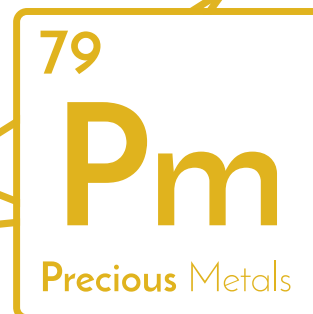
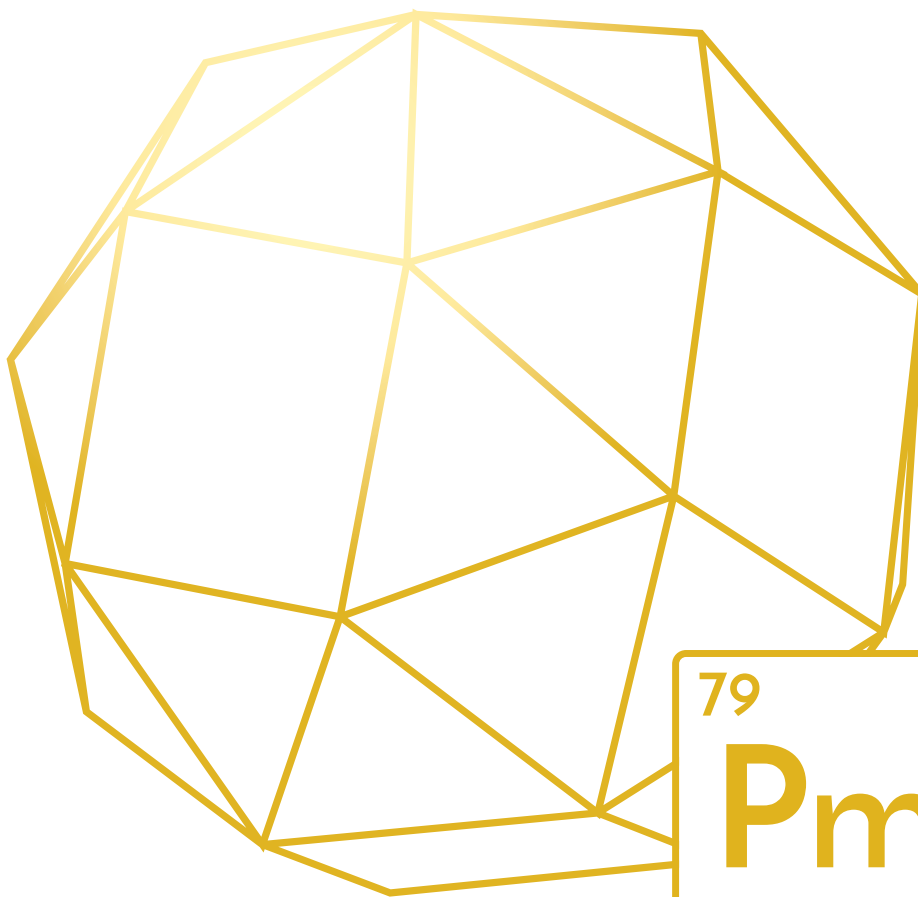




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United Nations
Interregional Crime and Justice
Research Institute

STRENGTHENING THE SECURITY AND INTEGRITY OF THE PRECIOUS METALS SUPPLY CHAIN



Strengthening the security and integrity of the precious metals supply chain

Technical Report

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Preface

In its resolution 2013/38 entitled “Combating transnational organized crime and its possible links to illicit trafficking in precious metals,” the Economic and Social Council calls upon the United Nations Interregional Crime and Justice Research Institute (UNICRI) to conduct a comprehensive study on the possible links between transnational organized crime, other criminal activities and illicit trafficking in precious metals.

UNICRI has developed a programme to promote an international strategy to combat illicit trafficking in precious metals, in which the comprehensive study requested in ECOSOC resolution 2013/38 is the major component of an Assessment Phase to be followed by an Operational Phase.

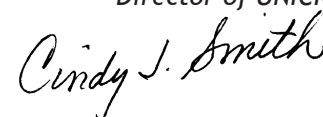
An Expert Meeting on “Promoting an international strategy to combat illicit trafficking in precious metals,” organised by UNICRI in September 2015 in Turin (Italy), allowed the collection of experts’ views on the issues and challenges that needed to be addressed and emphasized in the study.

The present technical report aims at giving a comprehensive overview of the current trends related to precious metals trafficking, in particular it focuses on the precious metals supply chain, the different threats and challenges hanging over this market - including the involvement of organised crime groups and associated criminal activities - as well as the regulatory frameworks and initiatives in place to guarantee the integrity of the supply chain. The knowledge acquired throughout this report is used to identify the strengths, weaknesses, opportunities and threats to address the challenges. A series of recommendations concerning the implementation of an international strategy to prevent and combat illicit trafficking in precious metals are included in the assessment.

The first findings of this report, produced during the period September 2015 - April 2016, have been presented and discussed during an International Meeting on “International strategy to combat illicit trafficking in precious metals,” organised by UNICRI in March 2016 in Cape Town, South Africa.

Cindy J. Smith

Director of UNICRI



Methods

This report began with a literature review (more than 200 reports, articles and studies) and used multiple methods of data collection, including targeted interviews (20+) with industry representatives and government agencies, analysis of case-studies, 2 experts meetings involving approximately 100 people (Turin, September 2015, and Cape Town, March 2016). Much has been written on the various topics covered in this assessment, especially on conflict minerals¹. The current assessment gathers in a comprehensive study the main characteristics and challenges related to the illegal trade and trafficking of precious metals as well as the most relevant initiatives aimed at combating the phenomenon at local, regional and global level.

The final section is dedicated to the development of a Strength-Weakness-Opportunities-Threats (SWOT) analysis, which highlights strengths, opportunities, and lessons learned from existing policies, recommending a sound strategy for combating illicit trafficking in precious metals, to be tailored to the different stakeholders.

The technical report has a global scope with data on Colombia and the Russian Federation and an in-depth analysis on South Africa considering the information provided by relevant institutions.

¹ Conflict minerals are minerals and metals originating in conflict-affected and high-risk areas. The four most prominent conflict minerals are what are called 3 T's - tin ore (cassiterite), tantalite (coltan), tungsten (a source derived from wolframite), as well as gold—that are used, among other things, in electronic devices such as cell phones and laptops.

Executive summary

The challenge

Illicit trafficking in precious metals generates a number of local and global challenges and threats. It not only harms the mining companies, but also severely hinders the socio-economic development of producing countries while putting local communities at risk. In addition, illicit trafficking increases the precious metals supply chain's vulnerability to the infiltration of transnational organised crime and it is frequently associated also to different serious cross-border crimes.

As requested by the ECOSOC Resolution 2013/38, the United Nations Interregional Crime and Justice Research Institute (UNICRI) has conducted a comprehensive study to assess the links between transnational organized crime, other associated criminal activities and illicit trafficking in precious metals. The study represents the assessment component of an international strategy UNICRI has developed to prevent and combat illicit trafficking in precious metals.

The findings

The report is intended to address the following research questions and sub-questions:

- What is the extent of illicit trafficking in precious metals?
- Is illicit trafficking in precious metals linked to transnational organized crime and other associated criminal activities?
- Is illicit trafficking in precious metals linked to terrorist activities?
- What are the vulnerabilities of the precious metals supply chain?
- How can illicit trafficking in precious metals be prevented and countered?
- What are the strengths and weaknesses of existing initiatives?

The increasing phenomenon of illicit trafficking in precious metals represents a significant source of financing for organized criminal groups that exploit loopholes in national and international legislation and in the precious metals trade. Precious metals represent ideal commodities for financing criminal activities given their easy transportability and high value. The development and expansion of transportation infrastructures, banking systems and telecommunication have facilitated the involvement of organized crime in this highly profitable business.

According to the cases analysed, the illicit trafficking in precious metals consists of at least five identifiable, complex and interlinked levels of organised criminal actors, namely: 1) individual criminal miners; 2) gangs and illegal mining bosses; 3) bulk buyers at the national/regional levels in the form of licensed or registered entities; 4) front company exporters; and 5) international intermediary companies and buyers.

As gold can be easily extracted and reworked, it is often the subject of illegal artisanal and small scale mining (ASM). Illegally mined gold can be mixed with scrap gold and sold to refiners. After melting, it is virtually impossible to trace the gold back to its mine of origin. By disguising and mixing illegal gold with other sources of the metal, it easily enters the legal supply chain. On the contrary, it is extremely rare that platinum group metals (PGMs) are mined by ASM, given the complexity of the extraction and refining processes involved. On the other hand, PGMs-containing products are usually stolen, illicitly traded and trafficked by organised crime syndicates.

With large scale and medium scale miners operating in many of the world's lowest income countries, gold mining operations frequently attract artisanal miners to the same area, who either work mined out areas which are no longer viable, or exploit the same mineral source. The encroachment of artisanal miners often results in violent clashes, safety and health issues and the disruption in mine/community relations.

The study identified several crimes related to the mining of precious metals:

- **Corruption:** risks of fraud and corruption are mainly related to procurement, security breaches, loopholes in the regulatory framework (including licences and permits), and logistical management aspects.
- **Money laundering:** the proceeds of crime can be laundered through the purchase and sale of gold, which transactions are concluded most often in cash. Gold can be used as an alternative currency for the purchase of goods that are banned or regulated, such as drugs. Gold is used in money laundering systems based on commercial transactions.
- **Illegal migration:** about 70% of all arrested illegal miners in South Africa are illegal migrants.
- **Sexual and gender based violence and child labour:** women and children are not only exploited as cheap labour, but are subjected to rape, domestic violence and general abuse.
- **Linkages with armed and terrorist groups:** examples on the reliance of armed and terrorist groups on illicit trafficking in precious metals are provided. However, more data is needed to elaborate a comprehensive picture.

The study assessed the national and international initiatives in place to combat illicit trade in precious metals in different countries. It found that legislative and regulatory frameworks are important instruments for preventing and combating the illicit trade in gold and other precious metals.

Some progress has been made in curbing the illicit trade of precious metals through the implementation of certification schemes; in this respect mechanisms and acts have been developed. Although some positive steps have been taken in terms of the various due-diligence schemes mentioned in the report, the ease and anonymity with which gold can be illegally traded impedes the implementation of gold tracing schemes.

One of the main challenges law enforcement agencies face involves being able to prove that the precious metals found in someone's possession are stolen. Establishing a sample database for purposes of fingerprinting for comparison purposes may contribute in this regard to identify the sources of the precious metals, thus proving their licit or illicit origin. Since it is a key element to combat the illicit trafficking of precious metals, this report analyses gold and PGM products fingerprinting capability as well as the related challenges.

The assessment highlights many gaps, including jurisdictional loopholes along the supply chain, general supply chain weaknesses, gaps in law enforcement capacities, a lack of information sharing between national agencies and international organisations, and knowledge and training of relevant personnel.

The report is composed of four sections. The first section deals with an overview of the supply chain. It analyses the distribution, production, processing and demand for gold, platinum and other precious metals.

The second section highlights criminal threats to the global supply of precious metals, such as illegal mining and the theft of various products composed of these materials. The section introduces crimes related to the mining of precious metals, such as human rights abuse, child labour, environmental crime, terrorist financing and money laundering. Additionally, brief descriptions of a number of case studies are provided.

The third section analyses the current international initiatives in place to combat illicit trade in precious metals within different countries. These initiatives involve international actors, the private sector and national institutions. In this chapter, some of the initiatives, such as the London Bullion Market Association (LBMA), the OECD's initiatives and the World Gold Council Conflict-free Gold Standards are highlighted and analysed.

The fourth and final section addresses risk assessment, vulnerabilities and threats to the legal supply chain, as delineated in the previous sections, through the development of a SWOT analysis (Strength-Weakness-Opportunities-Threats). It reveals strength and opportunities, and the lessons learned from existing policies, recommending a sound strategy for combating illicit trafficking in precious metals, as pertains to different stakeholders.

Way forward

To address gaps identified, optimise available tools and develop additional instruments for combating the illicit trade in precious metals, it is recommended that an effective and appropriate precious metal regulatory system is established and implemented. The following specific objectives are crucial for developing a comprehensive strategy to combat trade and trafficking in precious metals:

- Reinforcing national capacities for comprehensively securing the integrity of the precious metal supply chain.
- Reinforcing cooperation between the Private and Public sectors.
- Enhancing knowledge and awareness of identified threats, and the effectiveness of existing countermeasures.
- Establishing an international mechanism to secure the integrity of the precious metal supply chain (a National Precious Metals Action Plan). While functioning as an objective on its own, the Plan also will support the first three mandatory objectives.

The report highlights the fact that the precious stones supply sector share common challenges with the supply sector of gold and PGM. Consequently, the strategy on precious metals also can address the challenge posed by precious stones.

List of abbreviations and acronyms

AFP	Analytical Fingerprint Procedure
APG	Asia Pacific Group on Money Laundering
ARM	Alliance for Responsible Mining
ASM	Artisanal and Small Scale Mining
ASMO	Artisanal and Small-scale Miners Organisations
CFSI	Conflict Free Sourcing Initiative
CFSP	Conflict Free Smelter Program
CoC	Chain-of-Custody Standard
CTC	Certified Trading Chains Initiative
DDG	Due Diligence Guidance
EICC	Electronic Industry Citizenship Coalition
EITI	Extractive Industries Transparency Initiative
EUCU	European Union Customs Union
FATF	Financial Action Task Force
FNI	Nationalist and Integrationist Front
GeSI	Global e-Sustainability Initiative
GFI	Global Financial Integrity
GLR	Great Lakes Region
ICFSS	Institute of Criminalistics of the Federal Security Service
IFF	Illicit financial flows
ILO	International Labour Organisation
IPA	International Platinum Group Metals Association
ISPAC	International Scientific and Professional Advisory Council of the United Nations Crime Prevention and Criminal Justice Programme
ITRI	International Tin Research Institute
iTSCi	Tin Supply Chain Initiative
LBMA	London Bullion Market Association
LPPM	London Platinum and Palladium Market
MPRDA	Mineral and Petroleum Resources Development Act 28 of 2002
OGMR	Rwanda Geology and Mines Authority
RJC	Responsible Jewellery Council
SADPMR	South African Diamond and Precious Metals Regulator
SARS	South African Receiver of Revenue
UCR	FBI's Uniform Crime Reporting
UNICRI	United Nations Interregional Crime and Justice Institute
UNODC	United Nations Office on Drugs and Crimes
UNTOC	United Nations Convention against Transnational Organized Crime
VAT	Value-Added Tax

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Introduction

The economic and industrial value of precious metals make them a coveted product for illicit activities exploiting loopholes in the market, legislation, law enforcement and mine security. Illicit trafficking in precious metals is a huge market estimated to produce several billion USD per year. Illegal actors and organised crime groups take advantage of the vulnerabilities all along the precious metals supply chain, from extraction to refinement and trade, creating serious threats for the national and regional economies, as well as representing a global security issue due to connections with other serious crimes.

Precious metal producers (gold, as well as platinum mines and mines producing gold and precious metals as by-products) are exposed to theft and impacted by artisanal and, at times, illegal mining activities on their property (Rosenfeld Sweeting & Clark, 2000; Liskowich, 2013). Not only do these activities have a direct impact on mining companies, but the accompanying effects of violence, corruption (Partnership Africa-Canada, 2014), the exploitation of women and children (The World Bank, 2012), environmental degradation and inadequate health and safety conditions result in a much wider impact on the community (Rosenfeld Sweeting & Clark, 2000; Partnership Africa-Canada, 2014; ICMM, 2010). At a higher level illegal immigrants, illicit trafficking and the smuggling of products, tax evasion and money laundering, have a major impact on investments in affected countries, and on the national and international economy (Partnership Africa-Canada, 2014). Illegal earnings stemming from this trade, as well as the channels used for these transactions, present similarities with other illegal activities, such as drug and weapons trafficking, conflict financing and possibly terrorism (Partnership Africa-Canada, 2014).

Trends in the illicit trade and trafficking of precious metals are constantly evolving, and the illegal actors and groups involved are adapting their modus operandi to avoid detection and investigation by customs, law enforcement agencies and prosecutors. Therefore, tackling the issue requires a multi-sectoral approach and the establishment of an international initiative that would reinforce the capacities and commitment of the actors involved in the prevention and fight against the illicit trafficking in precious metals and related illegal activities at local, regional and international levels.

Section one: assessing critical aspects of the precious metals supply chain

This section presents background information, explores the global supply chain of this sector, and examines the differences among gold, platinum and other precious metals allowing for a better understanding of the impact of illicit trafficking in precious metals.

Impact of mining on the economy

The mining sector represents an important part of the economy in a number of countries. The International Council of Mining and Metals (ICMM) report issued in 2012 lists the mine production value as a percentage of GDP for a number of countries, with Zambia at 23.8%, the DRC at 16.7%, Chile at 14.7%, Ghana at 12.7%, Peru at 12%, and Australia and South Africa between 7% to 8%. According to ICCM the Russian Federation, mineral production represents, approximately 2% of the country's GDP.

Although the above mentioned ICMM study suggests that in many countries mining provides, on average, only a modest direct contribution to GDP (2% to 4%), related industries should be taken into account.² As an example, in 2012 the South African mining sector employed 524,632 people directly, while indirect employment amounted to 841,260 jobs (Mungall and Naldrett, 2008).³ In 2010 the global mining industry was estimated to represent the 11.5% of the world's GDP (as measured by revenues from products sold), taking into account payments to supply chain and support industries, the mining's contribution to global economic activity was valued to be around 21% (Mark Cutifani, 2013).

