2007), *The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM)*, Report following a mission to North Kivu, EITI

138 Credhho (2007), background report

139 Credhho (2007), background report

send their children to Bisie to earn money for their studies and for other primary needs. Having earned some money, the majority of children give up school and stay in the mine to get some more. Other children are attracted by Bisie's reputation as an Eldorado.¹⁴⁰ If nothing is done about it, every child in Walikale risks ending up in the mines within five years. The negative repercussions include loss of schooling, an increase in illiteracy, childhood delinquency, a drift towards armed gangs as the Bisie mines dry up, a rise in the incidence of sexually transmitted diseases (especially HIV/AIDS), moral corruption, etc.¹⁴¹

Many factors have combined to heighten child labour prevalence in the DRC including large numbers of war/conflict orphans, ex-child soldiers, HIV/AIDS orphans, lack of incentives for schooling, and lack of formal jobs. Women constitute a growing proportion of workers, they are engaged in some aspects of artisanal mining but due to low status they are generally compelled to undertake the poorly paid ancillary activities.¹⁴²

According to the Congolese Labour Code the legal age of employment is 18. Employment of children at the age of 15 or more is allowed if permission is given by the Inspector of Work and the child's parents. The writings of the law are, however, of limited use since most children in the mining sector are not formally employed but work individually.¹⁴³

ILO ON CHILD LABOUR

The ILO Convention no 138 (Minimum Age Convention) and 182 (Worst Forms of Child Labour Convention) were ratified by the DRC in 2001. They state that children should not work before the age of 15 and that they must have finished school. The minimum age for lighter work is 13 and for hazardous tasks 16 to 18. As a general rule, countries with weak economies and educational sectors are allowed to let children work at the age of 14, if they have finished their studies. The minimum age for lighter tasks is 12 and for hazardous working 16 to 18. These regulations are reflected in Congolese legislation, which prohibits employment of children under 18 for hazardous work like mineral extraction.

The excavators are very modestly recompensed by the owners of the workings in the form of small amounts of minerals, even after having dug out hundreds of kilos. The state is not involved in the matter, and the miners are at the mercy of the pit owners.¹⁴⁴ Their vulnerability to exploitation is further increased by the miner's mostly illegal status. Only a very small minority is in possession of an artisanal miner's card (*carte d'exploitant artisanal*) and designated artisanal mining zones do not seem to exist in North Kivu.¹⁴⁵

No democratic organisation, association or co-operative is followed to provide a single 'voice' that could help the artisanal miners in conducting pricing or workplace negotiations, mobilising assistance programmes, conducting awareness campaigns amongst its members and organising security and other mining-related activities. In reality neither the existing Mining Code of 2002 nor the Code on conduct of artisanal miners of 2003 are appropriate or sympathetic to the realities of the sector's artisanal miners.¹⁴⁶

140 Credhho (2007), background report

141 Credhho (2007), background report

142 D'Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 5

143 Code du Travail (2002), Exposé des Motifs and article 133 referred to in Global Witness (2006), Digging in Corruption, p 32.

144 Credhho (2007), background report

145 Garrett, Nicholas (2007) The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM), Report following a mission to North Kivu, EITI, p. 21

146 D'Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 6

5.5 Effects on Communities and Environment, Poor Infrastructure

Artisanal mining is associated with a multitude of social problems, many rooted in the forced migration of artisanal mining populations. They include conflicts with local communities, localised artificial inflation, ‘dollarisation’, food insecurity, increased demands on limited infrastructure/public services, and families abandoning farms and children dropping out of school. Many sites and nearby towns have become breeding grounds for general moral depravity, unconventional social behaviour, sexual violence, sex work, delinquency and criminality.¹⁴⁷

When large numbers of Congolese migrants arrive at a new ‘rush’ or mineral find, they can sometimes come into conflict with local communities. In addition, when a ‘booming’ economy develops around a sizeable artisanal mining operation, localised inflation often poses extreme difficulties to those who are not involved in mining and have a much lower income. In some areas of the DRC this has provoked violence. The higher cost and lower availability of basic foodstuffs also results in under nourishment and malnutrition for many not involved in mining, and is especially common amongst the more vulnerable groups such as women and children.¹⁴⁸

In addition, increased pressure on local services provided through local administrations, such as water supply, educational facilities and health provision – already scarce following the years of conflict – also pose difficulties and become yet another potential source of tension between the miners and the local, indigenous populations and land owners.¹⁴⁹

The “Ndogondogo” phenomenon

This is the name given to prostitution amongst the miners of Bisie. The miners prefer little girls to the older ones, whom they consider less attractive. The money to be made draws in numerous willing participants amongst the girl miners of Walikale.¹⁵⁰

Marital breakdowns and familial dislocation

A spouse who goes to work at the mine rarely returns to his/her partner, as they are sucked into the other life that reigns there. This leads to numerous marital breakdowns owing to the man or woman re-marrying in Bisie. This impacts on their children, who often find themselves abandoned.¹⁵¹

Environmental destruction

Artisanal mining is nearly always environmentally destructive as the sector operates in a clandestine manner with little regard or respect for the local environment or ecosystems, resulting in the direct dumping of waste, tailings, effluents, river damage in alluvial areas, mercury pollution, land degradation and soil erosion, deforestation, and the loss of biodiversity in protected areas.¹⁵²

The Congolese Mining Code includes environmental aspects. It stipulates that miners must restore sites where digging is finished and all mining projects must now have an environmental plan comprised of a mitigation and rehabilitation plan, an environmental impact study, an environmental management plan and an environmental adjustment plan.

Schools have open skies

A number of the district’s primary and secondary schools have been built on the initiative of parents. Most are rammed earth and thatch constructions, and they lack desks. Pupils sit on tree trunks or planks of wood. There is not one school at Bisie, and the children who are not in the mines spend their time in the cinemas watching films, some of which are pornographic.¹⁵³

147 Ibid. p. 6

148 Ibid. p. 12

149 Ibid. p. 12

150 Creddho (2007), background report

151 Creddho (2007), background report

152 D’Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 5

153 Creddho (2007), background report

Educational institutions lack rooms

Despite the revenues generated by cassiterite, the Walikale district's socio-economic situation remains in desperate straits. Higher institutions of learning survive amid difficult conditions. For example, the Higher Institute for Rural Development (Institut Supérieur de Développement Rural) does not have any lecture rooms of its own. Instead, its students attend lessons on the premises of the local technical commercial and administrative institute. Its administrative office is housed in a little old building that belongs to a senator from the transitional period.¹⁵⁴

Public buildings decay

Almost every building housing public services in Walikale dates back to colonial days. They have dilapidated roofs, and the bricks in the walls are crumbling one after the other. Neglect of the most serious kind can be seen in the building housing the agriculture, fishing, stock-rearing, hygiene, police, where part of the roof no longer exists. These offices have to manage with ancient equipment, no computers and dilapidated chairs, shelving and filing cabinets.¹⁵⁵

Roads need maintenance

Once one goes beyond the 60 km of asphalted road leading towards the eastern province, Walikale's roads are in a pitiful state. The road from the neighbouring district of Masisi, which was opened by the German organisation Agro Action Allemande, and on which all hopes were pinned in terms of opening up the region, has deteriorated rapidly through lack of maintenance. The district has renewed only ten or so kilometres of the road leading from the capital of Walikale to Itebero. This is a mere drop in the ocean compared to the sheer size of the area and the revenues generated annually from cassiterite mining alone.¹⁵⁶

5.6 Blood Cassiterite

Violations against international human rights and humanitarian law in eastern DRC are colossal. Abuses on the part of government soldiers and other armed combatants target non-combatants and include killing, rape, torture, arbitrary arrests, intimidation, mutilation, and the destruction or pillage of private property. This also causes mass displacement and all the effects that come with this, as people are forced to live in subhuman and dangerous conditions within the reach of armed combatants.¹⁵⁷

In some areas, military groups are actually in control of the mines and are carrying out their own digging, whilst in other areas military personnel are illegally taxing the artisanal miners, either on site or when the miners carry the minerals to the nearest town or trading point. The rich mineral wealth of the area has benefited local traders and numerous military factions, but has left the local population living in danger and poverty, not to mention the fiscal losses to central government.¹⁵⁸

The fighting continues in North Kivu, and has intensified in 2007. Some 370,000 people have fled fighting in North Kivu in 2007. "What we're worried about with the expanding and intensifying of fighting is that we're seeing people who have already had to flee for the second or third time," said Patrick Lavand'homme, head of the UN humanitarian agency OCHA in Goma. "The problem is reaching these areas to distribute medical and surgical supplies. It's now impossible," he said in October 2007.¹⁵⁹

There are numerous armed fractions involved in creating the displacement in North Kivu. Responsible are the FARDC (national army), FOCA (the armed branch of the FDLR), Hutu militias

¹⁵⁴ Creddho (2007), background report

¹⁵⁵ Creddho (2007), background report

¹⁵⁶ Creddho (2007), background report

¹⁵⁷ Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 11

¹⁵⁸ Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 17

¹⁵⁹ Reuters, Congo Fighting Resumes, by Marlene Rabaut, 12 October 2007

of Local and ex-Local Defense Forces, Mai-Mai group, the Rwandan Defence Force, and General Laurent Nkunda's troops.¹⁶⁰