Gold mining, in particular, can have a major macroeconomic impact. The World Gold Council (2012) highlighted that gold accounted for 75% of Mali's foreign exchange earnings. Surveys indicated that 76% and 70% of revenues from gold in the form of taxes, royalties, wages, etc. were retained in the economies of Ghana and Tanzania, respectively. Gold is also one of the top sources of foreign exchange earnings in countries such as Peru, Mongolia and South Africa (World Gold Council, 2014).

The formal mining sector creates many opportunities for growth, influx of foreign investment, employment opportunities (employment multiplier effect when supply companies are taken into account), significant foreign exchange earnings (positive impact on balance of payments), contributions to government revenues (royalties and taxes), along with other assets. Many developing countries have realised the benefits of a robust mining industry and have revised their mining legislation and regulation to attract foreign capital. This includes the privatisation of previously state-owned mining companies (Rosenfeld Sweeting and Clark, 2000).

Over the last few years, the international mining industry has undergone some major changes due to the downturn in demand for metals and a subsequent downturn in commodity prices. Many mining companies have cut their operating costs by restructuring, reducing labour costs and closing down less profitable mines. However, mining still makes a valuable contribution to the economy. In 2013, South Africa, for example,

² See also the Communications report Chamber of Mines, 2014.

³ Indirect employment entails jobs in industries that either supply goods and services to the mining sector, or use mining products for downstream value addition, or which are related to the spending multipliers from mining and mining employees in the economy (Chamber of Mines of South Africa, 2013).

recorded a nominal mining GDP of approximately USD 37.5 billion (R 280 billion),⁴ just over 8% of the total national GDP (Chamber of Mines of South Africa, 2014), offering direct employment to over 460,000 people. According to MINEX Russia (2014), all of Russia's extractive industries constitute 33% of Russian GDP, and Business Monitor International predicted that the value of the Russian mining sector will have grown to USD 259 billion by 2015, despite the global slowdown in demand. According to the World Gold Council⁵ (2014), 15 members of the Council provided work for over 160,000 people.

The country's larger mining companies are publicly listed and have to comply with stock exchange listing requirements and reporting standards. They also have to satisfy the demands of their shareholders. The mining industry is regulated by various laws in terms of mining and mineral rights, labour issues, safety and environmental performance, social improvements, and related aspects. The mining majors uphold stringent standards, in some cases going beyond the requirements of international good practice guidelines (SAHRC, 2015). As an example of the industry's involvement in infrastructure and social development, a mining company invested USD 100 million in partnership with Tanzania's National Utilities Company in order to link its mines and the local community to the national electricity grid. This mining company also develops or supports many programs related to community health care, enterprise development, education, infrastructure programs, etc.

The global distribution and supply of gold and platinum

Precious metals are comprised of gold and the platinum metals group.⁶ Gold is much more abundant and widespread than platinum group metals, which are among the least abundant of the Earth's elements. This is reflected in worldwide production numbers, with primary gold production estimated at around 3,000 metric tons for 2014 (Statista, the statistics portal 2015a; World Gold Council 2015) vs. primary platinum production of approximately 161 metric tons (Statista the statistics portal, 2015b). This means that the world's platinum production is less than 6 % of the total gold production.

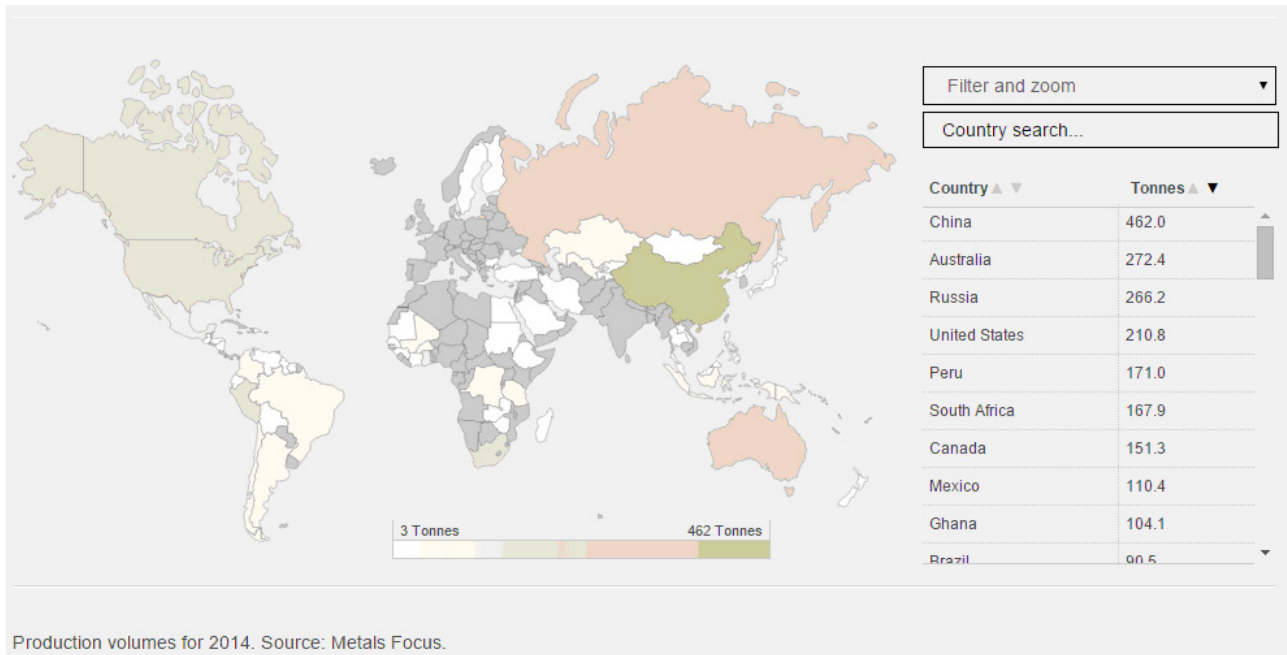
Gold is mined across all continents, except Antarctica (Figure 1), whereas platinum group metals are mainly mined in 5 regions of the world (Figure 2). Large primary platinum group metal deposits are restricted to Africa (Bushveld Complex and Great Dyke) and North America (Stillwater and Lac des Iles Complexes), with areas producing significant platinum group metals as by-products being located in Russia (Pechenga and Noril'sk igneous provinces), China (Jinchuan Complex) and North America (Sudbury Complex) (Figure 2).

4 Calculated at an average exchange rate of 7.46 R to 1 USD.

5 The World Gold Council is the market development organisation for the gold industry. Working with the investment, jewellery and technology sectors, as well as engaging in government affairs, its purpose is to provide industry leadership, while stimulating demand for gold. Based in the UK, with operations in India, the Far East and the USA, the World Gold Council is an association whose members comprise the world's leading gold mining companies. Web site: www.gold.org

6 Metals that are rare and have a high economic value. The high values of these metals are the result of various factors: scarcity, resistance to corrosion and oxidation and uses (industrial processes and investment commodity). The most important of these metals are Gold, Platinum, Palladium, and Rhodium.

Figure 1: Gold mining production around the world (World Gold Council, 2015).



Currently, China is the world’s leading gold producer, followed by Australia, the United States, Russia, Peru and South Africa (Table 1).

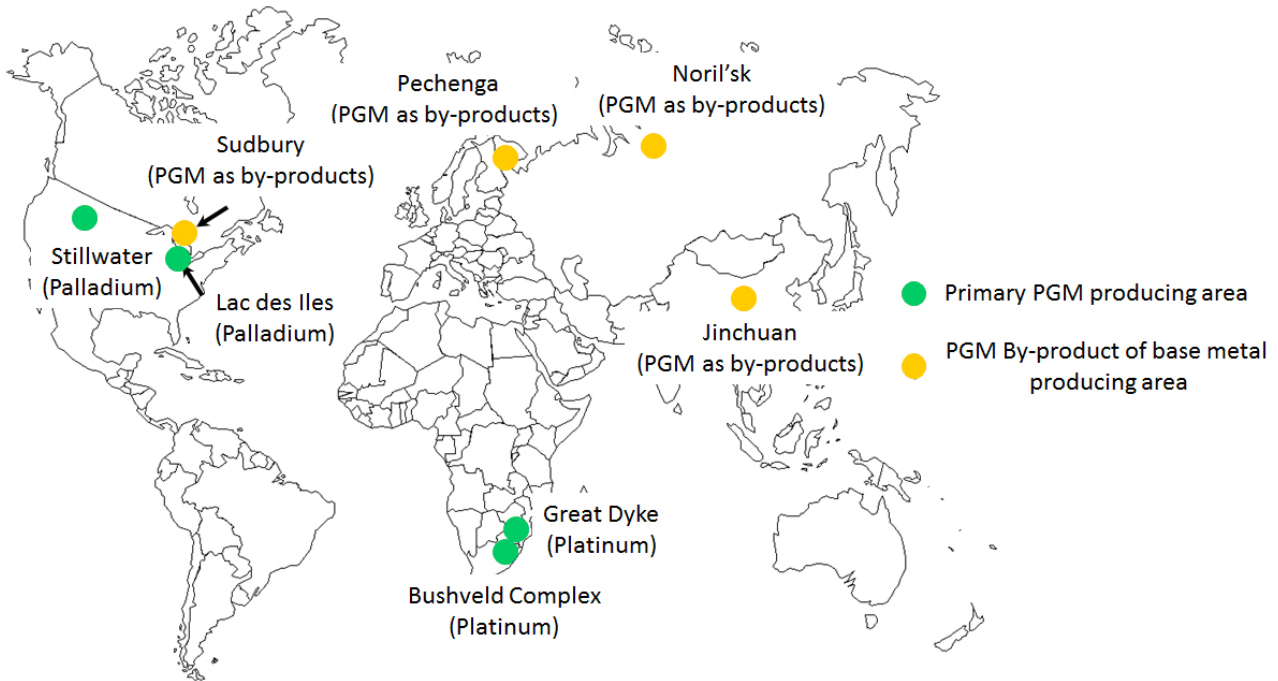
Although South Africa is only ranked as the 6th largest producer, the South African Witwatersrand deposit deserves special mention as it has produced nearly 50 % of all the gold mined in the world. Over 100 years of mining at the Witwatersrand has left a legacy of abandoned shafts, unworked low-grade areas and many tailings disposal dumps (SAHRC, 2015). South Africa is the world’s leading platinum producer, with the Bushveld Complex in South Africa containing 75 % of the world’s platinum resources, 54 % of palladium and 82 % of rhodium resources. Russia, the major producer of palladium, is also the second leading platinum producer, followed by Zimbabwe and North America (Statista, the statistics portal, 2015a).

Most newly mined gold comes from large mining companies. However, the World Gold Council (2012) estimates that approximately 10 to 15 % of the world’s gold output originates from artisanal and small-scale sources.

Table 1: List of countries that produced more than 20 metric tons of gold during 2014 (World Gold Council 2015).

Country	Tons	Country	Tons
China	462.0	Kazakhstan	49.2
Australia	272.4	Mali	48.6
Russia	266.2	Chile	44.5
United States	210.8	Colombia	43.6
Peru	171.0	Philippines	40.4
South Africa	167.9	Burkina Faso	38.9
Canada	151.3	Dominican Republic	36.1
Mexico	110.4	Dem. Rep. of the Congo	35.8
Ghana	104.1	Mongolia	32.0
Brazil	90.5	Sudan	31.9
Indonesia	89.5	Turkey	31.3
Uzbekistan	85.0	Zimbabwe	23.9
Papua New Guinea	67.2	Guinea	23.5
Argentina	60.0	Venezuela	22.7
Tanzania	50.8		

Figure 2: Simplified world map showing the most important PGM producing areas.



World gold supply

Gold has many uses aside from jewellery and its application in technology. Gold components are used in mobile phones, computer technologies, and health care and space equipment. (Hewitt et al. 2015; PwC 2013). It also has a traditional role as a store of value and a mechanism for trade and exchange (PwC 2013; Habashi 2005). A total of 183,600 tons⁷ of gold have been mined in human history (World Gold Council 2015). All the gold mined still exists in some form or another, and only a small percentage is unaccounted for (Hewitt et al. 2015). Concerning the global consumption of newly produced gold, about 50% is attributed to jewellery, 40% to investments, and 10% to industry. Approximately three-quarters of new gold is produced by the top 15 gold producing countries.⁸

Due to its unique properties, gold is easily recycled; from 1995 to 2014 recycled gold accounted for about a third of the total supply (Hewitt et al. 2015). A 2013 report by Price Waterhouse Coopers (PwC) summarises the key elements of the gold value chain, separating the supply and demand side, as shown in Figure 3. Table 2 lists the supply and demand for 2013, 2014 and the four quarters of 2015. The data highlights the fluctuating supply-demand situation, with a surplus of approximately 5.7 tons for 2015 (World Gold Council, 2015 and 2016).

⁷ This is equivalent to 9513 m³ of gold.

⁸ The 15 major gold producing countries (2012) are_ China, Australia, United States, Russia, Peru, South Africa, Canada, Ghana, Mexico, Indonesia, Uzbekistan, Brazil, Papua New Guinea, Argentina and Tanzania. Source: PwC, 2013.

Figure 3: Schematic diagram of the gold value chain (PwC, 2013).

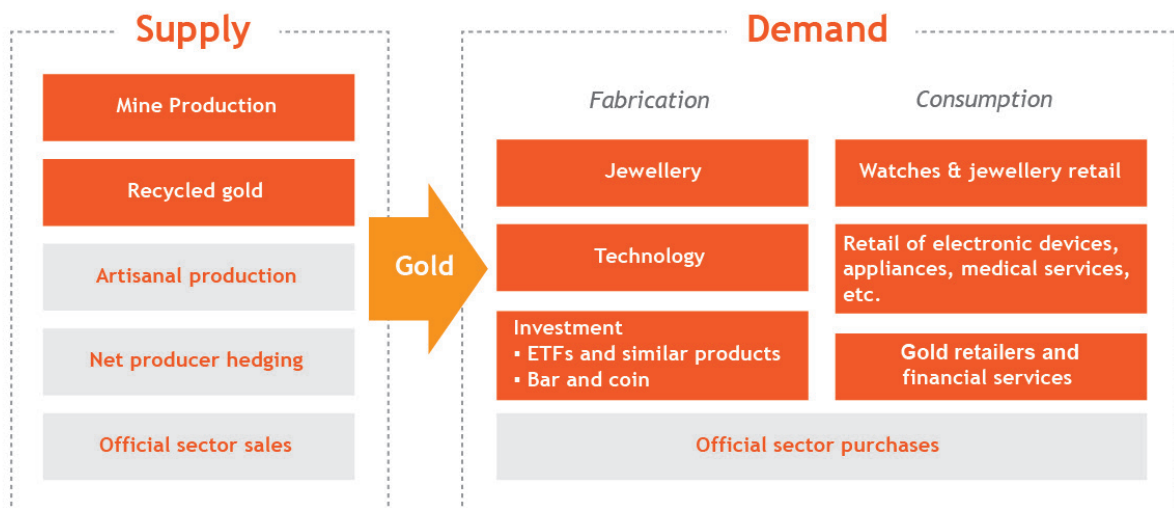


Table 2: Gold supply-demand data modified following the World Gold Council (2015 & 2016). (All values in metric tons).

	2013	2014	Q1'15	Q2'15	Q3'15	Q4'15
Supply						
Mine production	3070.3	3140.5	732.4	788.2	840.9	824.8
Net producer hedging	-31.9	103.6	-13.1	-8.2	15.5	-15.0
Total mine supply	3038.4	3244.1	719.3	780.0	856.4	809.8
Recycled gold	1247.2	1169.7	355.3	255.8	254.3	227.4
Total supply	4285.6	4413.9	1074.6	1035.8	1110.7	1037.1
Demand						
Fabrication - Jewellery	2703.3	2480.8	602.7	512.3	628.5	671.4
Fabrication - Technology	354.3	346.4	81.2	83.1	81.9	84.5
Sub-total above fabrication	3057.6	2827.2	683.9	595.4	710.4	755.9
Total bar and coin demand	1700.8	1000.5	251.4	201.4	295.3	263.5
ETFs and similar products	-915.9	-185.1	25.2	-23.9	-65.9	-68.9
Central banks and other institutions	625.5	583.9	122.9	129.2	169.0	167.2
Gold demand	4467.9	4212.2	1083.5	902.2	1108.8	1117.7
Surplus/Deficit	-182.4	156.2	-17.4	103.3	-37	-43.2
LBMA Gold price, US\$/oz	1411.2	1266.4	1218.5	1192.4	1124.3	1106.5

It is estimated that roughly 90% of recycled gold comes from jewellery, coins and bars (high value recycled gold), with the remainder coming from recycled industrial gold (waste: electrical and electronic equipment). Recycled gold is defined as gold that is sold for cash by consumers or other supply-chain actors, including jewellery manufacturers that sell old stock (Hewitt et al., 2015).

World platinum group metals supply

In contrast to gold - of which only 10 % of mine production is used for industry - the platinum group metals have a major application in technology. According to the International Platinum Group Metals Association (IPA), one in four of the goods manufactured today either contain platinum group metals (PGMs) or had PGMs play a key role in their manufacture (IPA). The three most important PGM are platinum, palladium and rhodium, all three of which are used in autocatalysts. Other industrial uses include air purification, use in

chemical processes as catalysts, and in applications for the electronics sector. Platinum (and minor amounts of other PGM) is also a sought after metal in the jewellery industry. The PGM (especially platinum) have a much shorter investment history than gold, but some of the PGM are now traded as ETFs on stock exchanges, such as coins (e.g. the American Platinum Eagle or the Canadian Maple Leaf) or as bullion.

As is the case for gold, the physical properties and durability make the metals valuable for effective recycling. According to the International Platinum Group Metals Association (IPA) industrial catalysts and spent automotive catalysts are recycled at a rate near 95% of the maximum potential (IPA). However, end of life recycling rates for PGM in consumer products are lower and require an efficient recycling chain from collection to refining. In 2014, recycling provided for 25% of the platinum demand (Table 3).

Table 3: Platinum, palladium and rhodium supply-demand data after Johnson Matthey (2015). Values in '000 oz.

Supply	Platinum			Palladium			Rhodium		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
South Africa	4205	3546	4237	2464	2125	2480	551	466	584
Russia	725	715	696	2610	2628	2600	80	87	80
Others	871	864	874	1300	1351	1323	62	64	62
Total Supply	5801	5125	5807	6374	6104	6403	693	617	726
Gross demand									
Autocatalysts	3147	3354	3695	6958	7351	7457	786	837	851
Jewellery	3028	2900	2862	355	279	245	213	168	146
Industrial	1652	1784	1836	2192	2125	2074			
Investment	871	272	-88	-8	932	-400			
Total Gross demand	8698	8310	8305	9497	10687	9376	999	1005	997
Recycling	-2029	-2073	-2213	-2525	-2750	-2873	-278	-316	-333
Total net demand	6669	6237	6092	6972	7937	6503	721	689	664
Movement in stocks	-868	-1112	-285	-598	-1833	-100	-28	-72	62

Differences between gold and platinum group metals (PGM) / gold and platinum refineries

Gold mining companies usually produce doré gold, which is then delivered to one of the gold refineries for further purification. Some gold mining companies produce a high grade concentrate (also called slimes), which is then processed further at a refinery. Purification is usually achieved by a high temperature process (smelting) or a hydrometallurgical process. The largest gold refineries belong to one or more of the various certification schemes. Gold refineries are recycling also second hand gold (such as jewellery), scrap, low-grade waste, etc. The recycling of scrap, such as electronic waste, is considerably complicated: the material can contain up to 60 different elements and often dangerous chemical compounds. Requiring special equipment and safety procedures restricts the recycling of e-waste to large scale refineries (Hewitt et al., 2015).

The major platinum producing companies in South Africa operate their own precious metals refineries, but other platinum group metal producers send their high-grade concentrates to refineries around the world. Some of the refineries refine both gold and platinum group metals, whereas others specialise only in gold. Gold recycling refineries are involved also in the recycling of platinum group metals, with typical feed materials consisting of catalytic converters (used in the chemical, petrochemical and glass industry), autocatalysts, electronic waste, etc.

The European PGM industry, which represents producers and recyclers, employs around 12,000 people and generates over 28.5 billion Euros per year (IPA, 2014).

More detailed information on the processing are provided in Annex I. The processes are relevant to the later discussions on the theft, trade and the various initiatives to counter illicit trafficking in precious metals.

Gold processing

Gold occurs in a variety of rock types and different mineralisation styles, involving different extraction methods.

Mining: Mining of gold takes place in hard rock as well as in unconsolidated sediments (placer mining) and can take place as open pit mining or underground.

Hard rock mining: requires larger and costly equipment and is normally the domain of medium and large mining companies. In many deposits, gold occurs together with sulphides: the process usually involves an upgrade of the heavier sulphide minerals by flotation that may be preceded by a gravity process in order to take out the coarser gold.

Placer mining: involves the extraction of gold from unconsolidated gravel, sand and soil. It requires less technical knowledge and equipment and many artisanal (and illegal) operations concentrate on placer mining. Techniques used to recover gold are all gravity methods, gold-bearing material can be then scooped from unconsolidated materials using simple tools such as spades, excavators and dredges. The gold is then recovered by washing away the lighter soil, sand or gravel, leaving a gold-rich concentrate behind. The flotation concentrate can be treated in various ways including the heating up of the concentrate, driving of sulphur (and other elements such as arsenic), which result in an iron oxide rich material that could be leached to extract the gold. Although greener options have been developed this method is still practised.

Despite many developments in the gold industry, most gold extraction and recovery processes are based on cyanide chemistry. Prior to the use of the cyanidation process, the miners used the amalgamation method, where gold was extracted by mixing the crushed ore with mercury and vaporising the mercury to leave the gold-rich product behind.

Although the cyanidation process is used worldwide with great success, the toxicity of cyanide led to the development of other less toxic lixiviants.

Low-tech operations (such as ASM) usually sell their products as is, or make use of an amalgamation process resulting in health and environmental issues.

Platinum processing

Platinum placer deposits do occur, but they are rare and usually of a limited size. Small amounts of platinum group minerals do occur in gold placers. However, as they do not react with mercury, these minerals are quite easily separated. In alluvial platinum deposits, gravity methods are employed to concentrate the platinum group minerals, which are then subject to further refining and smelting.

Hard rock mining of platinum (as well as the nickel operations which produce platinum as a by-product) is dominated by underground operations with some companies mining from surface operations before moving underground.

The initial processing stages of all major platinum producers are similar, with the ore being crushed and milled before the sulphides and platinum group minerals are concentrated using a froth flotation process. Concentrates are sent to the smelter operation for further separation of the value minerals from the unwanted gangue. The furnace matte from the smelter is transferred to a converter operation, where most of the iron and a large percentage of the sulphur are removed. Most producers granulate their converter matte whereas others slow-cool their converter matte in ingots before further separation. From here on, the process followed by different producers varies: for primary producers, the converter matte is further treated at a refinery operation where most of the base metals are removed. The resultant high-grade product is further refined through complex dissolution and precipitation processes to produce pure platinum group metal products.

Companies producing PGM as by-products also use a froth flotation process, but due to the higher base metal sulphide content, the PGE grade of the sulphide flotation concentrates has a much lower 4E content compared to that of primary producers. Some companies produce copper and nickel rich concentrates which are treated separately. Flotation concentrates are usually smelted and converted to form a converter matte. Subsequent processing focuses on the removal and recovery of the base metals. The residue, which

contains the platinum group metals, is usually shipped to an independent refining operation for further upgrading and separation of the various platinum group metals (cf. heading “Large, medium and artisanal and small scale mining”).

Large and medium scale, and artisanal and small scale mining

Precious metals are mined in two contrasting mining scales: large and medium scale mines, and artisanal and small scale mines. Considering the fact that each one of them implies different actors, an overview on these mining scales is needed in order to comprehend both their particularities and interrelated aspects.

Large and medium scale gold mines

The classification of mining operations is usually based on their annual output measured in metric tons per year. Although a differentiation is made between underground and surface operations, large scale mining operations usually have an output of well over a 500,000 tons per annum (a large gold mine can easily mill over half a million tons per month), whereas medium scale mines produce between 50,000 to 500,000 metric tons. Moving this amount of material requires substantial capital, industrial scale equipment, high level technology, large scale processing operations and a well trained and equipped workforce (Philippine Rural Construction Movement). Large scale operations are held by major mining companies who operate around the world. Nevertheless, the six biggest gold producing mining companies have their bases in Canada, the USA, Australia and Russia (Weber-Fahr et al., 2001, p. 441).

Large and medium scale PGM mines

In terms of primary PGM producers, the Bushveld Complex in South Africa and the Great Dyke in Zimbabwe are responsible for approximately 75% of the world’s primary platinum production and approximately 37% of newly mined palladium. These companies mine the same ore bodies, i.e. the Merensky reef, UG-2 and Platreef in the Bushveld Complex and the Main Sulphide Zone in the Great Dyke. A small satellite body to the Bushveld Complex is mined for nickel (Nkomati Nickel Mine), with PGM as by-product.

The South African PGM mining industry has four major mining companies that operate their own smelters and refineries. These companies have take-off agreements with larger companies for their concentrates. In these cases, the concentrates become part of the smelter feed. Several South African producers also operate in Zimbabwe, with the products being transported to the South African operation for further treatment (i.e. smelting and/or refining). Due to the downturn in commodity prices, some of the operations are restructuring and putting shafts on care and maintenance, but at the time of writing (November 2015) 15 mining operations, close to 10 joint venture operations and more than 5 greenfield projects on the Bushveld Complex and Great Dyke have been counted. Mining companies operate more than 20 concentrators, 7 smelter operations, 5 converter operations (1 in Zimbabwe), 4 base metal refineries and 3 precious metal refineries. Some of the South African companies send their products for further refining to bigger companies. A number of them are 100% subsidiaries of foreign firms.

In North America, two primary PGM producers are major palladium producers, having other metals as by-products. One of them is Canadian, and the other is based in the United States. The Canadian company sends out its concentrate for smelting (Hatch, 2015), whereas the American company operates its own smelter and base metal refinery, shipping the PGM-rich filter cake for further refining to a third party (Stillwater Mining Company). The American company is involved also in recycling and processes ceramic and metallic automotive catalysts, petroleum catalysts, industrial PGM catalysts and refinery sweeps.

In Russia, of the base metal operations (mainly nickel and copper) that produce PGM as by-products, one

single company delivered more than 40% of the newly mined palladium. This company operates two major production complexes, namely Polar Branch and Kola MMC, located in the Kola Peninsula. Both production complexes use massive Cu-Ni sulphide ores as primary raw material. Processing of the ores includes flotation, smelting and refining. PGE-rich concentrates are further refined at Krasnoyarsk (located in the southern part of Siberia).

The Sudbury complex in Ontario, Canada, is used by several mining companies, two of which are the biggest producers in the country. The first one operates six underground mines and integrated milling, smelting and refining facilities that process extracted minerals. Nickel is the primary product, with other base metals and PGM as by-products (Vale, 2016). A PGM-rich concentrate is shipped to the United Kingdom for final processing.

The second company operations consist of several mines, a mill-concentrator and a smelter. Its matte is sent by rail to Quebec City, and is shipped overseas to Norway for refining into pure metals. Nickel and copper are the major products with PGM as by-products (Sudbury Integrated Nickel Operations).

With PGM processing more complex than that of gold and with only a few alluvial deposits of PGM worldwide (e.g. in the Chocó Department, Colombia and the Ural Mountains in Russia), PGM mines do not attract artisanal miners to the same scale as is being experienced in the gold mining industry. Although some of the dumps are being re-worked for their PGM contents, the complex processing also requires a more substantial business partner, leaving little opportunity for artisanal practices and illegal mining.

Artisanal and small scale mines (ASM)

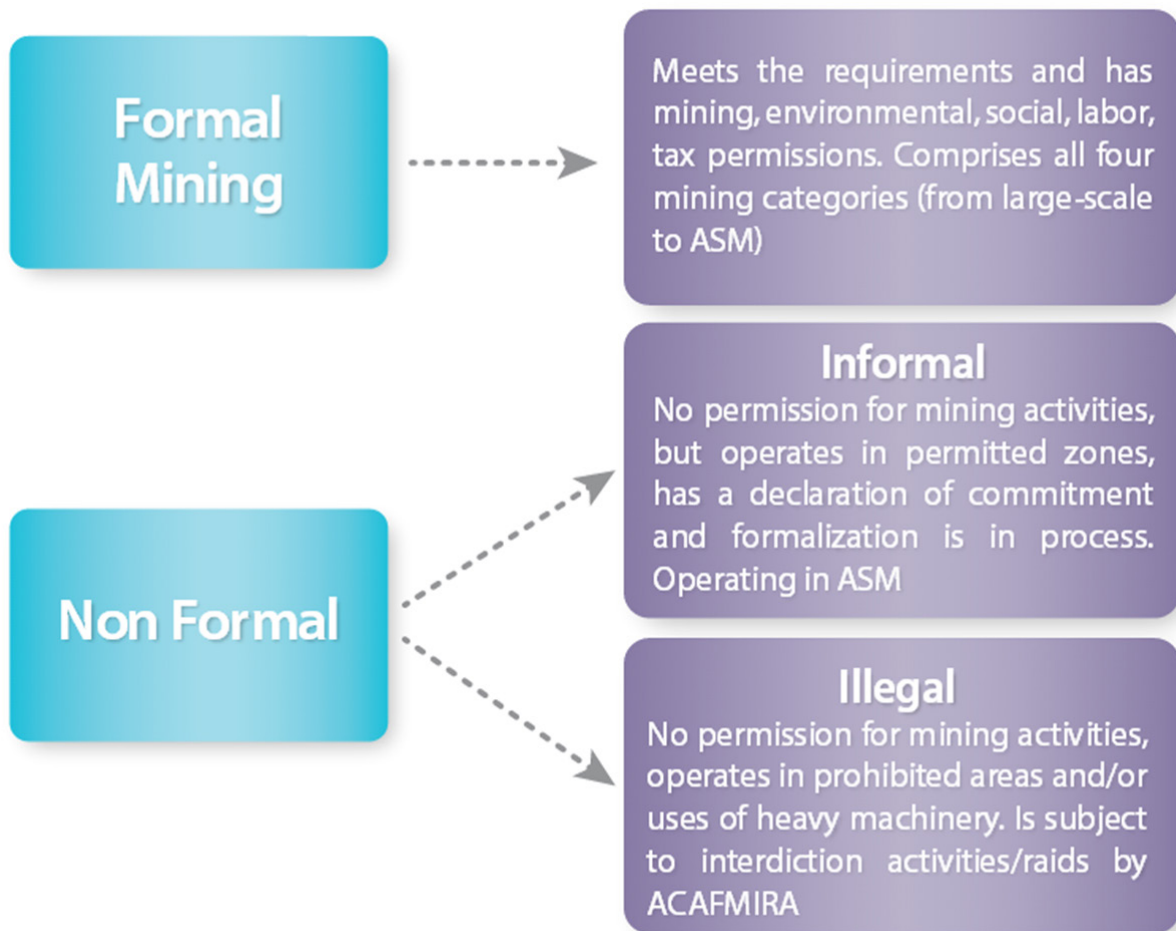
A common definition for this sector does not exist, and its legal status and defining criteria vary from country to country (Miningfacts.org). In general, it can be said that ASM covers a broad spectrum of activities, but it is principally characterised by mining operations which exploit marginal or small deposits, tend to lack capital, are labour intensive and have poor access to markets and support services (PwC, 2013). In most cases rudimentary equipment are used in dangerous conditions that fall significantly short of international safety limits (Bafilemba & Lezhnev, 2015). For example, although an upper bound of 50,000 metric tons for an underground mine and 100,000 metric tons for an opencast mine define the upper limits of ASM, most artisanal operations are labour intensive, pick and shovel operations that use basic processing techniques (SAHRC, 2015).

The International Council on Mining and Metals estimates that the ASM-sector operating in developing countries employs 15 million people and provides a livelihood for over a 100 million (ICMM, 2011). Other estimates are as high as 20 million (Eftimieet al., 2012) to 25 million (Miningfacts.org) artisanal miners. Price Waterhouse Coopers (2013) estimates that ASM produces around 330 metric tons of gold each year, representing around 12% of the global mine supply (estimates by the World Bank are as high as 20%), and ASM is likely to continue to provide livelihoods for millions worldwide.

Although there is a general consensus that ASM has a legitimate and significant role to play in the social and economic development of many countries (ICMM 2011; SAHRC 2015), a significant proportion operates beyond government supervision (no legal mining title or valid mining contract) (Miningfacts.org). The unsafe disposal of tailings and waste dumps, acid mine drainage, improper closure of pits and mines, the use of toxic chemicals and toxic effluent dumping in forest clearings used for timber and firewood have been listed as some of the problems associated with ASM (e.g. Bleischwitz et al., 2012). In addition, many of these illegal mining operations occur underground, with miners working in more profitable areas living in poor conditions for long periods of time (Coetzee & Horn 2006; Crowley 2015). Legal miners and runners working for illegal miners supply food and other consumables at inflated prices, creating a second economy (Coetzee & Horn 2006; IOLNews 2016; eNCA 2016). Illegal miners organise themselves into gangs, are armed, and protect their areas from infiltrations by other gangs, resulting in violent confrontations and subsequent loss of life (Maylie 2014; News24 2015a; Shange 2015a; Hosken and Smillie 2015).

It is worth underlining that “non formal” mining includes both informal and illegal mining activities. While informal mining refers to miners that “have not yet been able to meet all legal requirements”, illegal mining encompasses a violation of the law (The Global Initiative against Transnational Organized Crime, 2016, p. 5-6).

Figure 4: Formal and Non Formal Mining (The Global Initiative against Transnational Organized Crime, 2016, p. 6).



The South African term “zama zama” refers to a person who works illegally in abandoned mine-shafts in order to retrieve metals or minerals.⁹ Although regarded by some as a form of artisanal mining (SAHRC, 2015), it is an illegal activity which is often associated or linked to organised crime (Mwareya, 2014).

The next section of this report draws special attention to the criminal threats to the supply of precious metals.

⁹ From Zulu zama zama, reduplication (for emphasis) of -zama, stem of ukuzama to try, strive, make an attempt to obtain something (Oxford Dictionaries).

Section two: criminal threats to the global precious metals supply chain

In order to assess the extent of the problem of illicit trafficking in precious metals, this section presents the criminal threats to the global precious metals supply chain, presents crimes related to precious metals mining, and provides a number of examples highlighting relevant criminal threats and challenges.

Although the definition of illegal mining varies according to national legislation, it is generally agreed that while informal mining is undertaken outside the legal framework of the country but within a system of recognized property rights, illegal mining is undertaken without government approval and outside of the provisions of the mining law.

Illegal mining and product theft

Gold

Especially in the case of gold, where processing is fairly straightforward, the focus has shifted from stealing and refinery products to illegal mining (Coetzee and Horn, 2006). With gold easily reworked, substantial amounts of illegally mined gold (around 10%) can be mixed in with scrap gold and sold to refiners; after melting, it will be virtually impossible to trace it back to the mine of origin (Partnership Africa-Canada 2014; World Gold Council 2012). By disguising and mixing illegal gold with other licit sources of the metal, it becomes part of the legal supply chain. Therefore, this process represents a form of money laundering - further details will be provided in this regard under the heading "Illicit economy and illicit financial flow (IFF)".