The 1994 genocide in neighbouring Rwanda is primarily to blame for the crisis. The Hutu extremists who murdered an estimated 800,000 Tutsis and moderate Hutus later fled into what was then Zaire, using it as a base to attack Rwanda's new RPF Tutsi government. Rwanda twice invaded Congo to confront the insurgents. The conflict ended with eastern Congo controlled by Tutsi rebels backed by Rwanda and Uganda. Peace accords and elections in 2006 – the first free vote for more than 40 years – were meant to bring some stability but efforts to integrate rebel troops into the national army are running into trouble.¹⁶¹

Among the biggest warlords is General Laurent Nkunda, ex-commander of the Rwandan backed RCD – the main rebel group which controlled most of eastern DRC during the five-year civil war. He claims he is only protecting Congolese Tutsis. Human Rights Watch (HRW) says his troops have been implicated in numerous killings, torture and rapes. Some 170,000 people alone have fled North Kivu's three-way clashes in 2007 between Nkunda's forces, ethnic Hutu Rwandan rebels and the Congolese army.¹⁶²

Nkunda primarily controlled Walikale/Bisie from June 2004 to December 2004. After private charter flights flew the cassiterite to Kigali, it was often smelted at the MPA plant in Gisenyi, then shipped by road to the port of Mombasa or Dar es Salaam (or shipped as raw ore), depending on the time period as they shifted ports to escape scrutiny. Ships delivered it to Rotterdam, Singapore (to a lesser degree), and Malaysia, then it was shipped by land to its final destination.¹⁶³

In late 2007, Nkunda controls the mines in Masisi Territory (between Goma and Walikale) to the east and south of Masisi Town. The Mai-Mai, FOCA, and other primarily Hutu militia comprised of ex-LDF, control the areas to the north and the far northwest corner on the Walikale Territory border. None of these are industrially mined, they are all artisanal projects or open pits. There are known cassiterite deposits near Luwovo, Mataba Hill, and an open pit near Ngungu, all in Masisi.¹⁶⁴

Nkunda and his backers in the Rwandan government are accused of smuggling minerals out of North Kivu to Rwanda, specifically cassiterite and pyrochlore. It is said that the control of the production and smuggling of these minerals is fuelling the continued violence, hence the term „blood minerals“. It is believed that Nkunda may make a move to re-exert control over Walikale sometime in the future. The 85th brigade, while continuing to control access to the mining area of Walikale, has been fighting against Nkunda.¹⁶⁵

Also, the mismanagement of the country and the widespread corruption among the political elite has been described by many. If the DRC is to gain fully from its natural resources it needs to control its borders and add more value at home. The Mining Code only accepts exports of unprocessed ore if it cannot be processed locally and exporters need the approval of the authorities.¹⁶⁶ However, for years the borders have been guarded by corrupt customs officials.

The east of the DRC has always been an important transit region for trade in Central Africa. Most exports take place outside the formal system and are unregistered. According to the Goma-based Pole Institute, cassiterite exports from North Kivu alone were worth around US\$ 25million in 2006, but only a small fraction of this found its way into official statistics: US\$ 7million. Of the cassiterite mined in Walikale district, less than half is registered in Goma as having arrived, and only slightly more than half of this amount shows in the export registers. Pole Institute remarks, according to the official statistics cassiterite comprised about 30 percent of the exports from North Kivu in 2006. Export taxes in the DRC are much higher than in neighbouring countries, since many more agencies

160 David Barouski, Researcher, e-mail on 22 November 2007

161 Guardian, Q & A Conflict in Congo, by Mark Tran, 4 November 2007

162 BBC News, Profile: General Laurent Nkunda, 4 September 2007

163 David Barouski, Researcher, e-mail on 25 November 2007

164 David Barouski, Researcher, e-mail on 22 November 2007

165 Zmag.org, 'Blood Minerals' in the Kivu Provinces of the Democratic Republic of the Congo, by David Barouski, 1 June 2007

166 Code Minier (2002), article 85.

involve themselves in trade control at the border than provided for in the law.¹⁶⁷

Conflicts over these trade operations and their control have been a major causal factor in recent wars in the region.

5.7 Jungle of Comptoirs and Traders

Once the cassiterite has been mined, it is then sold on to purchasing agents, or comptoirs. A comptoir is a local business that buys raw minerals extracted from the mines before they are processed. They, in turn, arrange for the onward transport of the ore, by plane or lorry, and sell it to the mineral processing or international marketing companies. These companies sell on to international markets. Each comptoir generally specialises in one or two specific minerals and many of the owners in the cities are foreigners.¹⁶⁸

According to the Initiative for Central Africa (INICA) the various actors involved in the early production chain (local digger – middleman – purchasing agent – processing and/or international marketing company) of cassiterite are themselves disconnected from each others' working conditions and realities. INICA says that information sharing between these actors is essential to rebuild trust and improve the organisation of the artisanal mining sector.¹⁶⁹

Minerals can only be transported by individuals with a miners' or a traders' card. In North Kivu, the middlemen, who buy cassiterite at the mining sites and sell to purchasing agents in larger villages, are often as informal as the miners, as they too lack the required trading licence. They tend to escape regulation and often contribute to the exploitation of the miners by paying the miners prices which do not correspond to the real value of their minerals.¹⁷⁰

The most important cassiterite comptoirs in North Kivu are companies called Amur, Sodexmines and MPC (Metal Processing Congo; MPA's sister company). MPC is the main player in Walikale area. Also Amur and Sodexmines are reported to buy cassiterite from Bisie. Cassiterite from Bisie is carried on foot to Njingala, 35 km away and a two-day journey through difficult terrain. In Njingala, comptoirs including those mentioned above, buy the ore for up to twice the pit price. From Njingala, the comptoirs transport their cassiterite to Walikale airstrip, known as Kilambo. Kilambo is in fact part of the old war-bashed Goma-Walikale road which is no longer used. Plane accidents are frequent.¹⁷¹

From Kilambo, cassiterite is flown to the provincial capital Goma and brought to the trading firms based there. At these head offices, the mineral may still be rejected as too impure and the middleman not paid. When agreement is reached, the mineral is officially weighed and packaged for export, usually in container loads of 25 tonnes, under the supervision of a multitude of state agencies. From Goma, cassiterite is transported by road to either Rwanda or Uganda as transit goods. Most of the cassiterite from Goma, a city on the Rwandan border, is exported by Belgian traders called Trademet or SDE, or MPC.¹⁷² There are even many other companies involved.

Cassiterite exports grew rapidly and exploded during the tin price boom of 2004, remaining at a high level since then. Cassiterite exports from North Kivu in 2006 were 2,904 tonnes, but increased in the first six months of 2007 remarkably, reaching 4,019 tonnes.¹⁷³ However, the figures do not reflect the true amounts, as cassiterite leaves North Kivu even unregistered.

It is estimated that about 14,000 tonnes of unprocessed cassiterite arrive in Goma from Walikale annually, with a world market value of US\$ 88.7 million, if factoring 30 percent weight loss to obtain a 65 percent tin export grade. The UN estimates only US\$ 800,000 actually stays in the local economy

167 Tegera, A. & Johnson, D. (2007) Rules for Sale: Formal and informal crossborder trade in Eastern DRC, Pole Institute report, p. 4, 15–16

168 Global Witness (2005), Under-Mining Peace. Tin: The Explosive Trade in Eastern DRC, p. 18

169 INICA, May-June 2005: Zoom on Artisanal Mining, INICA Flash No 9.

170 Garrett, Nicholas (2007), The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM), Report following a mission to North Kivu, EITI, p. 18

171 Tegera, A. & Johnson, D. (2007) Rules for Sale: Formal and informal crossborder trade in Eastern DRC, Pole Institute report, p. 27–28

172 Ibid. p. 22–28

173 Credhho (2007), background report

of Walikale territory, states UN Panel of Experts, 2007.¹⁷⁴

A large number of trading firms are active in the mineral trade in North Kivu, but only a few of them appear to be significant.

Table 5: North Kivu recorded cassiterite exports by comptoir in 2006 and first half of 2007 (in tonnes)

COMPANY	2006	1 st HALF OF 2007 ¹⁷⁵
Sodexmines	778	1,254
Amur	944	992
MPC	429	428
Bakulikira Ng.	68	248
Ets Panju	74	221
Munsad	296	205
Avisam Trading	–	177
Metachem	10	110
Hill Side	25	87
Clepad	–	79
WMC	–	70
La Comète	98	48
Hua Ying	–	25
Starfield (SMC)	–	24
Eurotrade Int.	–	23
Gemico	156	20
Ets Gama	27	–
Total	2,904	4,019

Source: Division des Mines, Goma

The market leaders in cassiterite exports are Sodexmines and Amur. The former is directed by a Lebanese businessman with a British passport who entered the North Kivu mineral market from Kinshasa in 2005. The latter is owned by a Congolese trader from Idjwi island in Lake Kivu who has good links with the local administration and also food supply contracts with the UN's World Food Programme. MPC is an established South African mineral trader, linked with Rwanda through the sister company MPA.¹⁷⁶ Both companies belong to a new consortium named Kivu Resources.

Around 80 percent of cassiterite from North Kivu is reported to go to Belgium through Belgian traders. The second most important destination is reported to be Rwanda, accounting mainly for MPC/MPA exports. Ets. Panju exports to Malaysia and Russia. Exports to Britain are carried out by Comptoir Ibak (Bakulikira) through a British trader, Afrimex. Most cassiterite transits via Uganda, the rest via Rwanda.¹⁷⁷

However, according to the information FinnWatch has received, most cassiterite from North Kivu goes to Asia, not to Belgium (see the following chapter). Cassiterite is mostly transported from Goma via Uganda to the Indian Ocean ports of Dar es Salaam and Mombasa probably by two truck companies, TMK (Kivu Transport and Handling) and Transami. These two companies are perhaps the main players in transit, customs and storage services. They also take care of export formalities.

¹⁷⁴ Garrett, Nicholas (2007), The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM), Report following a mission to North Kivu, EITI, p. 24

¹⁷⁵ Source: Division des Mines, Goma, DRC

¹⁷⁶ Tegera, A. & Johnson, D. (2007), Rules for Sale: Formal and informal crossborder trade in Eastern DRC, Pole Institute report, p. 23–24

¹⁷⁷ Ibid.

Table 6: Cassiterite exports from Goma 2006 by destination¹⁷⁸

COUNTRY	FIRM(S) OF DESTINATION	QUANTITY (IN TONS)
Belgium	Trademet, SDE, STI	2290
Rwanda	MPA, Eurotrade	435
Malaysia	Corporation Berhad	74
Britain	Afrimex	74
Russia	Fincocor Kazakhstan	27 (supposedly Finconcord -edit.)
Hong Kong	C.Steinweg	4

5.8 International Marketing Firms and the Route to Asia

The biggest foreign marketing firms of cassiterite from North Kivu are Belgian SDE and Trademet, Metmar as well as Rwandan MPA, which has recently become a part of the Kivu Resources. Their registered export quantities in the first half of 2007 are 1,254 tonnes for SDE (assumption: Sodexmines sell all cassiterite through SDE); 1,197 tonnes for Trademet (assumption: Amur and Munsad sell all cassiterite through Trademet), and 428 tonnes for MPA (assumption: MPC sells all cassiterite through MPA).¹⁷⁹ Real export figures may be much higher than these registered figures.

Based on the information received, FinnWatch concludes that most cassiterite from North Kivu ends up in Asia with the big smelters of Thailand (Thaisarco), Malaysia (MSC), China (Yunnan Tin and others) and Indonesia that all supply the electronics solder market. Some cassiterite might go to Belgium, but this needs further research. It can also be concluded that cassiterite from Bisie goes to Asia, because according to the Pole Institute¹⁸⁰ the *comptoirs* to these foreign marketing firms, namely Sodexmines (supplier to SDE), Amur (supplier to Trademet) and MPC (supplier to MPA) are based in Njingala.

Cassiterite is partly enriched already in the DRC. For example, Sodexmines advertises itself in the Yellow Pages¹⁸¹ as a purchaser and processor of cassiterite. It produces cassiterite powder with a tin content of 65 percent. This is done in its Kivu factory with a processing capacity of 150 tonnes of cassiterite per week. The factory is equipped with crushers and magnetic separators. To reinforce its market position, it has received a large concession in Katanga which is exploited industrially. In the same advert, just next to the name of Sodexmines another name appears: Elwyn Blattner Group, a parent company of SDE.

SDE

SDE (Société pour le Développement et l'Expansion d'Entreprises) has been involved in commerce between the DRC and Belgium since it began trading. SDE became part of the US-owned Elwyn Blattner Group in 1983. This enlarged its business in the field of obtaining raw materials for the metal industry. Nowadays SDE serves many Blattner Group companies in the DRC and has its head office in Brussels, Belgium. According to its web page SDE imports to Europe many Congolese products such as cacao, coffee, rubber, palm oil and tropical timber.¹⁸² Strangely, cassiterite is not mentioned, although SDE is a significant cassiterite trader.

Among the major timber firms in the DRC is a company called Saffois, owned by a family firm – the Blattner Group. The Blattners' other Congo-based businesses include construction, road building, telecommunications, aviation, trucking, port services and agriculture. The Blattners have operated in

¹⁷⁸ Ibid.

¹⁷⁹ Credhho (2007), background report

¹⁸⁰ Tegera, A. & Johnson, D. (2007), Rules for Sale: Formal and informal crossborder trade in Eastern DRC, Pole Institute report, p. 27

¹⁸¹ <http://www.pagewebcongo.com>

¹⁸² <http://www.sdee.be>

Congo for forty-six years. They purchased some of their best assets after the Mobutu seized them from their Belgian owners. Environmentalists charge that Safbois is logging in violation of local agreements and national laws and with no regard for the well-being of local people or the environment.¹⁸³

SDE sells its cassiterite to a Belgian client and big cassiterite/tin trader, whose name SDE's director Edwin Raes does not want to disclose. Their cassiterite travels through the port of Mombasa to Belgium (Antwerp), Indonesia and Malaysia. Raes says that cassiterite ends up with big smelters, and he suspects one of them is in Belgium.¹⁸⁴ However, according to other sources, European tin smelters have not been able to compete with Asian and South American tin producers in tin ore processing and smelting for a decade, because of high production costs.¹⁸⁵

Trademet

Belgian Trademet SA was established in 1989 and is involved in the area of trading of ores, primarily tantalite and cassiterite. Geographically the company operates worldwide but has specific interests in Africa, the Far East and Europe. Trademet is a member of the Minor Metals Trade Association (MMTA) and the Tantalum-Niobium International (TIC) Study Center.¹⁸⁶

Trademet was one of the businesses considered by the UN Panel of Experts to be in violation of the OECD Guidelines for Multinational Enterprises in 2001. The International Peace Information Service (IPIS) recommended to the Belgian government and judicial authorities that they should investigate the companies mentioned in the report from the Panel of Experts, including Trademet.¹⁸⁷ In its final report, the UN Panel of Experts considers the Trademet case as resolved after in-depth discussions and action where needed.¹⁸⁸

Trademet buys cassiterite among others from the DRC and Rwanda, and two big Goma-based comptoirs Amur and Munsad. Cassiterite is transported from Goma via Uganda to the Indian Ocean ports of Dar es Salaam and Mombasa. Transportation is less expensive via Uganda than Rwanda. Trademet sells its cassiterite extracted in the DRC directly to Asia to big tin producers in Malaysia, Thailand and China. In China, Trademet sells to three or four big smelters. Trademet usually has one-year contracts with tin producers. "Smuggling maybe occurs, but it is very difficult to escape from paying taxes, because there are some 15 offices from where you have to get papers before exporting," says director Freddy Muylaert.¹⁸⁹

Metmar

For the past three years, South African stock listed company Metmar has been marketing tin collected, upgraded and traded by MPC from artisanal miners in Kivu. It has been reported to export 500 tonnes of tin concentrate a month.¹⁹⁰ Over the year 2007, these exports were due to grow to 1,000 tonnes per month. The reason was, artisanal miners were to be given assistance and a new area to exploit.¹⁹¹ Metmar told FinnWatch, from North Kivu it is exporting „a couple of containers“ a month, each 20 tonnes, but from other Sakima sources, not from Bisie mine there.¹⁹² The shipments go by road to Dar es Salaam and Mombasa and are then shipped to Malaysia, Thailand, Indonesia and China, where Metmar pays smelters for converting the metal.

Metmar is the the marketing wing of a new consortium with social programme, Kivu Resources. It

183 The Nation, The Fight to Save Congo's Forests, by Christian Parenti & Laura Hanna, 4 October 2007

184 Edwin Raes, Director, SDE, phone interview on 14 November 2007

185 Peter Boecks, Metallo-Chimique, phone interview on 20 November 2007

186 <http://www.mmta.co.uk/directory/viewMember.aspx?ID=50>

187 Cuvelier, J. & Raeymaekers, T. (2002), the War Economy in the DRC: European Companies and the Coltan Trade. An IPIS report.