In terms of stock loss, retail companies estimate loss as a result of internal theft (theft by staff as well as shoplifting by customers) at about 1% of the value of the stock. This is because security is in place. External theft in the form of armed robbery is more of a threat (Virtual Metals Research & Consulting Limited, 2006). In terms of global gold production (as summarised in Table 2 - reference WGC 2015 and 2016), 1% would equate to approximately USD 1.25 billion.

It is difficult to put a total value on the amount of gold stolen from operations, as mining houses are generally quite reticent to discuss the extent and details of theft from their operations. Studies on a gold mine in Africa, for example, indicate that total losses were equal to 5.2% of the total gold production (P. Bishop. pers. comm., Feb 2016). The Illicit flow of gold in the GLR was calculated as USD 22 million in 2011 (Partnership Africa Canada, 2015).

Some studies, research and data related to specific producer countries may help in identifying the scale of the issue under consideration.

South Africa

Reportedly, there are between 8,000 and 30,000 illegal miners in South Africa and approximately 6,000 abandoned mines available to work in. The huge variation in estimates highlights the difficulties in assessing the number of people involved. Most of South Africa's illegal miners are undocumented immigrants from neighbouring countries such as Lesotho, Mozambique and Zimbabwe (Crowley, 2015). Moreover, armed gangs are kidnapping rival miners and forcing them to work in slave-like conditions (News24, 2015b; Mwareya, 2014).

Arrests are made on a regular basis (Fin24, 2013; Times Live, 2010; Crowley, 2015; News24, 2015c), but once a certain area has been cleared, the illegal activity flares up in another mining area. Members of the South African Chamber of Mines have reported numerous cases or incidents of illegal mining (both surface and underground) over the last few years (Table 4), with a staggering number of people involved.

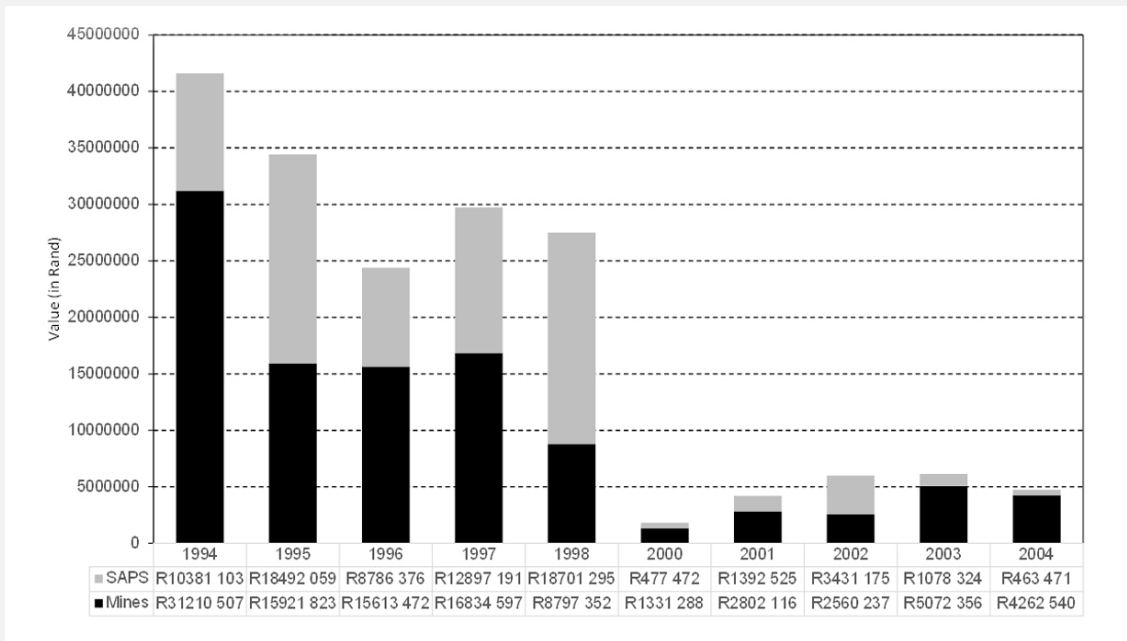
Table 4: Summary of the number of incidents of illegal mining reported by the members of the South African Chamber of Mines. Data from 2015 up to November. Data provided by the South African Chamber of Mines.

Year		Number of Incidents	Mine-employees involved	Non-mine employees involved
2013	Surface	251	2	251
	Underground	351	7	811
2014	Surface	863	7	1693
	Underground	221	0	338
2015	Surface	73	0	121
	Underground	764	55	2010

Although the majority of illegal gold in South Africa comes from the so-called “zama zama” activity, the theft of gold bearing products from mining operations (as elsewhere in the world) is still rife. In June 2014, the Hawks (South African Police Service Directorate for Priority Crime Investigation) arrested 20 gold plant operators in connection with the theft of gold bearing material worth millions of Rand (Fin24, 2014a). In March 2015, unprocessed gold was seized in Springs, east of Johannesburg, following an 18 months investigation into an international gold syndicate (Mdhuli, 2015). In August 2015, over 200 tons of gold concentrate were discovered in a factory in Potchefstroom (a town near one of the gold mining hubs) with a suspected value of millions of Rands (Areff, 2015a).

The last detailed study on theft of precious metals in South Africa was reported on in 2006 by Coetzee and Horn, and includes data up to 2004 (Figure 5). The data reflects two different studies with a clear difference in values reported between the two data sets. Although Coetzee and Horn attribute this to an improvement in security at the various participating mining houses, it might be related also to differences in reporting and value calculations.

Figure 5: Value of gold bearing material theft reported by the various mining houses and the South African police from the period 1994 to 2004.



Since 2013, the South African Chamber of Mines has been collecting data on a monthly basis from the various mining houses confirming that product theft is highly variable and presents a serious problem (Table 5) with a large number of incidents being reported. Taking into account that not all cases of theft are detected, this data represents only a portion of the loss due to gold-bearing material being stolen. For example, data does not include the gold concentrate discovered in 2015 in Potchefstroom as the case is still under investigation.

Table 5: Summary of the number of incidents of theft, the recovered value and the number of people involved in these incidents. Data from 2015 up to November. Data obtained from the South African Chamber of Mines.

Year	Number of Incidents	Value recovered	Mine-employees involved	Non-mine-employees involved
2013	442	R8 601 415	11	354
2014	460	R13 637 858	53	329
2015	536	R2 259 475	57	154

Tanzania

Tanzania is reported to produce on average 28 kg monthly from just over 250 pits (Dr. Willison Mutagwaba, MTL Consulting Co. Ltd, *pers. comm.* to Peter Bishop, 2012). In 2011, seven 'criminal intruders' were killed at a gold mine in Tanzania, which belonged to a large international group (White, 2012). In 2012, heavily-armed men attempted to raid an airstrip owned by a large gold mining company in an attempt to steal 587 kg of gold bars. The attack was thwarted by local police. According to the Police's regional crime officer. "incidents such as these are usually carried out by a syndicate" and also involve an inside informer. In 2013, a group of illegal miners, accompanied by children, invaded Geita Gold Mine in northern Tanzania in an attempt to steal low-grade waste rock and diesel from the site (AllAfrica, 2013).

Peru

In Peru, mining equipment, valued between USD 4 and 5 million, was destroyed in an operation undertaken by the government against illegal mining (involving more than 900 police officers). The operation was carried out in order to address environmental issues, with the short term goal (2014) being the elimination of more than 40% of cases of illegal mining in the country (Perú 21, 2014).

Vietnam

In Vietnam, a firm with permission to extract sand and gravel was found to be involved in the illegal extraction of gold. Following reports from the local community concerning environmental damage and threats being issued to villagers approaching the area, the Provincial Public Works and Transport Department ordered the firm to stop its illegal work. Following the warning, the firm left the country (The Nation, 2014).

Despite the complexity of the phenomenon, managing the illegal mining dilemma is further hampered by the fact that it might be difficult to criminalise illicit mining from a prosecutorial point of view. Indeed, illegal miners are often arrested and prosecuted on related charges, such as trespassing, possession of unwrought precious metals, weapons and explosives or other criminal acts committed as part of illegal mining (cf. heading "Associated criminal activities").

Platinum group metals

Due to the complexity of platinum group metals processing and refining, illegal mining is almost unheard of in the platinum industry. However, the theft of products represents a serious problem, and mining companies have put extensive security procedures and systems in place to protect refineries where the high-grade materials are produced. As a result, product theft has moved upstream, with smelter products being particularly at risk. Although, in the last few years there has been also an increase in theft from concentrators.

South Africa

Regarding the situation of platinum group metals in South Africa, as platinum mining is undergoing major restructuring due to low commodity prices, increased labour costs, along with other problems, less profitable underground areas, and in some cases shaft, have been put on care-and-maintenance. Old worked out areas (generally close to the surface) are fenced off with their ventilation openings sealed. As is the case for the gold mines, zama zama move into these areas in order to strip valuable assets, mainly copper cable (Scheepers, 2013).

Data reported by Coetzee and Horn (2006) again indicate the variable nature of product theft (Figure 6), a trend which is confirmed by the Chamber of Mines data (Table 6). The table presents minimum values. Discussions with individual mining companies indicated substantially higher amounts having been recovered over the same time period - indicating inconsistency in data reporting. The data also highlights the variation in the value of material being stolen, with 90% of the value recovery reported in 2015 attributable to 3 cases. Using the 1% rule, as referred to earlier on, 1% of total world platinum mine production equates to approximately USD 112 million.

Figure 6: Value of platinum-bearing product theft reported by the various mining houses and the South African police in the period from 1994 to 2004.

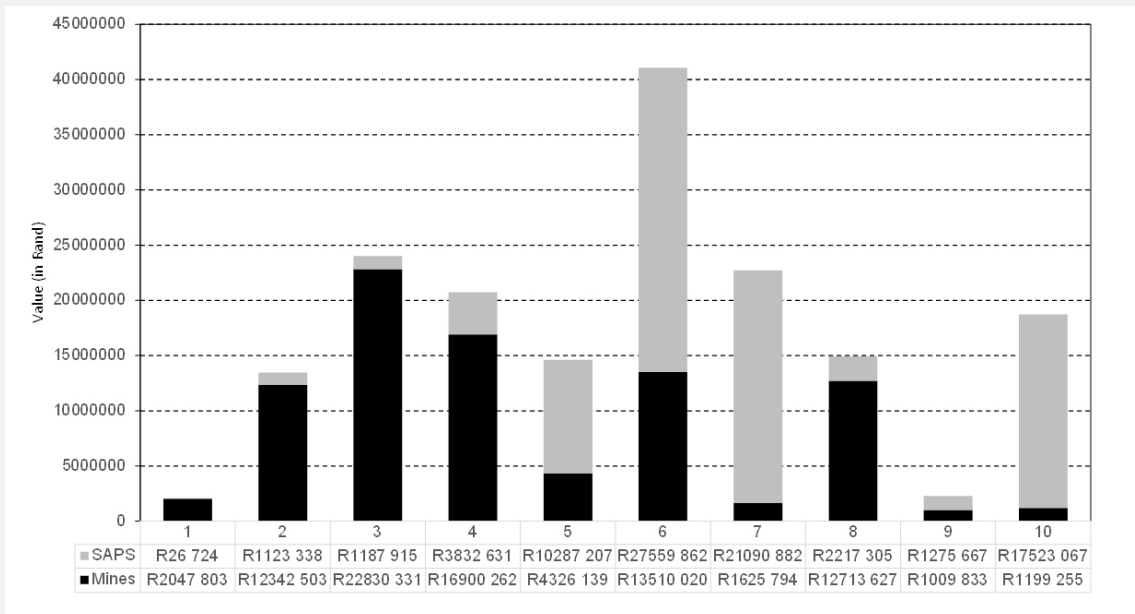


Table 6: Summary of the number of incidents of PGM theft, the recovered value and the number of people involved in these incidents. Data from 2015 up to November. Data obtained from the South African Chamber of Mines.

Year	Number of Incidents	Value recovered	Mine-employees involved	Non-mine-employees involved
2013	34	R2 326 651	16	8
2014	87	R2 111 226	46	17
2015	146	R34 444 393	39	21

Historically in South Africa, the most common at-risk products are furnace and converter mattes from the smelter process and concentrates and residues from the refining process (generally the base metal refineries). In the past, flotation concentrates have been too low in grade to be of an interest to criminals (requiring large volumes for upgrading and further treatment), but in the last few years these are also at risk, with perpetrators upgrading these materials by simple gravity methods such as panning or washing.

These materials can be further processed (usually by smelting) in small refining operations, after which they are sent off to one of the larger, more specialised refineries (usually located in Europe) for final separation and purification of the PGM. The main purpose of the smelting is to change the form and composition (some elements might be lost during the smelting operation, while base metals are frequently added as precious metals collectors) of the illicit product so it will not be recognised as such by the next refinery in the supply chain. It is usually traded as scrap containing precious metals (obtained from the recycling of jewellery, catalysts, etc.).

Associated criminal activities

The following paragraphs discuss some of the most frequent crimes associated with illegal mining and illicit trade in precious metals. The list is by no means exhaustive, but demonstrates the complexity and extent of the problem.

Human rights abuses

Many of the industry's initiatives on combating the illicit trade in gemstones and precious metals and other minerals specifically focus on the widespread abuses of human rights.

Among the serious human rights abuses¹⁰ listed in a draft version of the London Bullion Market (LBMA) Responsible Gold Guidance audit (2012),¹¹ three of them have been reported in several cases of illegal mining and have a significant impact on the populations of producer countries. These crimes are: human trafficking, sex and gender based violence and child labour.

Smuggling of migrants¹² and human trafficking¹³

The UN Special Rapporteur on Contemporary Forms of Slavery noted, with reference to the mining sector, that “men and adolescents are often recruited through deception, being offered working

10 “For the purpose of this Guidance, serious human rights abuse includes at least the following: genocide; slavery and slavery-like practices; summary or arbitrary executions; torture and cruel, inhuman or degrading treatment or punishment; enforced disappearance; arbitrary and prolonged detention; deportation or forcible transfer of population; systematic discrimination, in particular based on race or gender and the worst forms of child labour”, LBMA, 2012, page 3.

11 To learn more about the LBMA Responsible gold audit guidance please access the following page: www.lbma.org.uk/responsible-gold.

12 Smuggling of migrants is defined as “the procurement, in order to obtain, directly or indirectly, a financial or other material benefit, of the illegal entry of a person into a State Party of which the person is not a national or a permanent resident”, Protocol against the Smuggling of Migrants by Land, Sea and Air, supplementing the United Nations Convention against Transnational Organized Crime, entered into force on 29 September 2003 - Article 3. Use of terms.

13 United Nations Convention Against Transnational Organized Crime and the protocols thereto defines trafficking in persons as “the recruitment, transportation, transfer, harbouring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation”, Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime, entered into force on 29 September 2003 - Article 3.

conditions and workers' rights that are subsequently not complied with in practice. Often, the workers receive advance payments in cash or goods during their first three months of work, which are then deducted from the salary, using a mechanism of overestimating the goods provided and underestimating the quantity and quality of the gold handed over, so that the worker is indebted to his «patron» (UN Special Rapporteur on Contemporary Forms of Slavery, 2011, p. 10).

South Africa

In 2010 the International Scientific and Professional Advisory Council of the United Nations Crime Prevention and Criminal Justice Programme (ISPAC) reported that at least 17,000 men had been smuggled from Eastern Africa to South Africa. It is estimated that in South Africa the number of undocumented migrants varies between 500,000 and 1 million. They are often brought to major cities, such as Johannesburg, and to mining regions, e.g. Rustenburg (ISPAC, 2010), as many of the people involved in illegal mining and illicit trafficking in gold in South Africa are illegal migrants. There have been reports of foreigners being “recruited” for employment in South Africa, and being forced on arrival to work in illegal gold mining operations (Mwareya, 2014).

Peru

As reported by the study conducted by Verité in 2013 on forced labour in illegal gold mining, in 2010 “there were 1,600 victims of trafficking and police records indicate that there were 253 reports of trafficking, of which 176 (70%) were for labour trafficking and 6.5% occurred in artisanal mining. Of the 253 trafficking victims, 113 (47%) were male, of whom 95 percent were minors; and 140 (53%) were female, of whom 79 percent were minors” (Verité, 2013, p. 21). In some occasions, workers are sold by their families and forced to work to pay off the “fee for recruitment”, and even self-employed miners risk to “become victims of debt bondage, especially when organized crime comes into play” (The Global Initiative against Transnational Organized Crime, 2016, p. 28).

Sexual and gender based violence and child labour

The International Labour Organisation (ILO) defines child labour “as work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development”.

Children are involved in ASM, and form as much as 40% of the labour force at some gold mines, working as surface miners, rock crushers, transporters or gold washers. Child miners are thus exposed to severe injuries (Bafilemba and Lezhnev, 2015): “due to the extremely hazardous nature of the work, mining is considered a Worst Form of Child labour (WFCL)” (The Global Initiative against Transnational Organized Crime, 2016). According to the UN Special Rapporteur on Contemporary Forms of Slavery, “the work carried out by children in the mining sector, by its very nature and the conditions in which it is performed, qualifies as a contemporary form of slavery” (UN Special Rapporteur on Contemporary Forms of Slavery, 2011, p. 10). The International Labour Organization (ILO) has conducted many studies on children in hazardous work and estimated that approximately one million children aged 5 to 17 years old put their lives at risk by working in mines worldwide. ILO reports that most of this children work in artisanal and small scale mines, child miners suffer the highest death rate due to fatal injuries (32 per 100,000 full-time workers, FTEs) compared to the child workers exploited in other sectors such as agriculture (16.8 per 100,000 FTEs) and construction (15 per 100,000 FTEs). Children obliged to work in the ASM mining industry are greatly exposed to the risk of injury, illness, and fatal incidents. The gold mining industry is particularly hazardous for child workers

as they are often exposed to toxic metals such as mercury during their everyday work. The prolonged exposure to mercury can “result in profound problems of the central nervous system, leading to delirium and suicide.”(ILO, 2011). Furthermore, child diggers may suffer also of malnutrition as they lack adequate water and food supplies as well as time to rest (ILO, 2006).

In a briefing paper released by the United Nations Children’s Fund (UNICEF) on the conditions of children working in mines and quarries in West and Central Africa it is observed that “a typical child worker in an ASM is a boy or a girl above ten years of age who, depending on social and cultural practices, is involved in digging, crushing, grinding and washing ore or in support services and petty trade.” (UNICEF, 2012). While older boys are often involved in the process of digging precious metals, younger children are spared from the heavy work as they do not have sufficient strength. Therefore, these kids act as porters and are involved in other tasks such as petty trade, and bringing food and water to the mining sites. Girls are very much involved in artisanal and small scale mining illegal industry as well. A study from ILO shows that girls aged 12 to17 in the Tanzania are forced to work forty-two to seventy hours weekly, sometimes working longer hours than boys (ILO, 2007).

Overall, child workers see this occupation as temporary and as a means to “help finance their own education, and it is their primary reason for working in mining sites”. [8] In Sierra Leone (Kono District) UNICEF finds that some child miners are paid a daily fee of 6,000 Leones (US\$ 2.52) to work in alluvial diamond mining sites, in order to support their families and to cover their school expenses. In the same area about 70% of the child diggers were obliged to work six to seven days per week while 44% of them worked from a minimum of eight hours to a maximum of ten hours per day, reducing their chances of pursuing education (UNICEF, 2012).

Young girls working in the mining sector can be subjected also to commercial sexual exploitation. A study carried out by ILO in Tanzania shows that 85 of the 135 interviewed girls working in this industry were enticed or obliged to practice prostitution. Furthermore, the research reveals that girls working in the gemstone trading “are paid very little for their work and are expected to earn money through sexual favours” (ILO, 2007).

According to UNICEF, the international agreements to stop children exploitation in the mining sector have been so far largely unproductive. The root cause is that child miners are working in rural areas where there is a widespread lack of governmental control and social protection services. In these regions mining companies can operate without difficulty in the grey area between legality and illegality, not respecting labour market regulations and recruiting cheap labour force (UNICEF, 2012).

The following table (Table 7) summarises information on age restrictions (ILO).

Table 7: The main principles of the ILO’s Convention concerning the minimum age of admission to employment and work.

The minimum age at which children can start work	Possible exceptions for developing countries	
Hazardous work: Any work which is likely to jeopardize children’s physical, mental or moral health, safety or morals should not be done by anyone under the age of 18.	18 (16 under strict conditions)	18 (16 under strict conditions)
Basic Minimum Age: The minimum age for work should not be below the age for finishing compulsory schooling, and in any case not less than 15	15	14
Light work: Children between the ages of 13 and 15 years old may do light work, as long as it does not threaten their health and safety, or hinder their education or vocational orientation and training.	13-15	12-14

According to the UN Special Rapporteur on Contemporary Forms of Slavery “illegal mining has brought with it a wider range of contemporary forms of slavery, most prominently trafficking in girls and young women [...] coerced into prostitution in brothels opened in mining shanty towns” (UN Special Rapporteur on Contemporary Forms of Slavery, 2011). This is confirmed also by data gathered in Peru: “sex trafficking was pervasive in Madre de Dios [...] researchers witnessed girls and women being transported to the mining camps on the banks of rivers” (Verité, 2013).

In 2003, the percentage of female miners active in the ASM worldwide was estimated to be about 30%.

Eftimie et al. (2012) report that among the African countries most active in ASM, the percentage of women involved varies between 20 to 50% (Uganda 45%, the DRC 20%, Ghana and Malawi 50% and Zimbabwe 44%).

In Latin America, the number is considerably lower, estimated to vary between 10 and 30%, whereas in some Asian countries, women make up well over 10% to even more than 50% of the workforce (Eftimie et al., 2012). In Mongolia, the number is estimated at 30% (Cane et al., 2014), while in India an estimated 50% of the ASM is carried out by women (Eftimie et al., 2012).

Men and women usually play a different role in the ASM, depending on cultural or traditional factors, functions, and expectations. Men and women often do not have equal ownership or rights over resources: women are often less involved in, or excluded from decision making, and ineligible to make decisions for themselves or their families (Eftimie et al., 2012).

Studies on mining camps, mining communities and townships in the vicinity of mining areas indicate that women and children are not only exploited as cheap labour, but are subjected also to rape, domestic violence and general abuse.

Democratic Republic of the Congo

It has been reported that gold mines in the DRC are using child miners as young as 8 years old. Children are recruited also as child soldiers, participating in armed groups controlling the gold trade (Enough, 2012).

Studies conducted in the Eastern Democratic Republic of the Congo document “increased rates of prostitution, rape, and forced marriage (including that of young girls)” in the mining areas. During the first half of 2014, over 2700 cases of sexual violence were reported in the eastern DRC (Bafilemba and Lezhnev, 2015).

Peru

In Peru, the mining camp Huaypetuhe in the Madre de Dios gold mining region has been characterized by high crime rates, domestic violence, and incidences of rape (Eftimie et al., 2012).

Mongolia

According to Cane et al. (2014), in a study on gender based violence in Mongolian mining communities, one of the major obstacles in researching the spread of abuse is the hidden nature of gender based violence. It is often concealed due to social, legal and personal reasons.

Research findings suggest that the rate of gender based violence has increased since the onset of mining in the communities. As elsewhere, domestic violence, prostitution and alcohol-fuelled violence have increased, causing personal trauma, disintegration of the family structure, health related issues and broad community insecurity (Cane et al., 2014).

South Africa

A report by the South Africa Human Rights Commission (SAHRC) on the Issues and Challenges in relation to Unregulated Artisanal Underground and Surface Mining Activities in South Africa refers to children and women who have been taken underground for prolonged periods. Women and children are involved also in the processing of gold, grinding gold-bearing rock into a fine powder, and use handmade gold washing tables and mercury to form gold-mercury amalgam (Crowley, 2015).

Colombia

In Colombia, both the government and the Ombudsman's Office (Defensoría del Pueblo) "have reported that an increasing number of women and children are being recruited for labour exploitation in illegal mining areas" (The Global Initiative against Transnational Organized Crime, 2016, p. 32).

Environmental impacts, environmental crimes and health risks

The most recognised areas of environmental crime are the illegal emission or discharge of substances into air, water or soil, the illegal trade in wildlife, illegal trade in ozone-depleting substances and the illegal shipment or dumping of waste. Environmental crimes provide for very high profits for perpetrators and relatively low risks of detection. Very often, environmental crimes entail a cross-border aspect.

There is no doubt that mining operations impact the surrounding environment. However, advances in mining and process technology linked to regulatory requirements and an awareness of health, safety and environmental issues by mine management, as well as the general population, have resulted in mining companies endeavouring to minimise the environmental impact of their activities. This generally includes the restoration of the ecosystem on mine closure.

On the other hand, ASM and illegal miners are usually operating outside the legal framework, paying little heed to safety and health requirements and have little concern for the impact of their activities in the environment.

On the mining aspect, excavating the gold-bearing material has resulted in the destruction of large tracks of land. Deforestation, soil erosion, alluvial river damage, small dam construction, silting up of water streams and rivers, pollution of soil and water and the dumping of processed rock and waste are common to most artisanal and illegal mining sites. Where the gold-bearing material contains significant amounts of sulphides (such as pyrite), acid mine drainage further pollutes and destroys the environment.

With little geological knowledge, tunnels (up to 100m deep and poorly ventilated) are usually unsupported, leading to frequent collapses. Few miners have adequate protective safety equipment (masks, gloves and hearing protection), with one of the biggest health risks on the mining side being the exposure to dust. In many cases, the mining takes place by hand using a shovel and pick, with the material moved in wheelbarrows and buckets. Where mechanised equipment has been introduced, suitable safety measures are usually ignored (Buxton, 2013). Medical support is often lacking, with miners only approaching medical facilities following serious injury or illness.

Artisanal as well as illegal miners are generally exposed to the scourge of poor sanitation and a lack of clean water, malaria, typhoid, dysentery, tuberculosis, sexually transmitted diseases (including HIV/AIDS), malnutrition, and substance abuse. These can reach epidemic proportions if not effectively controlled.

The biggest health and environmental issues with artisanal and illegal gold mining are related to the use of mercury during processing. As discussed under the heading "Gold Processing", the use of mercury

(amalgamation method) was the common method used prior the invention of the cyanidation technique.

Artisanal and illegal miners still use the amalgamation method to extract gold from the mined ore. In hard rock mining, the gold-bearing ore is usually crushed and the gold-bearing fraction upgraded into a concentrate. In an alluvial operation, the gold bearing material is upgraded by gravity methods, resulting in a higher grade concentrate. The amalgamation process usually requires the gold-bearing material to be milled or pulverised to expose the finely locked gold. If the ore is refractory in nature, the pulverised ore will be heated (roasting) to oxidise any sulphides that might contain finely disseminated gold. The finely ground ore is then reacted with mercury, which dissolves the gold and forms a gold-mercury amalgam. The resultant amalgam (normally also containing some other metals such as silver, copper, etc.) is next heated to high temperatures, which volatilises the mercury (mercury has a boiling point of 356.7°C), leaving an impure gold alloy button. During the vaporising of the mercury, the processors will breathe in the mercury vapour. The impure gold can be sold as it is, or smelted to further upgrade and purify the product.

Once the amalgam has collected all the gold from the crushed rock or concentrate, the rock containing small amounts of mercury is discarded as waste. This mercury will over time leach from the waste dumps and pollute the surrounding soil, groundwater or streams.

According to Buxton (2013), ASM for gold is the world's second¹⁴ worst mercury polluters, responsible for one-quarter to one-third of global mercury pollution. Six hundred and forty to 1350 tons of mercury a year is being released from at least 70 countries. On average, 350 tons enter the atmosphere, while part of it is released into rivers, lakes, soil, and tailings (Telmer and Veiga, 2009 in Buxton, 2013). Ultimately, the mercury will end up in the food cycle, not only impacting the mine operators and processors, but the wider community.

Exposure to mercury vapour leads to serious adverse health effects. Mercury accumulates in the body and will eventually attack the nervous system, producing symptoms such as hair loss, memory impairment and loss of muscle coordination. Evidence is provided by the following cases:

Zimbabwe

According to Mambondiyani (2015), artisanal gold miners in Zimbabwe use approximately 25 tons of mercury annually. In 2013, an estimated 153,000 women and children are involved in the Zimbabwe ASM. Children are especially vulnerable to mercury exposure, and testing for mercury poisoning in the Kadoma area in central Zimbabwe showed that nursing mothers had levels of mercury 25 times higher in their breast milk than considered safe by the World Health Organization.

Philippines

In the Philippines, the amalgam decomposition takes place at home by using the kitchen stove. Women are routinely responsible for this task, and they reported to have kidney pain, respiratory problems, and dizziness (Eftimie et al., 2012).

14 Combustion of coal or gas for power generation is the largest contributor to mercury emissions.

Bolivia

In Bolivia, women spend several hours per day working in tailings saturated with heavy, metal-rich acidic drainage and cyanide residues (Jerez 2001).

Colombia

A study in Colombia found evidence of mercury contamination in 17 federal States and 80 municipalities linked to illegal mining practices. With most of the mercury ending up in river streams, the consumption of mercury-contaminated fish is linked to tremors in the limbs, loss of memory, and a lower IQ. Infants exposed to mercury via their mothers present higher risks of being born with birth defects (Foget, 2014).

The 2013 Minamata Convention on Mercury¹⁵ is working on introducing mercury-free methods of mining (such as the iGoli process).¹⁶ However, few miners would consider the alternatives to the mercury process, as it is a highly effective process and produces quick wins at low costs. In many cases, mercury is supplied by the gold-buyers, and until the artisanal and illegal miners understand the health implications of using mercury, and the influx and use of mercury is strongly controlled, the hazardous substance will be used for gold processing. Mercury is usually traded illegally or informally on the black market.

In the vicinity of larger operations, cyanide (used to dissolve gold in advanced processing) is relatively easy to obtain. Although the use of cyanide by artisanal miners is limited, the use and disposal of cyanide are also of environmental concern. Cyanide is also harmful to the world's wildlife, generating acute toxicity reactions, even with the smallest amount of exposure to this toxic chemical. Heavy metals associated with gold are also hazardous to health.

Nigeria

Eftimie et al. (2012) reported the death of hundreds of children in Nigeria, as well as miscarriages among women, as a result of lead released from small-scale gold mining.

Zimbabwe

The toxicity of cyanide has led to the use of this highly poisonous substance in poaching activities, and, in 2013, as many as 300 elephants died in Hwange Park in Zimbabwe after poachers laced salt pans with cyanide (The Guardian, 2015).

15 Minamata Convention on Mercury: international treaty designed to protect health and the environment from mercury and mercury compounds, which also includes regulating artisanal and small-scale gold mining.

16 A mercury-free gold extraction process (Mintek).

Illicit economy and illicit financial flows (IFF)¹⁷

The World Economic Forum warns that the scale of illicit trade is difficult to quantify because of its secret and illegal nature, but emphasises the importance of understanding the orders of magnitude involved, assessing the impact and improving the effectiveness of policies. In 2011, the illicit gold trade was estimated at USD 2.3 billion, based on data from only three countries (South Africa, DRC and Peru).

Global Financial Integrity (GFI) classifies the movement of funds or assets as an illicit flow when the funds are illegally earned, transferred, and/or utilized. Thus, the definition of illicit flow covers many of the practices in the illicit trade of precious metals: the smuggling of gold or proceeds of the trade across borders, the various money laundering practices, mis-invoicing to evade customs duties, dirty money transfers, etc. Many of the case studies give evidence of these practices.

South Africa

According to the South African Revenues Service (SARS), the illicit economy ranges from the underground economy, which operates outside of the rules and regulations of the country, to the economy generated by organised crime activities. It is alleged that well respected companies also, at times, partake in illicit activities.

It is estimated that the South African economy loses 10% of its GDP a year to the illicit economy. Most of the losses are linked to the smuggling of tobacco products, counterfeit textiles, drug manufacturing and smuggling, illicit mining and trafficking in gold and diamonds, ivory smuggling and the poaching of endangered species, like abalones and rhinos (SARS, 2016).

Fraud, value-added tax (VAT), tax fraud, tax evasion and tax avoidance

Fraud can be defined as a fake representation or concealment intended to deceive or misrepresent a fact.

Value-Added Tax (VAT) and tax fraud are more specifically linked to the intentional falsification or omission of information to limit the amount of tax liability. The incorrect valuation of precious metals on export or import documents, or the practice of exporting or importing precious metals under the banner of “low-value scrap”, or other misleading descriptions, are typical examples of fraudulent transactions.

Tax evasion is defined as the process by which a person, through fraud, unlawfully pays less tax than the law mandates.

The Report of the High Level Panel on Illicit Financial Flows from Africa (AU/ECA, 2015) defines tax avoidance as “the legal practice of seeking to minimize a tax bill by taking advantage of a loophole or exception to tax regulations or adopting an unintended interpretation of the tax code”.

Both tax evasion and tax avoidance are used during the illicit trade in precious metals.

¹⁷ The most common definition of IFF is “money illegally earned, transferred or used”. In this case, money includes assets. The definition covers two areas: illegal and legally generated money. Illegal money refers to the proceeds of criminal activities. Legally generated money (funds or assets) can, however, become illegal because of its use (e.g. terrorism financing) or illicit transfer (fe.g. breaches of tax laws or trade mispricing) (The World Bank, 2015).

Peru

An investigation in Peru in the late 1990s found that approximately 40% of the country's gold companies were set up largely to take advantage of an export-tax rebate. Gold was shipped to American refiners, with the exporters pocketing the tax-rebate. Gold was then smuggled back into Peru and shipped out again for another tax-rebate (Kaplan, 1999).

Australia

In Australia, an organised crime syndicate was investigated for recycling high-quality gold bars and selling it back to itself under intricate company arrangements as second-grade gold in order to claim a 10% goods and services tax (GST) credit. Approximately USD 184 million in GST fraud has been identified through the gold bar scandal, although it is possible that the scam may be more widespread and the investigation was ongoing at the time of writing (Benson, 2014).

The examples presented below provide a detailed description of how gold is linked to tax fraud in South Africa and tax scams in the European context.

South Africa

In South Africa, massive tax fraud was taking place through criminals claiming value added tax (VAT) on illegally mined gold by disguising it as second hand scrap gold (mainly jewellery). The VAT Act allowed for the deduction of a notional input VAT when a VAT vendor bought second hand goods from a vendor not registered for VAT. This measure allowed for the unlocking of a part of the VAT previously paid for by the final consumers as the goods re-enter the supply chain. Forging a paper trail using an army of "invoice writers" by means of stolen (often purchased) identities provided the necessary documentation to support the claims of a "legal" second hand gold trade (Goldfinger, 2014). The trader thus pocketed the 14% VAT on the value of the gold traded to refineries as jewellery gold, as well as the profit made on the purchase of the stolen gold (which is also part of a money laundering scheme). Gold coins (legal tender) are zero rated, and were used in these VAT schemes to mix in with jewellery, as well as illegally mined gold, before melting into a doré bar. Copper and other elements were usually added to further create the impression of jewellery gold. One of the syndicates investigated allegedly fabricated fraudulent documentation reflecting purchases of second hand jewellery amounting to R50 million. Another syndicate was alleged to have fabricated over 16,000 fraudulent invoices (worth about R437 million) to reflect purchases of second hand gold jewellery (The Citizen, 2015). Following these investigations into multi-million Rand tax evasion schemes, the South African Treasury proposed amendments to South Africa's VAT Act and recommended that gold (including gold coins and goods containing gold) be excluded from obtaining the notional input tax (Visser, 2014). The Act came into effect on 1 April 2015 (Republic of South African, Government Gazette, 2015).