188 UN Security Council, S/2003/1027, pp. 9–11.

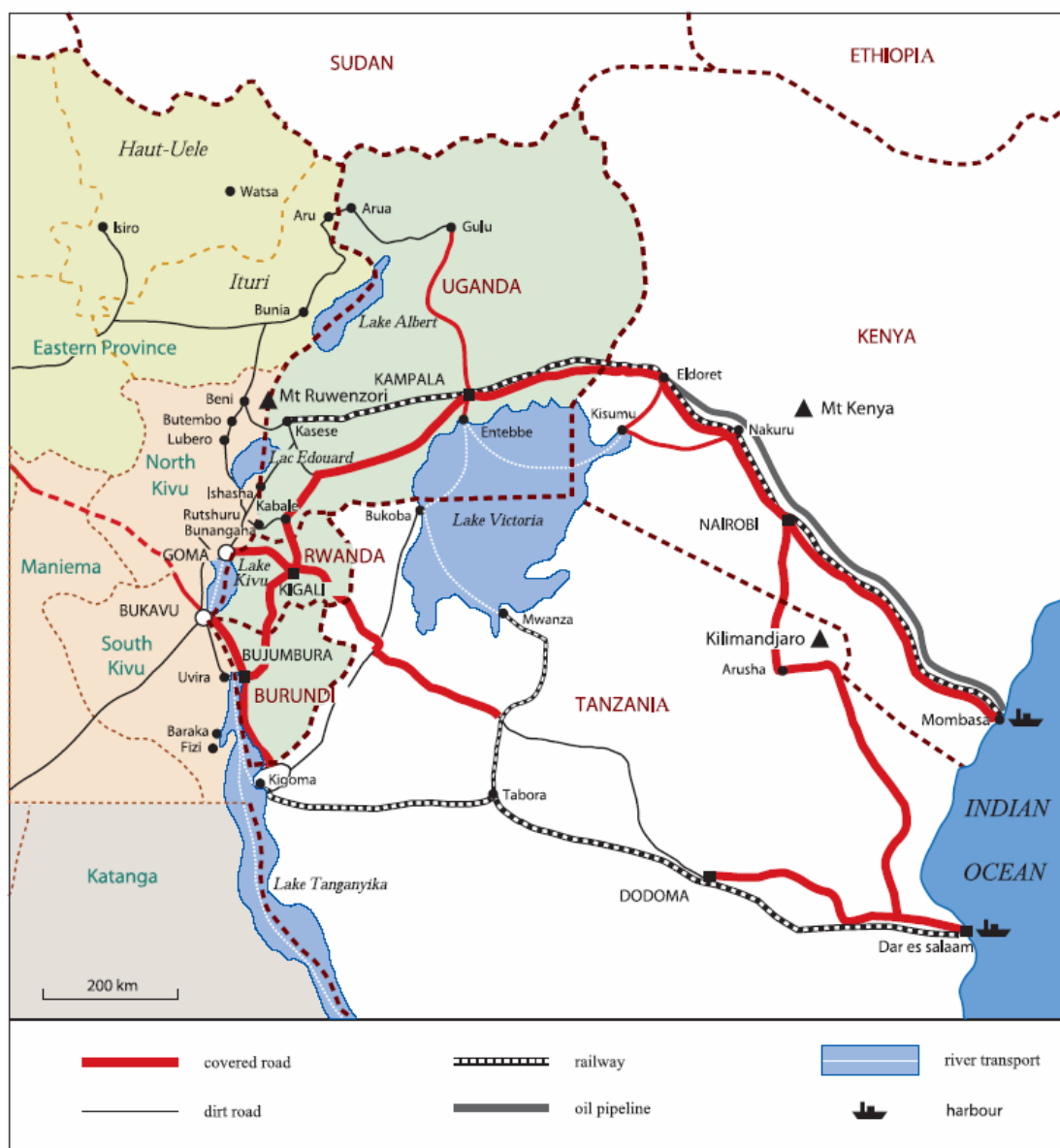
189 Freddy Muylaert, Director, Trademet, phone interview on 13 November 2007

190 www.miningmx.com/mining_fin/597494.htm

191 icms.iac.iafrica.com, "Metmar to raise R20m in BEE deal", by Allan Seccombe, 24 January 2007

192 CEO David Ellwood, Metmar, e-mail 11 December 2007

TRADING ROADS IN THE EASTERN BASIN



Trading routes of minerals from North Kivu towards Kenya and Tanzania.

Source: INICA/Roland Pourtier

is seeking exclusive marketing rights for tin, tantalum and tungsten minerals from Kivu concessions for at least a decade.¹⁹³

5.9 Examples of New Mining Consortiums

Kivu Resources

As a result of the new mining regime and legislation, interest in mining in the DRC has attracted new international investments. A consortium named Kivu Resources was formed in early 2007. The shareholders are South African listed company Metmar (7 percent), South African Coronation Capital

¹⁹³ CEO David Ellwood, Metmar, phone interview 16 November 2007

registered in Ireland (28) and involved even in aircraft leasing¹⁹⁴, Jonah Capital (35), founders (20) and management (10). Its South African CEO, operating from Mauritius, owns Edin Mining based in the British Virgin Islands, and owns his shares through this company.

Kivu Resources is the sole owner of Mining and Processing Congo (MPC) and Rwandan Metal Processing Association (MPA). There is a partnership and management agreement with Sakima, owned by the Congolese government, and an option to buy up to 80 percent of Sakima. Kivu Resources holds tin, tantalum and tungsten ore concessions in eastern DRC.¹⁹⁵ It is also managing tin and tantalum production from small-scale miners in Kivu. This happens through local companies it owns such as MPC. MPC buys, upgrades and trades cassiterite and tantalite.¹⁹⁶

Kivu Resources also holds exploration permits in the eastern Congo, on the concession areas stretching across 250,000 hectares.¹⁹⁷ Its operating licence has preconditions on uplifting the areas. The company needs to provide hospitals and schools for local people.¹⁹⁸

Shamika Resources

Another example of international interest is Canadian Shamika Resources, established in 2006 and a subsidiary in Goma early in 2007. By August 2007, Shamika had applied for its 18th exploration permit, and has been granted nearly 1,200 mining blocks covering an area of almost 1,000 km². It is acquiring more tin concessions. In Walikale, North Kivu, Shamika's property includes 249 mining blocks under one exploration permit, for 216 km². Shamika says, it is going to develop a community development programme inspired by CSR, UN Global Compact Principles and UN Norms for Business.¹⁹⁹ In early December 2007, Shamika had no operation activities nor sales of raw materials in Walikale blocks.²⁰⁰

5.10 Institutional Capacity and Development

Congolese institutions involved in governance of the artisanal mining sector suffer from limited institutional capacity.

In the DRC the Ministry of Mines is responsible for the artisanal mining sector, and has several key agencies under its jurisdiction, including the Mining Division. The capacity to police, regulate, monitor or assist the artisanal mining sector is under-resourced. Significant institutional strengthening, capacity building, sensitisation and effective decentralisation is needed to turn this around. There is also a lack of an enabling, consistent and clear policy to help implement the Mining Code to formalise, empower and assist the artisanal sector, especially in the provinces.²⁰¹

In North Kivu, Saesscam (Service d'Assistance et d'Encadrement du Small Scale Mining) is a key institution behind the ongoing attempt to formalise mining activities in the province's principal cassiterite mine, Bisie, which today remains fully controlled by the FARDC's non-integrated 85th brigade. However, despite some positive news, there are significant drawbacks to formalisation in its current state.²⁰²

Saesscam was established as a branch of the Mining Division in March 2003, primarily in order to track the flow of minerals from artisanal mine workings to the point of sale and ensuring all production

194 www.idaireland.jp/home/companies

195 www.kivuresources.com

196 www.miningmx.com/mining_fin/

197 www.kivuresources.com

198 www.miningweekly.co.za

199 <http://www.shamikaresources.com>

200 Patrick Martineau, Environmental and Social Affairs, Shamika Resources, email on 7 December 2007

201 D'Souza, Kevin (2007), Artisanal Mining in the DRC, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 6–8

202 Garrett, N. (2007) The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM). Report following a mission to North Kivu, EITI, p. 34

is funnelled into official routes to clamp down on smuggling and illicit sales. The idea was to base a Saesscam at each artisanal mine site to oversee all selling processes and record keeping. Saesscam also tasked with supporting artisanal miners with technical assistance, health and safety advice, social services, etc; a huge challenge for a young and relatively small organisation.²⁰³

In June 2007, the governor of North Kivu province, Julien Paluku Kahongya, issued a decree defining the shares of the charges as payments for services rendered, with a view to channelling the minerals produced by artisanal operations into the official market and combating fraud and mineral smuggling in North Kivu. This included supporting the creation and statutes of Saesscam – its share declared in this protocol is 25 percent.²⁰⁴

However, the channelling system and sole counter – as represented by Saesscam – has no presence for example at Kilambo airstrip, hence the difficulty Saesscam has had in establishing itself to this very day. The provincial governor, whose decision it was to establish Saesscam at Walikale, has so far done nothing concrete to ease the situation. According to information gathered on site, this encourages a system of transactions that occur between traders and certain representatives of the organisations involved in fixing the untaxed excess quantities. Representatives of the provincial tax department (EAD) are involved with the territorial and sectorial EADs in the receiptless “taxing” (at a rate of FC 1,500 or US\$ 3) of 50 kg packs of cassiterite at Bisie’s three official exit points (Njingala, Isanga and Mayuane): they divide this amongst themselves – at FC 500 each. The scam is lucrative, since an average of 100 packs pass through their hands on a daily basis.²⁰⁵

The official structure of Saesscam, with its anti-mining fraud activities, has never really taken off in Walikale. In August 2007, its staff had not yet been authorised to start supervising the channelling and taxation of the cassiterite as stipulated in its articles of incorporation. Saesscam has installed its staff at the control/collection barriers at Bisie, Njingala, Mayuane, Isanga, Mubi and at Kilambo airstrip where the minerals are loaded onto the aircraft. There is a small, empty office at Mubi, where three officials said they had nothing to do; life for them was hard owing to a lack of wages and nothing by way of revenues. Saesscam officials at the locations where their presence is tolerated (Mayuane, Isanga and Mubi airstrips) are restricted to collecting statistics furnished to them by the collection agencies. At the barriers in Njingala and Mubi, ANR (national intelligence agency) personnel have been preventing Saesscam officials from coming anywhere close.²⁰⁶

The situation is further exacerbated by the ongoing conflict in the province. Fighting and insecurity persist in North Kivu today and significant parts of the artisanal mining sector continue to be militarised.²⁰⁷

There are international initiatives that support local institutional development. One of them is the Extractive Industries Transparency Initiative (EITI), which aims to strengthen governance by improving transparency and accountability in the extractives sector. The Initiative sets a global standard for companies to publish what they pay and for governments to disclose what they receive. It is a coalition of governments, companies, civil society groups, investors and international organisations. Tony Blair announced the EITI at the World Summit for Sustainable Development in Johannesburg in 2002.²⁰⁸

The Initiative supports improved governance in resource rich countries through verification and full publication of company payments and government revenues from oil, gas, and mining. EITI is dependent on a minimum enabling environment to be in place. However, given the magnitude of the challenges of the Congolese mining sector, and in particular the recalcitrant artisanal sector, EITI