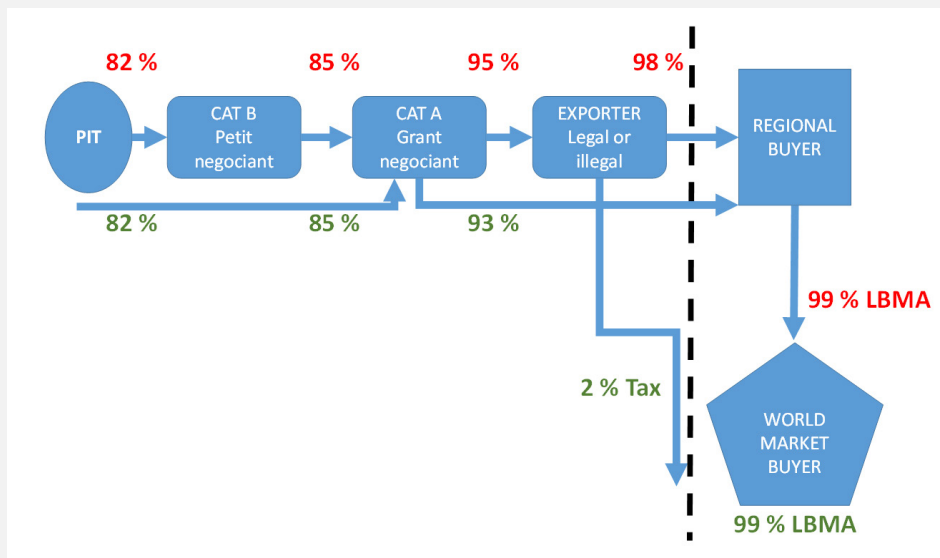
Tax scam in Europe

In the UK, an international smuggling ring, which took precious metals from Dubai to England, was exposed in 2012 (Bloom, 2014). In an elaborate scheme that included gold collection in Dubai, bag swapping in Frankfurt and entering the UK via the European entry channel, gold was brought VAT free into the UK. In the event of the carrier being stopped, forged paperwork claimed the courier was a legitimate VAT-registered gold trader who had travelled to Europe with the gold in his bag. As he had not left the EU, no duty would be payable on the gold. Around 120 scam trips between January 2007 and April 2008 brought in an estimated £100 million worth of gold into Britain (forensic accounting calculated the benefit gained by not paying tax at £9million).

Loss of royalties in the Great Lakes Region

With gold smuggling from the DRC seen as the source of conflict financing, a further study by Partnership Africa-Canada (2015) on the smuggling of gold in the Great Lakes Region highlighted that the royalties lost to the countries in the GLR as a result of the illicit flow of gold amounted USD 22 million in 2011 (depriving the region of much needed revenue).

Figure 7: Summarised value distribution along the Great Lakes Region ASM gold supply chain. The percentage figures are the prices paid at each step in the chain expressed as a percentage of the LBMA world gold price. Figures in red represent the illegal ASM chain, figures in green represent legal transactions (Partnership Africa-Canada, 2015).



The study recognised two kinds of contraband gold trade: in-region cross border traffic and out-region smuggling. The in-region cross border traffic is partially linked to the differences in royalty rates between the neighbouring countries with evidence showing that a rise in Tanzania’s royalty on gold by 1% in 2009 halved gold exports, while exports in its neighbouring country, Kenya, rose by a proportional amount. Other reasons for cross-border smuggling are that exporters are trying to avoid UN and public scrutiny, and the realisation on the part of exporters that by smuggling gold across the borders, the royalty on gold could be avoided altogether. Although gold smuggled across borders could then be “legally” exported as if it had been sourced in the second country, the illegal export of gold to an outside destination further increases profitability.

False invoicing and trade-mis-invoicing¹⁸

According to the Report of the High Level Panel on Illicit Financial Flows from Africa (2015), exported goods are often undervalued, while the value of imported goods is frequently overstated. The proceeds are then shifted illicitly overseas.

This practice is regarded as the largest component of illicit financial outflows measured by Global Financial Integrity (GFI). The four primary reasons for the practice are the same ones used in the illicit trade of precious metals, namely money laundering, undervaluation of goods, claiming tax incentives (VAT and tax fraud) and dodging capital controls to move money out of the country.

United Arab Emirates (UAE)

The 2015 FATF & APG Report on “Money laundering and terrorist financing risks and vulnerabilities associated with gold” presents an investigation that discovered extensive use of false invoices: “the jewellery and the gold were sent to Dubai using false invoices and fake companies in the UAE. If the transactions were completed without intervention these false invoices were destroyed and if not, then they were used to support the activity. The investigation established that the gold trader kept official records for the sale of 190 kilograms of gold in 11 months with a value of approximately EUR 6 million. However, the investigation calculated the need for gold by the syndicate was closer to 20 kilograms of gold per week” (FATF & APG, 2015, p. 7).

Money laundering¹⁹ and smuggling of precious metals

The 2015 FATF & APG Report on “Money laundering and terrorist financing risks and vulnerabilities associated with gold” concluded that gold is an extremely attractive vehicle for laundering money, as it provides a mechanism for organised crime groups to convert illicit cash into a stable, anonymous, transformable and easily exchangeable asset. The connection between the narcotics trade, money laundering and the gold trade is understandable, as much of the international gold trade operates “off the books”. Drug profits are converted into gold (as jewellery, bars or even scrap), shipped across borders and sold. The resulting profits are “clean” (Kaplan, 1999).

The regulatory characteristics of the gold market in a number of countries make gold an attractive business for organised crime groups. Cash-for-gold businesses can provide a continuous supply of untraceable gold commodities from various sources allowing for falsification of source and blending of licit and illicit supplies. Gold tied to drug trafficking is smuggled from one continent to another and is either kept as profit, or sold and cycled anew.

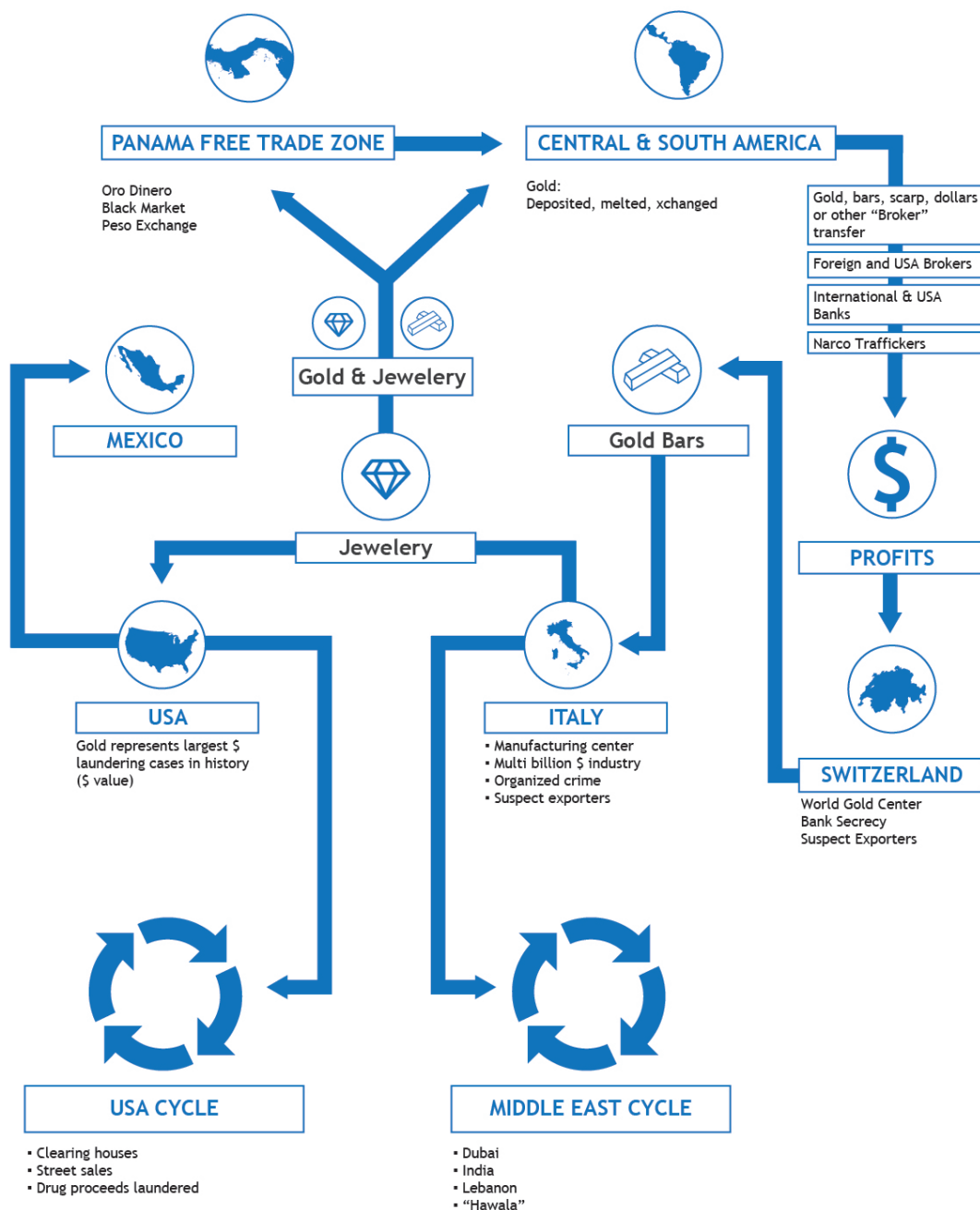
Cassara (2015) suggests that the international gold trade is exposed to the laundering of vast amounts of criminally derived funds. The FATF & APG report (2015) mentions Dubai as an intermediate destination

18 Global Financial Integrity (GFI) sees trade misinvoicing as “a method for moving money illicitly across borders, which involves deliberately misreporting the value of a commercial transaction on an invoice submitted to customs”.

19 Money laundering is “the method by which criminals disguise the illegal origins of their wealth and protect their asset bases, so as to avoid the suspicion of law enforcement agencies and prevent leaving a trail of incriminating evidence”, UNODC, www.unodc.org/unodc/en/money-laundering/introduction.html?ref=menuaside. The meaning of the term money-laundering can be extracted also from the United Nations Convention against Transnational Organized Crime (entered into force on 29 September 2003) - Article 6. Criminalization of the laundering of proceeds of crime: “1. Each State Party shall adopt, in accordance with fundamental principles of its domestic law, such legislative and other measures as may be necessary to establish as criminal offences, when committed intentionally: (a) (i) The conversion or transfer of property, knowing that such property is the proceeds of crime, for the purpose of concealing or disguising the illicit origin of the property or of helping any person who is involved in the commission of the predicate offence to evade the legal consequences of his or her action; (ii) The concealment or disguise of the true nature, source, location, disposition, movement or ownership of or rights with respect to property, knowing that such property is the proceeds of crime; (b) Subject to the basic concepts of its legal system: (i) The acquisition, possession or use of property, knowing, at the time of receipt, that such property is the proceeds of crime; (ii) Participation in, association with or conspiracy to commit, attempts to commit and aiding, abetting, facilitating and counselling the commission of any of the offences established in accordance with this article.”

for gold being smuggled to India. Gold is declared on import in Dubai, after which it is smuggled to India. An alternate route from Europe to India is via the international airports of Bangkok and Singapore, to a professional Burmese smuggler who would then transport the gold via Myanmar to India. Large quantities of gold bars are imported by Europe in order to be reworked into mass produced jewellery and the process vulnerabilities can be exploited by criminal syndicates. The jewellery is exported to suspect jewellery companies and brokers in the USA and Latin America. Although the gold exports are legitimate, shipments could be subject to false invoicing or over/under valuation (classic money laundering techniques). Money used for the purchase of the gold is either from the proceeds of drug sales or other illegal activities. Once the cash is used to purchase the gold, the money is effectively laundered. According to Cassara, many gold dealers and brokers maintain gold accounts, silver accounts, dollar accounts and local currency accounts, and simply transfer the gold on their books to other accounts, both internal and external. The next step in the cycle is to ship the gold to another buyer in exchange for funds (a further money laundering technique) or smuggle the gold across the border. The jewellery can be recycled back into bar form and deposited into banks, with the proceeds wired to offshore accounts, or it can be physically transported back to the refining countries to restart the cycle. The cycle is summarised in Figure 8.

Figure 8: Suspect gold-money laundering cycle based on findings of Cassara (2015).



Apart from laundering funds, export brokers also take advantage of export credits by over valuing. Suspect exports also include gold “scrap” (as it is difficult to determine the value of this, as it enters countries at any value the parties care to declare), gold pigment, gold plated copper medallions, plated lead bars, gold disguised as machine parts, steel dies and others.

With both governments and banks implementing more stringent regulatory and reporting procedures, alternative remittance systems are becoming more popular. According to Cassara, hawala networks are used by organised criminal networks to launder “staggering amounts of funds”. He concludes that the “magnitude of the international gold/money laundering phenomenon and its link to a variety of alternative/underground banking systems is not understood.”

A number of examples provided below refer to the nexus between gold and money laundering

Australia

In Australia the head of a drug syndicate was suspected of laundering the proceeds of its operations through the purchase and sale of gold, cattle and gambling. Cash was used to purchase gold from prospectors at a reduced price and sold on to unrelated business declaring the income as legitimate revenue. Workers in the syndicate were paid in gold, drugs and cash.

USA

Gold also played a major role in one of the largest money laundering cases in the USA, known as Operation Polar Cap. In the earliest phase of this operation, bulk cash from drug sales was delivered to collaborating gold dealers and jewellery makers in the USA. Fake gold bars were shipped from Uruguay to these manufacturers to give the appearance of a legitimate import business. Money was packed in boxes, declared as gold shipments and delivered to a cartel controlled jewellery retailer. The cash was deposited into banks as proceeds from the sale of the supposed gold and jewellery (Cassara, 2015). From there, deposited money was transferred into other secret accounts, primarily in Europe. According to the FATF & APG (2015), “gold does not have to exist or be moved physically to be traded”. Citing gold as the traded good on an invoice can be used to justify large movements of money, locally or across borders. Gold certificates (legal title to gold bullion stored on behalf of the owner) can be purchased and traded.

In a more recent case in the USA, scrap gold was imported from countries in Central America at undervalued prices (USD 6.4 million), while providing payments to the exporters at overvalued amounts (USD 24 million). The business owners were “charged with conspiracy to commit money laundering using customs violations as a predicate offence” (FATF & APG, 2015).

In another case, the detection of undeclared gold being smuggled from the USA into Mexico led to the exposure of a major network involving Los Angeles gold brokers/money launderers controlled by families from the Middle East (Cassara, 2015). The gold jewellery was to be smelted, sold as gold bullion, and the proceeds used to finance narcotics transactions.

Gold was exported from Colombia also as “gold pigments” and, on importation to the USA, described as gold bullion. In the USA, the gold was reshaped into common objects, such as nuts, bolts, wrenches, etc. and exported back to Colombia at a fraction of the real value. The cycle was then repeated (FATF & APG, 2015).

In February 2015, a gold-based scheme was detected by the U.S. Attorney’s Office of the Northern District of Illinois:

“thirty-one defendants face federal money laundering charges for their roles in a conspiracy that allegedly laundered more than USD 100 million in drug proceeds for the Mexico-based Sinaloa Cartel by purchasing gold, reselling it to companies in Florida and California, then transmitting the money from the United States to Mexico. Members of the organization were routinely directed to United States to collect narcotics proceeds, to use the money to purchase scrap and fine gold from local businesses, and to ship that gold to refineries based in Florida and California. The refineries in turn transmitted the cash value of the gold to Parra-Pedroza and other co-conspirators in Mexico” (U.S. Attorney’s Office, Northern District of Illinois, 2015).

South Africa

In South Africa, a five-year investigation led to the arrest of six people allegedly involved in the smuggling of diamonds and platinum through OR Tambo International Airport. Although allegedly operating a recovery plant, when visited, the plant was found to be inactive. A further report indicated that the plant was “not equipped to produce the material that was discovered on the premises”. The platinum products seized at the homes and at the recovery plant was identified as coming from some of the major platinum producers operating at the Bushveld Complex. The six people involved face several charges, including money-laundering, racketeering, theft and the illegal possession of and dealing in precious metals (Wagner, 2015).

In another South African case, trading in unwrought gold and money laundering also led to the sentencing of 10 members of the Msimango gang to a combined 115 years in prison (Crowley, 2015). The gang, led by four brothers, operated from 1998 to 2008. Assisted by mine employees, gold ore was smuggled out of a Harmony processing plant in the Free State province, and was then purified in at least seven makeshift smelters on farms nearby. The gang moved to a new smelter each time it was interrupted by police. The proceeds of its gold business was laundered and also spent on houses and cars (News24, 2014a). Additionally, the gang sold a portion of the processed gold to another syndicate in Gauteng province.

In 2002, the Directorate of Special Operations of the National Prosecuting Authority of South Africa authorised a special undercover operation to infiltrate a syndicate smuggling precious group metals across the borders of South Africa. Operation Yield infiltrated the syndicate hierarchy and established that platinum group metals were illegally trafficked transnationally between South Africa, Zambia, Mozambique, Swaziland, the United Kingdom, Canada and Europe. In 2004, ten persons were arrested, including a wealthy refinery owner residing in the UK who had travelled to South Africa at the time. The charges brought against the accused related to racketeering, money laundering, theft, fraud, contraventions under the Mining Rights Act relating to unlawful possession, dealing, acquisition and use of unwrought precious metals, and contraventions under the Exchange Control Act for exporting unwrought precious metals to the value of ZAR 300 million at lower values to international markets. After lengthy negotiations to finalise plea agreements with the prosecuting service, some of the senior members of the syndicate pleaded guilty. They received a range of sentences, which included imprisonment and hefty fines, as well as having their assets forfeited. Lower ranking syndicate members testifying as state witnesses against their syndicate bosses had charges withdrawn. The trial of the accused persons charged in the second indictment has been scheduled to continue in 2016. The delay in finalizing both matters before the court was as a result of the accused using delay tactics throughout the court processes and instituting ongoing legal challenges, which ended in numerous appeals being heard.