203 D’Souza, Kevin (2007). Artisanal Mining in the DRC. Briefing note, prepared for discussion at the DRC Donor Coordination Meeting by Wardell Armstrong LLP. p. 8

204 Creddho (2007), background report

205 Creddho (2007), background report

206 Creddho (2007), background report

207 Garrett, N. (2007) The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM), Report following a mission to North Kivu, EITI, p. 34

208 <http://www.eitransparency.org>

cannot be viewed as the sole solution, especially given its voluntary nature.²⁰⁹

In 2005, the DR Congo's transitional government committed to the Initiative in 2005 to improve the country's international standing with investors and international financial institutions. The national EITI is focused on the industrial mining sector. If the country's general reform process progresses and a minimum enabling environment can be established, the EITI may also have a role to play in the country's largely informal, albeit labour intensive artisanal mining sector. In this regard the Initiative will be an important tool to ensure that more revenues accruing to artisanal miners flow through official channels and that these revenues will be published, thus providing important information for the Congolese people to hold their government to account, which is a proactive contribution to the DRC's economic recovery.²¹⁰

Revenues that pass through the sector are largely lost in informal channels, bypassing the state's fiscal apparatus, which deprives the country of much required funds for development and leaves artisanal miners impoverished. EITI can for example help to increase transparency in licence fees, tax payments and export charges. Now they are collected at provincial level. Also, the high cost of doing business in the DRC currently prevents almost every company from operating accountably. To date, Western and Eastern governments have not done enough to ensure, their multinational companies conduct proper due diligence prior to purchasing or brokering minerals such as cassiterite.²¹¹

If Saesscam attains accountable and transparent operational capacity, it could become an important partnering institution for the EITI, particularly if it has functioning representation at local level.²¹²

Currently some donors and the UN also advocate certified trading chains. The implementation of a chain is driven both by industry and consumer demand for materials and goods produced in an ethical manner. In the DRC mineral certification schemes would help to assess the true ownership of natural resources.²¹³ Regrettably, it is likely that schemes would be ineffective in the current context of the DRC, especially in areas of particularly weak governance, such as the North Kivu.²¹⁴

As everywhere in the Congo, North Kivu has untapped agricultural potential which could respond quickly to urban demand, if the infrastructure was in place. And yet, for this to be possible, roads have to be built first.

209 D'Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 8–9

210 Garrett, Nicholas (2007), *The Extractive Industries Transparency Initiative (EITI) and Artisanal and Small-Scale Mining (ASM)*, Report following a mission to North Kivu, EITI, p. 10

211 Ibid. p. 6–8

212 Ibid. p. 39

213 Ibid. p. 43

214 D'Souza, Kevin (2007), *Artisanal Mining in the DRC*, Briefing note (prepared for discussion at the DRC Donor Coordination Meeting), Wardell Armstrong LLP, p. 10

6. TIN HAS MARKED INDONESIA ISLANDS



Indonesia is the second largest tin producer in the world. There has been tin mining and export since the 17th century. The legacy of tin is clearly visible in the environment, both urban and rural.²¹⁵

Tin production takes mainly place in Babel Province, which became independent from South Sumatra in 2002. Babel consists of Bangka, Belitung and smaller islands. There are about one million inhabitants in an area of 16,500 sq km of land. Bangka is the larger of the two main islands (11,700 sq km). The province has 1,200 km of coastline.

Situated between the South China Sea and Java Sea, the islands are separated from the Indonesian mainland islands. They support many indigenous animal and plant species, and flora and fauna specific to the islands. Dry seasons are severe, and water catchment areas relatively small, as most of the rivers and surface water runs into sea.

Cassiterite covers large alluvial areas of Babel province, but it is also being mined on the shores and offshore. There are two main types of mining: artisanal and industrial. Artisanal small-scale miners operate inland and off pontoons along the coast, working either for themselves, for small companies, or on behalf of mining companies. The number of mines varies between 6,500 and 18,000.²¹⁶ Each pit is mined by perhaps four mining units, consisting of perhaps even 3–6 miners. Only 199 artisanal mines held an operating licence in 2006.²¹⁷ The rest mine tin illegally or are unlicensed. Artisanal mining happens both within the mining areas of the tin companies and outside them.²¹⁸

Some artisanal miners prospect tin on public land, on the coast, in protected or commercial forests, or in forests likely to be converted into mining area. According to a miner named Hakim, moving mines to Babus coast is due to a shortage of mining land. Tin mining by the coast brings a lot of benefits and pits that would disturb people around are avoided. “In one day we can get 40–100 kg which is more than on land with a maximum of 80 kg.”²¹⁹

The 65 percent state-owned Timah is the world’s second largest tin company, Koba Tin is seventh.

215 Jatam (2007) background report to FinnWatch. Jatam is an Indonesian network of communities affected by mining and NGOs working with them. www.jatam.org

216 Jatam (2007), Laporan Panitia Kerja of Indonesian parliament estimate was 6,500 in 2006. Mining Association Astira gave the higher count of 18,000.

217 Jatam (2007), background report

218 Jatam (2007), background report

219 Jatam (2007), background report

They provide over 16 percent of the world's tin supply.²²⁰ Koba Tin is 75 percent owned by Malaysia Smelting Corporation, the rest belonging to Timah. These companies mine tin both inland and offshore in coastal waters, using fleets of dredgers moving along the long coastline. In 2006, Timah produced 44,700 tonnes of tin. 34 percent was exported to China, 22 percent to Indonesia, 12 percent to Malaysia, 7 percent to Thailand, and 6 percent to Peru.²²¹ As police raids against Koba Tin continued early this year, Timah benefited from being the sole legal buyer of concentrates from small-scale miners.²²²

Koba Tin produced 20,900 tonnes of tin last year, and additionally, artisanal mining produced another 60,000 tonnes, either licenced or unlicenced. The big companies do everything from exploration and mining to processing, smelting and marketing. Yet there are over thirty independent smelters as well.

6.1 Ghost Towns on Belitung, Moonscape on Bangka

Timah stopped operating and left Belitung Island 1991–92. It once provided a hospital and TV station. Now those buildings lie empty and derelict, and many houses have been abandoned or turned into ruins. Factory buildings are crumbling. Public transport has declined. Since PT Timah left, the capital of Belitung district, Kota Tanjung Pandan, and the second largest town of Manggar, have become ghost towns.²²³

Although Timah has closed used mining pits, artisanal miners come and re-open many pits in search of residues. Abandoned mining pits have been left behind by the mining company and artisanal miners. The pits have turned into small acidic lakes, infertile land, swamps and mud holes that locals use as ponds in which to breed fish. Where water has not filled the pits, the land resembles a lunar landscape with vast gaping dry craters. In its annual report, Timah announced, it still has 57,450 hectares of mining area in Belitung, but no actual mining operations are being carried out there. Small artisanal mines may be operating on the island.²²⁴

The bigger island, Bangka, has even gotten its name from tin: The word “wangka” (tin) appears in a Srivijaya inscription dating from 686 A.D., found in the western part of Bangka. The area of land used for mining on Bangka is over a third of its total area, and almost as large an area with forest cover. Timah has a mining area of 273,100 hectares with 81 mining concessions. Koba Tin has approximately 41,700 hectares. In an article published in April 2007, Reuters²²⁵ reports that tin mining has destroyed Bangka: deep craters as big as football fields pockmark the land, and smaller craters glitter in the sun, filled with highly acidic water. The soil has been completely ruined by uncontrolled mining. Also, the miners are constantly at risk of landslides or drowning in flash floods in rainy seasons.

The land is littered with mining pits, their size being relative to the amount of tin in the soil. For instance, in the village of Teluk Dalam in the subdistrict of Tanjung Pandan, artisanal pits as big as 12,000 cubic metres (50 x 30 metres and 8 deep) have been dug.²²⁶ For every cubic metre of soil one can get about 2 kg of cassiterite. One pit would thus yield 24 tonnes.

To understand the scale of mining activities in Bangka, we must look at the amount of soil removed to get the quantities produced. Timah's annual report indicates it had to remove 9.23 million cubic metres of soil to produce 41,000 tonnes of tin ore. Jatam did not receive data from Koba Tin, but estimates that for 29,200 tonnes of tin ore, they had to remove about 6.56 million cubic metres of soil. Thus, if 951,600 tonnes of tin ore were produced in a decade (1997–2006), the amount of soil removed

220 Jatam (2007), background report

221 Jatam (2007), background report

222 ITRI News: Soaring profits for PT Timah, 30 April 2007

223 Jatam (2007), background report

224 Jatam (2007), background report

225 Reuters, 'Indonesian island Bangka decimated by mining', 10 April 2007, by Lewa Pardomuan

226 Jatam (2007), background report

would have been perhaps 14 times that amount.²²⁷ These figures exclude the effects of artisanal mining.