Colombia

Authorities believe the gold industry in Colombia has been used to launder a total of USD 4 billion (Yagoub, 2014).

In 2015, a leading gold trader from Colombia was arrested following a three-year investigation by Colombian Authorities. The Colombia Attorney General's office alleges that he was at the center of a USD 970 million money-laundering scheme, building a billion-dollar gold-trading business from scratch in 13 years, connecting panners in Colombia's jungles and mountains with buyers in the USA. It is alleged that gold extracted from illegal mining passed from hand to hand until it reached a company that distributes jewellery, precious stones and metals, which "legalised" the gold by exporting it abroad (Florey, 2015). According to the Colombian Ministry of Finance, about 90% of the people listed as selling gold to this company had no connection whatsoever with mining, while others were deceased or homeless. Some of the companies existed in name only (Bristow and Willis, 2015). During the investigations, security firms transporting the gold cancelled their contracts, and the Colombian gold trader and his wife started transporting bullion in suitcases. Authorities have charged him with money laundering, procedural fraud, forgery, and conspiracy (Morla, 2015).

United Arab Emirates (UAE)

Gold is also smuggled between Dubai and South Africa. In December 2015, a passenger disembarking from a Dubai flight was apprehended carrying 48 small gold bars corresponding to 5.6 kg (Wicks, 2015), while in the same month two men travelling to Dubai were caught with gold bars weighing 37 kg. In the latter case the smugglers might have collaborated with airline security as they had already passed through the screening section (eNCA, 2015).

Ecuador

In Ecuador in 2010, approximately 20% of the Ecuadorian territory was registered as mining territory. However, the informal and sometimes illegal nature of the mining sector in Ecuador has impeded the ability of Ecuador and its neighbouring countries to identify how much gold is being mined and exported illegally. Ecuador estimates its annual production to be approximately 15 to 20 tons of gold (FTAF & APG, 2015). According to Castilla et al. (2015), only 30% of the gold produced in Ecuador from 2009 to 2014 had a legal origin, and more than 140 exporting companies (some of which are unlicensed for gold export) shipped in excess of 70 tons of gold between 2010 and 2014. Some of these companies were dissolved after the gold transport had been completed. Gold is also smuggled into Ecuador from Peru: in 2014 border police confiscated a load of 90 gold ingots valued at USD 2.5 million. The gold was to be mixed with Ecuadorian gold and exported "legally" via Guayaquil (the main port).

Peru

The Peruvian authorities' estimate that between 20 to 25% of Peru's gold export is illegal. It is alleged that gold produced by illegal mining in Southern Peru finds its way to Bolivia and, with other illicit gold, is exported via La Paz. Since 2012, several companies have been investigated to establish the source of their assets and the origin of the metals traded.

Illegal trade in weapons and commercial explosives

There are many reports from the areas where armed conflict is common, such as the Great Lakes Region in Central Africa or Colombia (Lavaux, 2007), and of armed groups trading gold for weaponry (Bafilemba and Lezhnev, 2015). It is alleged that certain governments contribute to arms trafficking by deliberately arming proxy groups involved in insurgencies against rival governments (Small Arms Survey). Enough (2012) reports the gold-for-weapons trade between the Rwandan Hutu Democratic Forces and the Congolese army; the Mai Mai militias and the army; and the M23 and the Rwandan Hutu Democratic Forces.

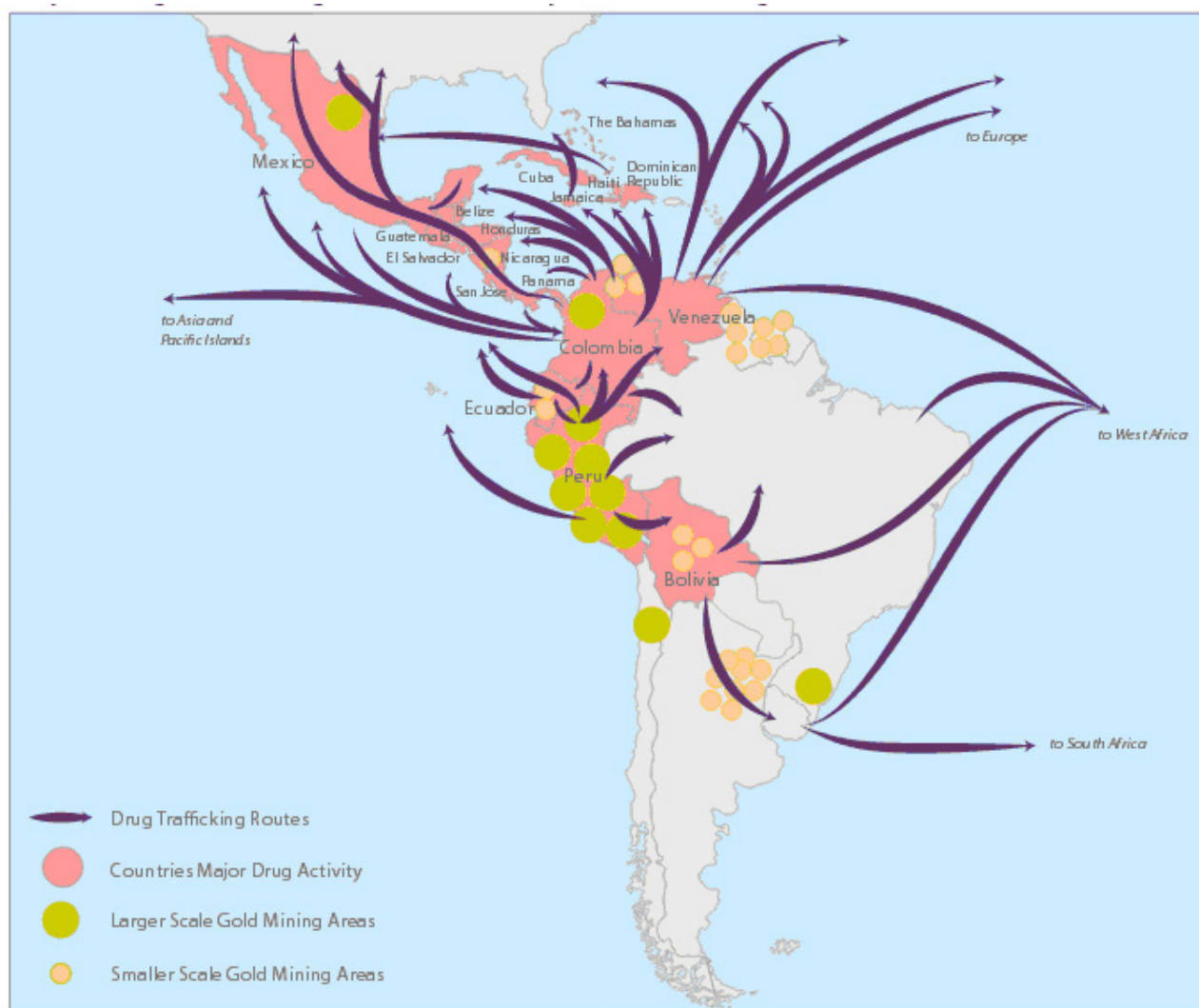
Drug trade

There are examples of cases in which proceeds from drug trafficking have been converted to or used in the illicit trade of precious metals and stones as part of the money laundering process. Ultimately the funds find their way back into the drug network, backing the drug trade (Cassara, 2015).

In the last decade, Latin American criminal groups have moved into the illegal mining and trade of gold, exploiting the fragmentation of the artisanal gold mining in the region. According to Colombian President Juan Manuel Santos, illegal mining "has now eclipsed cocaine trafficking as the main driver of violence and a source of dirty money in Colombia" (Bargent and Norby, 2015). Further details on the nexus between drug and precious metals can be found under heading "Illegal gold trade in Latin America".

The Black Market Currency Exchange is used by cartels to bypass financial requirements and regulations. In this process, drug related based currency is sold to black market exchangers, effectively laundering their proceeds. The broker places the funds in financial institutions and uses these to sell to or exchange with legitimate importers. These funds may also be used purchase gold (Cassara, 2015).

Figure 9: Drug Routes and Mining Sites in Latin America (The Global Initiative against Transnational Organized Crime, 2016, p. 9).



Rebel groups, militia and terrorism funding

There are many references to the exploitation of mineral resources by rebel groups in published literature. Gold, diamonds and other minerals are used to fund rebel groups, militias and armed gangs.

It has been extensively reported that illegal mining is associated to illicit trafficking of explosives, often used to commit other crimes such as bank robberies, bombings of facilities and conflict operations. Explosives are usually stolen from larger operations. In South Africa, for example, there are several reports from zama zama using explosives, not only during their illegal mining operations, but also as booby traps to protect themselves from rival groups and mine security. The South African Chamber of Mines reported an increase in explosive-related incidents, from 47 in 2013 to 129 in 2015. Explosives stolen from the mines are used also to commit other crimes, such as the bombing of bank teller machines (South African Government News Agency 2012; Koza 2015; News24,2016).

South Africa

In 2014, one person tried to smuggle in 54 packs of mining explosives, 150 detonators, and nine detonator cords, valued at over R 320,000. According to the perpetrator, the explosives were to be sold to illegal miners in the Gauteng Province (News24b, 2014).

Democratic Republic of the Congo

According to Enough (2012) and the Mail&Guardian (2015), in the Democratic Republic of the Congo armed groups control the trade in gold using violence and intimidation for taxation, protection, commercial or coercive control. Gold is one of the main sources of financing readily available to these groups and is an important instrument in the trade for weapons.

Mexico

The press reported on armed illegal miners entering a mine by force in Guanajuato, Mexico (Els, 2014) and affirmed that drug cartels have moved into illegal mining in the neighbouring state (the Canadian Press, 2014).

Colombia

The increase in gold demand and the escalation of the gold price in the last decade has exposed Latin America to an expansion of illegal mining and, “in countries where the government lacks control over large swaths of land [...] organized criminal groups have been able to operate illegal mines with impunity” (The Global Initiative against Transnational Organized Crime, 2016, p. 4).

The gold industry plays an important role in Colombia’s criminal underworld, serving as both a source of funding for criminal groups and as a means of laundering money. Illegal armed groups are heavily involved in gold mining operations, exerting control in mining areas through extortion, or by directly running operations.

In Colombia, rebels and gangs have taken over small-scale local mines or are warring over the control of gold-rich areas. According to Jamasmie (2014), higher profits are made from unlicensed mining activities than from drug trafficking, and governments are focussing on stopping the illicit extraction of minerals.

Realising that gold mining is an extremely lucrative business, some armed groups have taken on a much bigger role in illegal mining to increase their financial power (Florey, 2015). These illegal armed groups are now controlling also access to mines and determine who can work, where and when. In their own territorial strongholds, they have invested in machinery that is rented out, send their own people to work profitable areas or even directly control mines.

Much of the illegally mined gold uncovered during an investigation into gold trading and money laundering has been traced back to the mountainous region of Bajo Cauca, which was an epicentre of violence during the Colombian civil war (Bergent and Norby, 2015). Gold is smuggled into Colombia from other countries both via river and sea transport, and according to investigators, as much as USD 3.3 billion of gold was smuggled into Colombia from countries, including Venezuela, Panama, Mexico and Chile over a 2 year period (Willis, 2014). It has been estimated that more than half of Colombia's recorded gold exports in 2012 and 2013 may have been smuggled into the country and booked as local production (Willis, 2014).

Extracted gold is bought up by gold buyers "compras de oro" and sold on to exporters. The export companies play a crucial role in the illegal mining chain by introducing the gold to the legal market, at which point its illegal roots become increasingly difficult to trace (Yagoub, 2014).

Although military intelligence established that illegal mining and trading was going on in different parts of the country, it wasn't until mid-2014 that they could trace links to specific actors and obtain evidence (Florey, 2015). Currently, at least two export companies operating from Colombia are part of the investigation.

Colombia's "Czar of Gold"

In January 2015, authorities in Colombia claimed to have dismantled the largest money-laundering network in the country. It is alleged that gold extracted from illegal mining was sold to newly formed, short-lived supply companies that belonged to the same partners. These companies were established with little capital (Morla, 2015), but financed millions of dollars of gold purchases and conducted hundreds of transactions in a single day. The life cycle of these companies rarely exceeded three years (Bergent and Norby, 2015).

According to investigators, about 90% of the people registered as gold sellers had no connection to mining, and many of the 6 000 alleged providers of gold existed in name only, or were registered in the names of people who were deceased or homeless (Morla, 2015).

It is supposed that the supply industries pushed their gold to another company, which "legalised" the gold by exporting it abroad. This company would have exported 40 tons of gold -- worth approximately USD 1.3 billion -- to the United States over a five year period (Yagoub, 2014). Colombia's National Tax and Customs Directorate export declarations show that more than 97% of this gold might have gone to the USA (Bergent & Norby, 2015).

The CEO of this company is accused also of purchasing USD 5.5 million in gold from one of Colombia's illegal paramilitary death squads in July 2014 (Florey 2015).

Another investigation focusing on a different gold exporting company has alleged that between 2008 and 2012, this company would have increased its exports by over 500%. Its biggest customers during that time period were also American companies. (Bergent and Norby, 2015).

On the other hand, little published evidence was found on the involvement of terrorists in the illicit trade in precious metals (cf. case studies). Nevertheless, some references indicate the possibility of money laundering via the illicit trade in precious metals being connected to terrorist activities, and thus financing acts of terrorism, the recruitment and support of members, and maintenance of logistics hubs.

Colombia

According to FATF & APG (2015), drug-terrorist groups in Colombia take control of gold mines by forcing the legitimate owners to transfer the ownership titles to the group. A percentage of the mined gold is then sold to a legal business via a cash transaction. The proceeds are used to buy supplies to continue with the mining and terrorist activities. The remaining gold is kept for future transactions. With the FAFT & APG (2015) only including one case study on the involvement of a terrorist group in the gold market, the report proclaims “it would be worthwhile considering to what extent terrorist groups are moving or raising funds through the gold sector”.

Afghanistan

Newspaper reports from 2002 highlighted that gold supports the financial structure of the Taliban and Al Qaeda. According to Farah (2002b), prior to the American attack on the Taliban and Al Qaeda in Afghanistan, money and gold taken from Afghanistan’s banks and national coffers were moved outside the country. The profits and “taxes” from opium and heroin production are often converted into gold bullion and the money is usually transferred via the *hawala** system. According to the report, diamonds, tanzanite and other commodities were used also to make money and hide assets, but gold, because it is a global currency, played a uniquely important role. “Gold is a huge factor in the moving of terrorist money because you can melt it, smelt it or deposit it into an account with no questions asked” according to a senior US law enforcement officer investigating gold transactions (Farah, 2002a).

**The hawala system is commonly used in North Africa, the Middle East and the Indian subcontinent. Developed in the early medieval period to finance long-distance trading, it developed into a fully-fledged money market instrument. It has been gradually replaced by the formal banking system since the first half of the 20th century. In its simplest form, funds enter the system in one country and leave the system in the recipient’s country bypassing foreign exchange transactions. The trade is purely based on trust and extensive use of connections (family relations, regional affiliations, etc.), and settlements of debts between hawala brokers can take a variety of forms. Gold is an ideal commodity to balance the “books”.*

The fact that precious metals are usually sent from one country to another and from one continent to another, for further processing and trade, also makes the supply chain vulnerable to international organised crime. The next chapter highlights its extent and functionality.

In focus on “Gold and Gemstones sector: common challenges”

Although gemstones represent a commodity, they have no universal value or commercial market pre-valuation. The value is usually confidential, depends on subject expert criteria and is mostly based on market demand, marketing and fashion trends. The lack of universal price level allows subjective pricing, under or over valuation on official invoices and export papers that might be linked, in certain cases, to mis-invoicing or tax fraud.

The fragmented and complex supply chain of colored gemstones provides serious opportunities of exploitation for criminal activities: 70% of the extraction of colored gemstones is carried out by ASM in 47 different origins, 90% of which are developing or emerging countries. Similarly to gold, precious gemstones may be exploited to move illegal funds, as well as to launder proceeds of crime given the high-value and their limited volume, making for easy transport.

Origin determination represents a challenge for colored gemstones. Gemological testing laboratories do not issue certificates, but only reports and opinions regarding the origin of a specific colored gemstone: discrepancies in opinions are a recurrent problem in the sector. Therefore, the only way to follow the path of gemstones from their origins is through a traceability-trackability mechanism, from extraction along the supply chain, legal cross-border passages and beyond.

Consumer confidence is increasingly important in determining the value of gemstones: the assurance of a legal and acceptable provenance and reliable reports from independent third parties on the origin of gemstones have become key factors with respect to consumer demand and marketing responses from vendors. The primary influence in regulating the supply chain with strong measures has certainly been driven by NGOs and the media.

Although much has been done in terms of ensuring the integrity of the gemstones supply chain, various challenges still need to be addressed:

- Lack of harmonization and standards specifically applicable to the gemstone sector.
- Loopholes in mining laws and export procedures and regulations.
- Related offenses (such as child labor, human rights violations, gender abuses and environmental issues).
- Resistance towards regulation from middle-men, traders, manufacturing services, small jewelry manufacturers and retailers.

Private-Public Partnerships (PPP) are essential in addressing the above-listed challenges, and, more broadly, in preventing illegal practices in gemstones production and trade. Furthermore, PPP would provide an increased value in terms of improved credibility and integrity, and would ultimately support governments in ensuring royalties and revenue taxes.