6.2 Mining Affects Rivers, People and Wildlife

Artisanal miners simply dig a pit in the ground, fill it with water and pan the soil. If machinery is used, water pumped from a source like a river is used to soften the soil and ease the separation of tin ore from mud – by sucking soft soil in a machine and pumping it through a funnel. Muddy water is then pumped back into the rivers. This practice causes rapid siltation of rivers as well as damage to banks, wildlife and natural habitats. Tin mining is estimated to have severely damaged 15 rivers in Babel, ten of which are in Bangka. The number of rivers damaged has been rising rapidly with increased mining activity. Sometimes miners dam rivers upstream to get water.²²⁸

If Timah removes 9.2 tonnes of soil, it returns 8.2 tonnes of tailings back, either in rivers or on the ground near the pits. Mining has also destroyed 60 percent of forest cover in Babel. A quarter of the area is facing severe destruction, the signs of which can be seen in the disappearance of animal and plant life. Such species as nyato, a timber, jambu bandar a fruit tree, mouse deer, the murai bird and the striped squirrel are on the brink of extinction.²²⁹

Artisanal miners do not fill in the pits or restore the land once they have finished mining. There has been no policy on how to deal with the pits after mining. Old pits are potential water sources for the people, especially during the long dry season. Even municipal waterworks may use some pits for taking water. This causes health problems, as local people use pits for bathing, washing and as toilets. They may take drinking water from them or turn them into fish ponds. In some pits, the water is very acidic, with high levels of tin, lead and micro-organisms. The pits are also ideal breeding grounds for disease-carrying insects such as anopheles, vivax, ovale and malaria mosquitoes. In 2007, malaria became a serious threat to health in Babel. A year before, malaria cases had already risen at alarming level with 39,400 infections and sixteen deaths. The Provincial Health Department Head said the bad environment and poor hygiene are the main reasons for the growth in malaria.²³⁰

Tin is also found in alluvial layers on coastal areas. Mining there is increasing and carried out both by artisanal miners operating from pontoons and dredgers. A miner called Hakim told, moving mines to



After re-opening and re-digging Timah concessions on Belitung Island, Indonesia, artisanal mechanical mining has left pits unrestrained and filling up with unhealthy water. ©Whyu Epan Yudistira

227 Jatam (2007), background report

228 Jatam (2007), background report

229 Jatam (2007), background report

230 Kompas newspaper, 5 January 2007, Farida Bay, Head of Babel Health Department

the coast is due to shortage of mining land. Mining on Babus coast, Belinyu, causes less disturbance to people and is highly productive: “In one day we can get 40–100 kg whereas inland we can produce 80 kg at most.”²³¹

There are also hundreds of dredgers in South Bangka. For instance, Koba Tin uses floating bucket ladder dredgers offshore. They scoop the tin-bearing alluvium from the bed with buckets. The dredgers have treatment plants that separate tin-in-concentrate with the help of wet gravity separation²³². Tailings are discharged through tailings chutes, and slime from dredging is pumped into earlier mining ponds/paddocks. Depending on the model, dredgers may dig 18 or even 50 metres deep under water. The problem is that the machinery used sucks all underwater soil, causing huge damage to fish stocks and to the livelihoods of local fishermen. This method is also extremely destructive to fragile coral formations, thus affecting fish species breeding in corals.²³³

The environmental consequences of this kind of tin mining are extensive, as soil, forests, fauna and flora and even marine life become affected. Furthermore, dams built by artisanal miners often cause flooding upstream: “The floods in Bangka have been caused by artisanal miners operating in the upper course of the river. They sometimes dam waterways as they please. During heavy rainfall, the pits collapse and cause floods”, said Asin, Head of Tayu hamlet. Asu, a local citizen, describes how the river used to flow past his hamlet but has now expanded and cuts through a residential area.²³⁴

6.3 Problems in Production

Contractors often bought tin from artisanal miners, in order to meet production targets set by Timah and to earn a bonus. Timah later stopped this purchasing policy, as their storage needs for tin grew too big. Artisanal miners had to find new ways of selling their product. Koba Tin had developed a similar partnership policy, working in cooperation with a contractor named Gravel Pump and an artisanal miner group named Mitra Tambang Skala, mining within Koba’s area. The company was guarded by the Brigade Police. 75–85 percent of Timah and Koba Tin production was being derived from partnerships.²³⁵

The policy of these companies has been controversial from the start. Artisanal mining inflicted financial losses on the state, since unlicensed mining contractors did not pay the state any royalties. Artisanal miners did not need to restore areas they had finished mining, resulting in environmental destruction from the mining process. At the same time, the system brought income for the local people during the Asian financial crisis and was especially important when the price of pepper, an important cash crop, fell on world markets. Plantation workers, small farmers and even fishermen started panning for tin, which increased the number of unlicensed artisanal miners. Tin is not only mined in Babel, but also smelted. These islands are home to about 38 registered tin smelters, of which 29 were operational in early 2006. However, due to raids on unlicensed operations, the independent smelters had to close. Towards the end of 2007, ten smelters were in operation again.²³⁶

Artisanal mining in the area started as a result of Timah company policy. According to Thobrani Alwi²³⁷, a former managing director, the company gave people simple tools, since it did not consider some of its mining concessions economically worth exploring, even if it controlled the area. „The local people mined tin in our mining area, and once one area was finished with, they moved to a new location that we pointed out to them. After mining laws came into force in 1998, thousands of local people opened mines outside our area. The situation grew out of control, as mining happened outside our area.” The manager is referring to the deregulation of tin export resulting in regions and provinces

231 Kompas newspaper, 20 July 2006.

232 <http://www.ptkoba.co.id/mine>

233 Jatam (2007), background report

234 Jatam (2007), background report

235 Jatam (2007), background report

236 Jatam (2007), background report

237 Jatam (2007), background report

being given a free hand in managing their natural resources. Artisanal mining provides about 80 percent of Timah's tin-in-concentrate supplies.

Just as there are licenced and unlicenced miners, there are licenced and unlicenced smelting works. The small tin mines on Bangka and Belitung islands, known locally as "tambang, unconventional", were estimated to be producing about 84,000 t/yr of tin-in-concentrate, or about one quarter of total world production. About half this material was delivered to Timah and Koba, and the balance went to small independent tin smelters operating since late 2003, and numbering about 20. The crude tin plaques they produced were sold to Malaysia, Thailand and China.

There are almost 6,000 small tin mines leased from the two major companies (about 4,500 on Timah land and 1,400 on Koba Tin property). These mines typically employ five to six workers and produce one metric ton of tin concentrate a month (20 percent tin), using simple panning with water. Although most of them have been operating in the mining area of Timah, they preferred to sell tin to independent smelters and not state-controlled Timah, that paid less. At the same time no royalties were paid to government and no land restoration was carried out.

The most drastic change in the sector has been closing of about two dozen independent tin smelters on Bangka and Belitung from October 2006. Their sales dropped to 26,000 tonnes in 2006 from 80,000 in 2005.²³⁸ The smelters had estimatedly been producing about a fifth of world total supply. First in mid-2007 were some of the larger and better-managed smelters being allowed to re-start. The federal and regional governments have imposed a range of prerequisites for granting operating and export licences. These requirements include environmental controls, royalty payments and purity limits on the refined tin produced. These measures might to reduce Indonesian tin production by more than 30,000 tonnes in 2007.²³⁹

There has also been a conflict between the big tin producers, Timah and Koba Tin. Koba Tin participated in passing on and selling tin from artisanal miners, operating in the area of Timah. After investigations, the police arrested some managers of Koba Tin. Its tin production was stopped, and the tin market experienced a scarcity of supply. Consequently, tin prices increased, benefiting the stocks and prices of Timah. After the Koba managers were acquitted in 2007, Koba Tin's biggest owner – Malaysia Smelting Corporation – stated, Koba Tin is "a responsible corporate citizen, operating within the legal parameters of Indonesian laws including paying taxes and royalties for the export of tin from its leases and undertaking the necessary environmental and rehabilitation works".²⁴⁰

Angry people responded to the arrests with a demonstration in front of provincial police headquarters, throwing stones at police. Three policemen were injured. Two days later, a second demonstration by 5,000 people in front of a provincial government building turned violent.

6.4 Farmers Became Miners

Mining is the second most important source of income in Babel Province, with around one in three people involved in mining. Agriculture is the main source of livelihood, and the most important crops are rice and cassava. Cash crops such as pepper have been declining drastically due to artisanal mining. Between the years 2000 and 2004, about 50,000 hectares of land were converted from pepper production alone to tin mining. In just one year, the number of people working in mining rose from 104,000 to 129,000 (in 2005). At the same time, the number of people in agriculture fell from 172,000 to 141,000. Between 2001 and 2005, the contribution of mining and digging to the economy in Babel Province rose from 13.7 percent to 21.4 percent.²⁴¹

In 2006, the economic growth rate in Babel was 6.7 percent. Tin mining has been the most economically productive sector. It brings quick income without any need for big investments. Asep is

238 Simon F. Sembiring, Indonesian Ministry of Energy and Mineral Resources, 'Indonesian Mining Policy', presentation on 5 October 2007

239 Kettle, P. (2007) Is tin heading for a crisis? (Part two), Global SMT & Packaging – June 2007, p. 28

240 ITRI News: Koba Tin directors acquitted of all criminal charges, 2 August 2007

241 Jatam (2007), background report

an artisanal miner from the village of Gunung Muda, Belinyu. He says: “Lots of people here become suddenly rich. My neighbour bought a new car only one month after he had started mining. It is no wonder there are lots of people around with brand new cars.” Afan, another tin miner said²⁴² that one artisanal tin mining unit may produce 150,000 rupiahs per day. Even children simply collecting tailings from panning places may earn 40,000 rupiahs a day. For school children, that is a lot of money.

Anthony, a motorcycle dealer in Sugai Liat, said that his sales have grown fourfold to 80 bikes a month since artisanal mining became possible. Inhabitants of Babel Province consume more than Indonesians on average, but they invest less in human development (education, health etc.) A national economic survey in 2005 reveals that in Babel, 61.8 percent of household income is spent on food, 33.6 percent on housing, 2.3 on education and the same amount on health. One small trader in Pangkal Pinang said that some people who were able to extract large amounts of tin went and bought consumer durables like fridges, TVs and washing machine. “But they did not have any electricity,” the trader added.²⁴³

Only just over half of the 250,000 families in Babel have electricity. On Bangka, just under half have access to electricity. Even if the provincial economy is growing quite fast, no more than two out of five people have access to clean water. Only 7 percent use water from the municipal waterworks. Some people take their drinking water from pits that used to be tin mines and may now be used as latrines by other locals. People are also battling with malaria on the islands.²⁴⁴



Timah used to restore mining areas annually, but stopped in 2001, as artisanal mining re-opened pits. ©Wahyu Epan Yudistira

One would expect local people to be able to make an easy living from mining. Yet, they have only a marginal position in mining management and business, Jatam says. Economic development in Babel Province is very fragile, since it is based on a non-renewable resource, and there is no investment in other sectors or in human development. At the same time, the quality of life for local people is declining, due to the destruction of the environment by mining. Also, mining has attracted lots of people to move to Babel Province in search of easy money, which has increased social problems like gambling, alcoholism and sex work, reports Jatam.

242 Kompas newspaper, 6 October 2006

243 Ibid.

244 Jatam (2007), background report

6.5 Future of Tin Mining and Miners

According to Timah estimates, tin reserves in Bangka stand at about 500,000 tonnes. At the present level of mining, they would last for a decade. The provincial government is trying to encourage diversification into trade, fishing and the promotion of tourism, but the poor infrastructure on the island does not support the latter: roads on the island are in very poor condition.²⁴⁵

As from February 2007, new regulations have been in force. Indonesia issued regulations limiting exports of refined tin. Reuters reported that the aim was to curb unchecked shipments of tin used for solder, plate and chemicals.²⁴⁶ The new requirements for tin shipments involve permits from the Babel governor and the trade ministry, and verification by a surveyor. Only smelters with mining permits or smelters teaming up with those with permits may export refined tin. Exporters must be able to show that royalties have been paid to the government before export. Verification is needed of the source by a government-approved surveyor and the purity of the ingots needs to be checked.

From summer 2007, Koba Tin began repurchasing tin from small scale miners. The new agreement involves setting up partnerships with supervision of small mines, Koba Tin producing management services and helping with equipment to allow operators to treat low grade ore. It can smelt 2,000 tonnes per month but was only producing 400 tonnes of tin in concentrate with dredge and gravel pumps in early 2007. Three largest independent smelters are Banka Putra Karya, Jaya Abadi and Donna Kembara. Legal action against them and Koba Tin held up their stocks while new export licencing rules introduced. In mid-2007, these and nine others held licences but were not exporting.²⁴⁷

The international investment promotion policy of Indonesian government is encouraging Chinese and other investors. For example, Yunnan Tin Company has entered into a joint venture with Singapore Tin Industries, forming Indo Yunnan Mineral Utama. It is buying existing plants and plans to produce 36,000 tonnes per year integrating mining, smelting, refining and production on Bangka.²⁴⁸ This curbs small-scale operations at the same time. In 2006, Singapore Tin Industries started to refine metal from Indonesian independent smelters.²⁴⁹ With new requirements involving certifying systems, environmental management systems, etc. in place, there is a risk of pushing the small miners out of operation, unless integrated. Local miners dependent on the industry for their livelihoods have been protesting against the new requirements.²⁵⁰

Babel's Governor, Eko Maulana Ali, has called on domestic investors to cooperate with Chinese companies in exploiting the tin mining potential of the province. Not only Yunnan Tin Company but also Hoi Pak East International Limited and Guangxi Quinzhou Jiahua Mining Industry have signed Memoranda of Understanding concerning processing tin mining residues.²⁵¹

245 Jatam (2007), background report

246 Reuters, 'PT Timah says no problems with tin shipment', Anna Stablum, 16 February 2007. <http://uk.reuters.com/>

247 ITRI News: Indonesian export surge, 23 July 2007

248 ITRI News: Yunnan Tin announces Indonesian investment, 17 April 2007

249 ITRI News: YTC confirms Indonesian investments, 4 June 2007

250 Jatam (2007), background report

251 ITRI News *ibid.*

TIN MINING ON BANGKA AND BELITUNG ISLANDS ²⁵²

- 2007 New regulations to curb illegal exports and environmental damage came into force in February; independent smelters start getting licences.
- 2006 Twenty-one independent smelters were operating until raids led to arrests and closures of all but Timah and Koba Tin smelters.
- 2003 Local government issued permits for founding independent smelters.
- 2002 Free export of tin ore was first stopped and then exporting forbidden completely.
- 2001 Small scale mining mushroomed, world tin prices decreased lower than for decades, PT Timah almost collapsed.
- 1998 Tin exports freed by the Indonesian Ministry for Trade and Industry.
- 1974 All state-controlled companies were merged as PT Timah leaving it and PT Koba Tin.
- 1967–1989 sector opened to foreign investment, including establishment of PT Koba Tin.
- 1961 The government formed the state tin mining company PT Timah.
- 1958 State mining department took over control of companies.
- 1949–53 After independence in 1949, a state company started tin mining under Dutch management.
- 1945–49 Dutch took over tin production after the Japanese left.
- 1816 Dutch took over tin production from England, and founded a tin company named Bangka Tin Winning.
- 17th century Dutch East Indies Company arrived on the islands; modern tin mining started during Palembang sultanate.
- 686 AD Inscription found on Bangka mentions tin ("wangka"), indicated tin was mined on the islands.

²⁵² Jatam (2007), background report

7. SUPPLY CHAIN MANAGEMENT OF BRAND CONSUMER ELECTRONICS COMPANIES

Several voluntary initiatives argue that it is the responsibility of companies to manage their supply chain so that their business partners respect human rights and protect the environment. The OECD Guidelines for Multinational Enterprises, the United Nation's Global Compact and The Electronic Industry Code of Conduct (EICC) are some examples.

7.1 Ethical Guidelines on Supply Chain Responsibility

OECD Guidelines for Multinational Enterprises are recommendations jointly addressed by governments to multinational companies. They are voluntary in nature and provide standards of responsible business conduct. The guidelines state that companies should, when possible, encourage their suppliers and subcontractors to apply principles of good corporate conduct.²⁵³

The UN's voluntary initiative, The Global Compact, asks companies to embrace, support and enact, within their so-called sphere of influence, principles on human rights, labour standards, the environment and anti-corruption. Brand companies like Microsoft, Hewlett Packard, Philips, Fujitsu Siemens, Toshiba and Nokia have joined the initiative. In a subtext to its principle on human rights, Global Compact states that companies need to be fully aware of potential human rights issues both up and down the supply chain, which consequently makes it possible for companies to select responsible business partners.²⁵⁴

The Electronic Industry Code of Conduct (EICC) is a set of voluntary standards aimed at ensuring that human rights are respected, that the working environment is safe and healthy and that manufacturing processes are environmentally responsible. Companies such as Dell, Apple, HP, IBM, Intel, Lenovo, Microsoft, Philips and Sony have adopted the code. It states that "participants should regard the code as a total supply chain initiative" so that the code can be successful. "At a minimum, participants shall require its next tier suppliers to acknowledge and implement the Code."²⁵⁵

In 2007, FinnWatch, SwedWatch and SOMO sent out a questionnaire to the world's largest brand companies producing PCs, mobile phones, MP3 players, webcams and game consoles.²⁵⁶ The questions aimed to find out if the companies knew where the metals included in their products came from (traceability), if they or their suppliers attached social and environmental criteria to their procurement of metals, and whether or not they thought that they, as market leaders in consumer electronics, could contribute to the enhancement of labour and environmental standards within the extractive sector (sphere of influence).

Twelve out of twenty-two companies responded to the questionnaire. The organisations also received a joint industry response from the EICC and the Global E-Sustainability Initiative (GeSI).²⁵⁷

253 OECD Guidelines for Multinational Enterprises, article 2:11.

254 Global Compact, subtext to the first principle.

255 EICC's Code of Conduct. This initiative aims to facilitate the CSR-work of suppliers that only have to align to one set of standards instead of different ones. The EICC is also developing tools to assist member firms in code implementation.

256 Apple, Microsoft, Sony Ericsson, Sony, Nintendo, Creative, Hewlett Packard, Samsung, LGE, IBM, Lenovo, Dell, Acer, Philips, Fujitsu Siemens, Nokia, Motorola, RIM, Palm Europe, Toshiba, Logitech and Packard Bell received the questionnaire.

257 The Global E-Sustainability Initiative was launched in 2001 by a number of major ICT companies with the support of United Nations Environment Programme and International Telecommunications Union. The initiative works for sustainable development through cooperation between companies and other stakeholders. GeSI has formed a working group dealing with cooperation for better supply chain management.

7.2 Traceability

Companies that responded to the questionnaire do not purchase metals by themselves and are often not aware of what countries the metals included in their products originate from. However, the Taiwanese computer company Acer states that it is considering including more traceability in the company's CSR work. A few years ago, Sony Ericsson investigated where the tantalum (coltan) used in their mobile phones originated from. However, no similar investigations have been carried out by the company concerning other metals. The Singaporean MP3 brand company Creative, thinks that information about the origin of the metals used in their products is "business sensitive" and therefore secret.

Just before the publication of this report, Hewlett-Packard said that, after having received questions about the extractive level from FinnWatch, SwedWatch and SOMO, the company had conducted a survey of their notebook suppliers on extractives to get information about the origin of the metals included in their products. In some cases, Hewlett-Packard was able to obtain the names of their metal suppliers. When this report was being finalised it was unclear how the company would proceed with the results.

7.3 Sphere of Influence

The industry response expressed concern about social and environmental conditions associated with the mining industry. It stressed that brand companies are often small consumers of metals and that they are many steps removed from the extraction, refining and trading of minerals and metals.

"As an industry we feel that our ability to make improvements to these areas is most effective when we engage with the supply chain that is more directly within our sphere of influence," the industry initiative wrote in its response.²⁵⁸

The views expressed in individual answers differ somewhat. In general, companies consider their responsibility to be indirect, and they view their ability to influence as small or non-existent. The MP3 brand company Creative states that the extraction of metals lies within the company's sphere of influence since the use of metals can be reduced and recycling encouraged. Hewlett-Packard states that the company does not use coltan/tantalum originating from the DRC in its products. Motorola requires all suppliers to verify in writing that materials they sell to Motorola do not contain tantalum derived from illegally-mined Congolese ore. Laptop producer Dell is trying not to use tantalum that has been illegally extracted or extracted in regions where either the environment or wildlife is threatened. These examples suggest that the companies in question acknowledge some sort of responsibility in relation to the extraction process.

After having received the questionnaire from SwedWatch, SOMO and FinnWatch, the EICC and GeSI announced that they had decided to commission a study of their own "to help understand how metals are mined, extracted, recycled, purchased and used within the electronics sector". The study will concentrate on copper, tin, gold, aluminium, palladium, and cobalt. The outcome will be presented in April 2008.²⁵⁹

7.4 Social and Environmental Purchasing Criteria

In most cases suppliers further down the chain take care of the procurement of metals used in consumer electronics. Brand companies hope that these suppliers attach social and environmental criteria to this process, but most of the time no one seems to know if these demands ever reach the extractive industry.

Microsoft writes that the company expects its suppliers to share the same values as Microsoft supports. Working conditions should be fair and safe, and the environment should be protected. Only first and certain critical second tier suppliers are monitored, and Microsoft expects them to conduct

²⁵⁸ Response received the 7th of April 2007.

²⁵⁹ Statement letter submitted to SwedWatch 16 November 2007

audits of suppliers further down. However, only some of them actually do so.

“We find that some suppliers lack the tools and processes to accomplish this, and industry practices are often inconsistent,” writes Joan Krajewski, Environmental Director at Microsoft.

For this reason, both Microsoft and Hewlett Packard have started to offer suppliers tools and training. They also cooperate with other companies within the industry initiative mentioned above, EICC/GeSI, in order to harmonise the demands.

Hewlett Packard writes that metals are purchased three to eight or more tiers up their supply chain. Dell writes that metal suppliers are typically among the company’s third or fourth tier suppliers. According to Mats Pellbäck-Scharp, environmental manager at Sony Ericsson, the supply chain of the electronic industry is shallower than many other industries. For example, he states that it has fewer levels than the garment sector. Sony Ericsson’s suppliers are trying to reduce the risks by buying from big metal suppliers instead of small ones or the spot market.

“The big producers have better control and they are often scrutinised in the public eye,” Mats Pellbäck-Scharp told SwedWatch.

7.5 Transparency

Very few companies targeted by the questionnaire have submitted information about their suppliers of different components. Nintendo was the only exception as well as to some extent Hewlett Packard, which publishes the names of their battery suppliers. Their cooperation should be acknowledged.

FinnWatch, SwedWatch and SOMO would like to stress the importance of transparency if the CSR work of brand companies is to be trustworthy and meaningful. Many promises are made on websites, in codes of conduct and in sustainability reports, but without further transparency, NGOs, journalists and researchers cannot investigate the reality behind these statements. The need for protecting company secrets must be balanced with the public’s and consumers’ right to know under which conditions consumer electronics are being produced.

For an overview of company answers, please refer to Annex at the end of the report.

8. CONCLUSION

The tin solder connecting components in our consumer electronics can be directly linked to mines in the Democratic Republic of Congo (DRC) and Indonesia. When contacted in April 2007, the world's 20 market leaders in consumer electronics did not seem to be aware of this fact. At the top of the chain, companies are not very transparent or willing to acknowledge they can influence the lower links. Also miners, traders, middlemen, comptoirs, marketers, etc. seem to know only the link before or after themselves, but not much about the whole chain from mine to MP3 player, for instance.

This report highlights many problems related to dangerous and unhealthy working conditions, low salaries and the adverse effects on local communities and the environment of tin mining in the DRC and Indonesia. In both countries, tin is mostly mined by artisanal miners who often have no influence over conditions of their work. Congolese artisanal miners often labour in very difficult and dangerous circumstances, yet usually earn US\$ 1–3 a day, no matter what mineral they mine.

Many solder manufacturers and some tin producers contacted by our project were actually quite open concerning the origin of the metals they use. This should point to the possibility for influence and improvement at the mine level. However, more research is needed about the dynamics of the artisanal mining sector in the DRC. It is affected by customary laws, community leaders, military groups, middlemen, comptoirs etc. They do not know enough about the working conditions of each other and the realities.

Primary responsibility for the conditions in mines and the environment lie with local governments and mining companies. Home governments are not reacting appropriately to the companies' misconduct abroad. Thus there are no incentives provided for foreign investors to behave according to commonly accepted guidelines such as the OECD Guidelines to Multinational Enterprises. Foreign investment is increasing, and together with home governments, the consumer electronics industry could contribute to ensuring that the whole supply chain adheres to OECD Guidelines.

The DRC is taking the first steps towards formalising artisanal miners and reforming the sector. Initiatives such as EITI implementation and mineral certification scheme could support this positive development. Improved natural resource management will be a key element in consolidating the DRC's peace process, attracting investment, and contributing to sustainable development in North Kivu province and elsewhere.

Brand companies of consumer electronics could push for change by including the extractive industry at all levels in their supply chain management.

Mining needs to be limited to licenced operators, whether it be done by artisanal miners, international companies or joint ventures. Artisanal miners may be engaged in partnerships or as workers, but the terms must be decent as regards their pay, working conditions, and health and safety. Further, minerals should not be sourced from rebel or other groups in conflict areas where there is a risk of the money supporting local and regional conflicts, especially in North Kivu.

Individual countries are signatories to a host of international agreements such as the UN Conventions recognising a child's right to childhood and education, and workers to decent pay and conditions, and environmental protection. If countries have not yet signed or ratified these agreements, they should. Development policy goals such as poverty reduction have been set as one target of the international community. By signing on to initiatives such as Global Compact, companies have approved them. The same values are also reflected in individual companies' codes of conduct. -Why should any group of companies, for any reason, be allowed to deviate from the line stipulated in these Conventions, agreements and commitments?

Through a sector-wide approach the brand companies, as well as large first tier suppliers could pressurise the mining industry, traders and other players in the supply chain to ensure that their products have come to market in a sustainable and non-exploitative manner. Traceability of raw materials would open up possible channels of sustainable sourcing and checking the origin. Industry codes such as the EICC could then be applied throughout the entire chain, and not just to the top first or first and second tiers of production.

Brand companies and producers of consumer electronics such as component and contract manufacturers and solder producers should work together with tin producers: They should map out the most critical development issues for improving the working conditions and the environment in tin mining and push for change, develop local institutions, and demand transparency and sustainability from the whole supply chain.

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ANNEX 1

Outcome of the questionnaire sent to the market leaders of consumer electronics companies.

COMPANY NAME	DID THE COMPANY ANSWER THE QUESTIONNAIRE?	DOES THE COMPANY KNOW WHERE THE METALS INCLUDED IN ITS PRODUCTS HAVE BEEN EXTRACTED?	DOES THE COMPANY THINK THAT THE EXTRACTION OF METALS LIES WITHIN ITS SPHERE OF INFLUENCE?	DID THE COMPANY GIVE OUT NAMES OF THEIR COMPONENT SUPPLIERS?
Nokia	No*		Limited influence*	No
Samsung	No			No
Motorola	Yes*	No	Extremely limited	No
Sony Ericsson	Yes	Only tantalum	Some influence	No
Philips	Yes*	No	No	No
Dell	Yes*	No	Not directly	No
Acer	Yes	No	Very little	No
Apple	No*		Limited influence*	No
LG Electronics	No			No
Toshiba	No			No
IBM***	No*		Limited influence*	No
Lenovo	Yes*	No	No	No
Packard Bell	Yes	No	No	No
Hewlett- Packard	Yes*	No**	To some extent	Only battery suppliers
Fujitsu Siemens	No			No
Creative	Yes	Unclear	Yes, by using recycled materials	No
Sandisk	Not reachable	---	---	---
RIM	No			No
Logitech	No			No
Microsoft	To some questions*	Unclear	Unclear	No
Nintendo	Yes	No	Indirectly	Yes
Sony	Yes*	Unclear	Little or none	No
Palm Europe	No			No

* These companies are members of the EICC and/or the GeSI, which submitted a common reply on behalf of their members. This letter answered some of the questions of the questionnaire.

** Just before the publication of this report Hewlett-Packard informed SwedWatch that, after having received questions about the extractive level from SwedWatch, SOMO and FinnWatch, the company had conducted a survey of their notebook suppliers to get information about the origin of some of the metals the company uses.

*** IBM indicated in November 2007 that the company no longer produces any of the products mentioned in the text. They were, however, represented in the common response of the EICC/GeSI.