Research on illicit trafficking in gold is applicable to colored gemstones given the similar vulnerabilities, as well as the common destination of jewellery, and collaboration among key stakeholders on gold and gemstones may increase the efficiency of interventions and maximize results.

The extent and involvement of international organised crime²⁰

Syndicates and groups involved in the illicit trade of precious metals can clearly be regarded as organised criminal groups involved in transnational organised crime, considering the profit-driven motive and the

²⁰ The United Nations Convention against Transnational Organized Crime (UNTOC) defines organised criminal groups as: - a group of three or more persons that was not randomly formed; - existing for a period of time; - acting in concert with the aim of committing at least one crime punishable by at least four years' incarceration; - in order to obtain, directly or indirectly, a financial or other material benefit. "Drug trafficking is a global illicit trade involving the cultivation, manufacture, distribution and sale of substances which are subject to drug prohibition laws" (UNODC, 2010).

seriousness of the offences committed (including, but not limited to smuggling, fraudulent transactions, money laundering and human rights violations).

Much has been written about the theft and smuggling of precious metals and precious and semi-precious stones, criminal offences and the association with organised crime, as well as conflict financing. To better understand the criminal supply chain and the financing of illicit activities, the modus operandi of organised crime in South Africa is analysed in this section.

An analysis of the South African organized criminal syndicates

Most of the reports focus in South Africa has been on the zama zama and the illegal “artisanal” mining of old workings, surface outcrops and tailings dumps. However, there is also the theft of gold bearing products from the concentrators, as well as platinum group metal products from concentrators, smelters and refineries. Theft of copper cables from underground workings and surface operations has been linked also with the illegal zama zama activity.

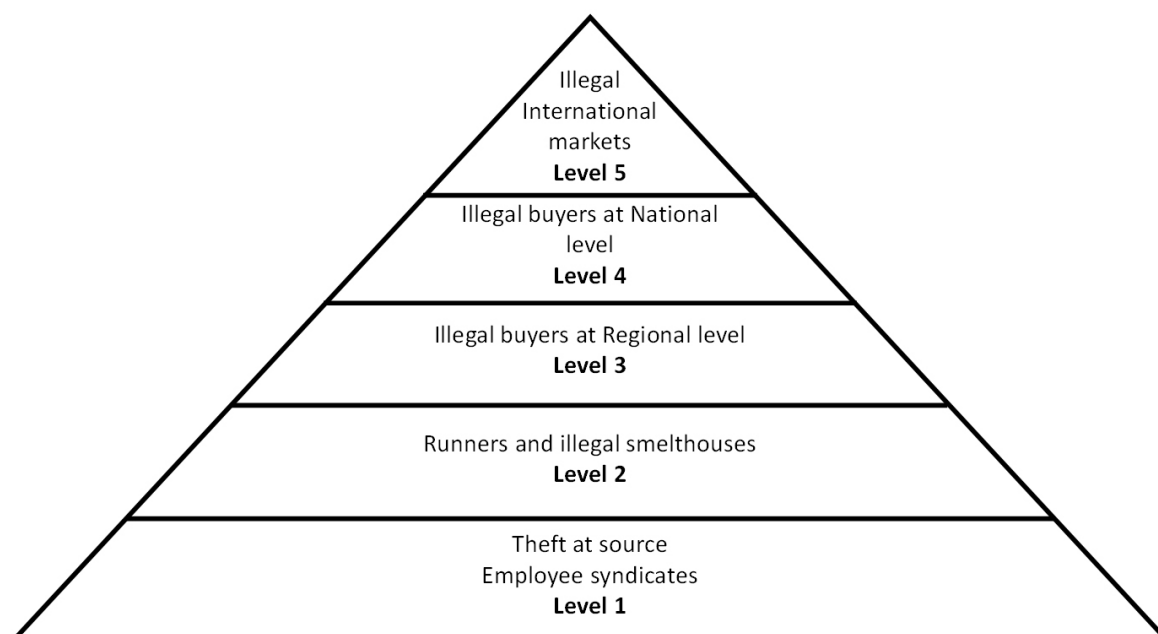
Analysing a number of cases, it has been concluded that the precious metals mining industry is the victim of organised crime groups with local syndicates connected to larger international operations and crime groups consisting of Nigerians, Russians, Germans and Indians. Triads, involved in the smuggling of precious metals as well as precious stones from South Africa to China, were implicated (Coetzee and Horn, 2006).

Reports highlight that these activities are well organised and usually go hand in hand with money laundering and other commercial crimes.

The 5 Levels of Criminal Activity

According to the South African experience, the illicit trafficking in precious metals consists of at least five identifiable, complex and interlinked levels of organised criminal actors (Figure 10). The hierarchy of the syndicates is discussed in more details as it is believed that the illicit precious metal syndicates in other countries operate in a similar manner.

Figure 10: The five level categorisation of syndicates (Coetzee and Horn, 2006).



- Level 1 (theft at source): represents the lowest-ranking members in the organised crime industry who provide the product to the next tier in the organisation. The level 1 groups include illegal miners (or zama zama), as well as mine employees stealing higher grade products from the operations. It also includes the crime facilitators of the operations, such as mine security personnel, police officials and justice system employees (South African Government news Agency, 2015). Low level

members, if caught, are easily replaced and the structure thus lowers the risk of capture of higher ranking members and the subsequent disruption of the organisation. This level is mostly involved with violence, slavery, abuse of women and children, prostitution, mercury use and pollution.

- Level 2 (middle management): refers to middlemen that are also the buyers of the products. These members might be involved in some upgrading of the product. They have little knowledge on the rest of the structure and only know level 1 that supplies them with material, and level 3 that buys from them. The “middlemen” are also the organisers of level 1 and support them with food, protection, equipment and means to access underground mining operations (logistical support). Armed gangs also are regarded as level 2 syndicate members.
- Level 3 (illegal regional buyers): refers to buyers who collect products from various members at level 2 throughout the region, further upgrade the product and package these into larger consignments for the next level. The level 3’s are often the agents of the more sophisticated syndicates or operate as independent couriers for such syndicates.
- Level 4 (illegal national buyers): the level 4’s are the so-called “high flyers”, front companies and legitimate exporters. They are generally legitimate business owners, who are well connected in both business and political sectors (Mail&Guardian 1996; Shange, 2015b; Sole & Evans, 2015).

The precious metals purchased from various sources are processed, containerized or packaged and then sold to local or international contacts. The level 4’s keep detailed records and also submit samples for analysis to determine value and precious metal contents of the consignments. All analysis reports, samples, correspondence, etc. are sent internationally to buyers in order to agree on price and to confirm purchase orders.

The level 4’s may also own front companies in neighbouring countries where the stolen material is smuggled to and then re-packaged as a product before being brought back in transit to international destinations. This level moves large illegal consignments from South Africa to the international market. Smaller, high value precious metal parcels are exported using a courier network via air. Bulk tonnage of lower grade precious metals is containerized and shipped. Misrepresentation is made to customs by undervaluing and falsifying the nature of the consignment. This successful operation overcomes the requirements for prescribed permits and licenses to possess, transport, and deal in the product as required by relevant legislation.

- Level 5 (“the illegal international networks” or “the overseas purchaser’s scheme”): it is generally believed that the level 5’s are located outside of South Africa. The level 5’s have access to international contacts and buyers who can assist in laundering the stolen precious metals into the legal system. This level is usually not known to the lower levels of the syndicate. As for the level 4’s, these members are legitimate business owners, and are politically connected. They often consist of intermediary companies and are legitimate entities. Corporations and corporate law insulates them from personal accountability and they are reasonably safe from prosecution, even if they are suspected of profiting from crime.

The level 5’s handle the imports and the onward transport (frequently export) to refiners. Once the material is transported out of South Africa and enters either a neighbouring country or is shipped to an overseas destination, counterfeit documentation is used to support the “legal” origin of precious metals. The source of origin and details of the client are masked, and the declared value and description are corrected through new analysis, pro-forma invoices and export documents. The product can then be legally exported from various international transit points supported by all necessary documentation. On arrival at the next port of entry, the product enters legally and can be sold and passed on for final refining, entering the legal supply chain. On verifying the legality of the shipment, the refinery would usually only check the import/export documentation and not follow the paper trail any further to determine the true origin of the product.

Upon the deal having been completed, a portion of the proceeds from the sale are repatriated back to the country of origin. The amount will correspond to the declared value (which was understated in agreement with the false declaration on the contents of the shipment), as indicated on the export documents to ensure the exporter complies with export legislation. The balance is paid into an off-shore bank account. Once this money is in a foreign bank account, the syndicate will sell the currency in exchange for local currency or offer it as an advance to other organised criminals who have a cash shortage.

In 2006, Coetzee and Horn reported that the active level 4’s in South Africa were selling to five different level 5 international buyers.

Modus Operandi of Organized Crime in South Africa

Investigations undertaken during operation Yield revealed that a syndicate in South Africa with international links was making use of legitimate registered companies in the country and certain neighbouring territories as fronts.

With the assistance of a precious metal refinery owner and independent non-related intermediaries (freight handling companies and business owners) in the United Kingdom, the syndicate facilitated the receipt and sale of precious metals stolen from South African mines and refineries. Based on a number of investigations the following modus operandi was detected:

Precious metals purchased from middlemen (level 2's) are stored in a warehouse somewhere close to an inland port, international airport or sea port. Batches are marked, weighed and analysed to determine the precious metal contents.

Using the services of a legitimate company licensed to export (e.g. a scrap metal dealer) the material is prepared for export. There is usually a relationship between the company owner and the Level 3 or 4.

The scrap metal dealer registers with the South African Receiver of Revenue (SARS) Customs & Excise to obtain an exporter customs code. A misrepresentation of the actual description and value is made on the application and a customs code for the new description is received for the consignment. As the false description does not reflect the commodity as precious metals or gold, the export is then dealt with as a normal type of commodity and will not require the processes and documentation used for Platinum Group Metals and Gold exports. Clearance is thus obtained through corrupt practices, fraudulent under-declared values and false descriptions of the consignments. In most cases, stated values are less than R 50,000 as consignments with higher values require the exporter to complete Form 178 (prepared by banks on behalf of the SA Reserve bank) undertaking repatriation of capital in a certain time frame (François Smit, Customs Specialist at the National Enforcement Unit of the South African Revenue Service, pers. comm. to Peter Bishop 2006).

The scrap metal dealer then approaches a clearing agent who will assist the dealer with the declaration process and the forms that need to be completed and submitted to Customs, which are the Customs SAD500, the airway bill, invoice, permit, bill of lading, packing list, etc. The clearing agent also will assist with any other additional queries that customs might have.

The documents submitted to customs relating to the false descriptions and values, date of departure, shipping details, seal number of the containers, etc. are sent to the intermediate (importer) abroad. The intermediary will receive also the analysis report of the respective batches, weights and approximate values fixed at a specific spot price.

Once the freight company being used by the intermediary receives the container, all is cleared from customs and the container is transported to a customs warehouse. The lower-grade bulk consignments are usually packaged in batches of 8 to 20 tons and either shipped and/or flown using legitimate export routes after receiving custom clearance.

In the case of gold or high grade precious metal powders or buttons, the correct description of product could be given, but the commodity is usually undervalued or exported as a sample for analysis, with a very low value. If exported as precious metals, an export permit from the South African Diamond and Precious Metals Regulator (SADPMR) needs to be obtained. A copy of the export approval issued by the SADPMR under the respective tariff heading must accompany the documentation for export. In this case, the package is usually dispatched via a courier company. However, small batches (up to a few kg) of very high-grade semi-refined precious metals are generally concealed in containers of large shipments.

After arrival at an overseas destination (in the Yield case this was the United Kingdom), the consignment is again assayed to determine the content and value.

New invoices reflecting more accurate descriptions of the precious metals and values of the consignments are arranged so that the consignment can be “legally” moved on to the next destination. The new invoice will have the following information:

- Address of receiving company.
- Material description and weight (new description given).
- Value of content (real value given).

The Bill of Lading is completed and insurance arranged by the freight company (a certificate of Insurance is issued). The insured value of the material exported is the one recorded on the new invoice received. This amount is far greater than the original amount declared on the export papers by the company of origin.

The precious metals are then shipped to the final destination (an international refinery). In the case of other intermediaries or business owners, the containers are re-shipped to international refineries without being opened, or having the contents examined. Interested international refineries in the United Kingdom, Canada, Belgium, Germany and Switzerland received containers for further processing.

Bank accounts across the world were used by the syndicate for the purposes of depositing the proceeds of the sale of the precious metals by either the refinery owner or an independent intermediary/business owner in the United Kingdom. The original value (under declared) is repatriated back to the country of origin (usually South Africa), as it is mandatory for completing the customs requirements. Profits were thus made due to undervaluation and false descriptions used to identify the contents of the consignment at the time of export.

In the Yield case, the syndicate bosses further sold the cash transferred into their foreign bank accounts in exchange for South African currency (money was transferred from their foreign bank accounts to more than 300 bank accounts situated in 19 countries). The syndicate leader has to get the money back to his country of residence to continue funding his operation and lifestyle. Elaborate schemes are devised to facilitate the money to be reintroduced into the legitimate systems - these include the hawala system, as well as formal off shore banking networks.

In the Yield case, South African currency was physically collected from the buyers of the cash, who were either South African citizens resident in SA or living abroad. In the latter case, family members in South Africa facilitated the delivery of currency to the syndicate courier. The courier delivered the cash to the syndicate leaders who continued the cycle of trafficking.

Similarly to the 5 level pyramid practiced by the crime syndicates masterminding the illicit trade of South African precious metals, the illicit gold trade in Latin America follows a network of small suppliers, working its ways up to major export companies that ship the gold to refiners abroad. Money laundering through the gold industry often involves false accounts of exports, which have led to huge spikes in reported gold sales that do not appear to coincide with real extraction figures. A study conducted by Verité on forced labour in illegal gold mining discovered that illegal mining in Peru is intrinsically linked to local organized crime groups as well as to criminal groups of Colombia, Italy, China and Russia (Kepes, 2015).

Despite existing regulation, the supply chain of precious metals presents loopholes. Although a number of initiatives have been set up, they are not as effective as expected. The third section of this study provides an assessment of national, regional and international initiatives in place to combat the illicit trade of precious metals in different countries, and the challenges they face. These initiatives involve international actors, the private sector and national institutions.

Section three: national, regional and international initiatives to combat illicit trade in precious metals

This section analyses the national, regional and international initiatives in place to combat illicit trade in precious metals in different countries and addresses their challenges. These initiatives involve international actors, the private sector and national institutions.

Relevant national legislation and regulatory frameworks

Legislative and regulatory frameworks are important instruments in controlling and combating illicit trade in gold and other precious metals. However, this is not an authoritative discussion on the various laws, acts and regulations. The following summary is merely an attempt to give an indication of the various acts that are specifically applicable to the mining and trade in gold and other precious metals.

As for the earlier sections of the document, most of the information provided is pertinent to the South African context, but, where possible, the information has been supplemented with other examples. It is believed that in most cases the key principles delineated will not be too dissimilar from situations in other countries, and therefore the problems experienced in South Africa in combating the illicit trade will be applicable also to other countries involved in the production of precious metals, albeit to a different extent.

South Africa regulatory framework

The Mineral and Petroleum Resources Development Act 28 of 2002 and the Precious Metals Act 37 of 2005

The discovery of major diamond and gold fields in the latter half of the 19th century heralded in a new era for South Africa. The development of the mining industry played an important role in the economy, and to regulate and protect the industry, legislation has been introduced, amended and evolved over many years.

To protect the industry from theft and illicit trade in diamonds and precious metals, early legislation prohibited private individuals and institutions from holding diamonds in unpolished form and precious metals in any other form than bullion coins or jewellery. The Mining Rights Act regulated the possession and trade in precious metals and stones, and also impacted refining and jewellery manufacturing. The Mining Rights Act 20 of 1967 was repealed by s68 (1) of the minerals Act 50 of 1991, which in turn was repealed by section 110 of the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA).

Following the election of a representative government in 1994, the country's mineral and mining policies were reviewed to ensure inclusion of the larger population in ownership and management of the mining industry. The review involved representatives from government, mining companies, the junior mining sector, labour and communities, and led to the Mineral and Petroleum Resources Development Act 28 of 2002,

which was promulgated in 2004. The principle of the act confers custodianship of mineral and petroleum resources to the State, as opposed to private property owners. Applications for prospecting, exploration and mining rights for all minerals have to be made directly to the state. As part of this process, all “old-order” mining rights had to be converted to “new-order” rights by 2009. “New-order” rights requirements focus on financial resources and technical ability, environmental concerns, social and labour, as well as health and safety, provisions, the inclusion and provision of opportunities for previously disadvantaged South Africans, and compliance with the mining charter (Virtual Metals Research & Consulting Limited, 2006, p. 118). The mining rights are guaranteed for up to 30 years and can be renewed.

The most relevant legislation in terms of trade in precious metals is the Precious Metals Act, 2005 (Act No. 37 of 2005), which replaced chapter 16 of the Mining rights Act of 1967. The Act provides for the acquisition, possession, smelting, refining, beneficiation, use and disposal of precious metals. The Act regulates the precious metal beneficiation and refining licences, jewellery permits, import permits and export approval, transport and conveyance of precious metals, etc. The South African Diamond and Precious Metals Regulator is responsible for the administration of the Precious Metals Act and approves and issues the various licences, permits and certificates (Precious Metals Act, 2005).

The Act defines “precious metal” as:

- “(a) the metal gold, any metal of the platinum group and the ores of such metals; and
- (b) any other metal that the Minister has declared by notice in the Gazette to be a precious metal for the purposes of this Act, and the ores of any such metal ”

Without the required licence, no person in South Africa may acquire, possess or dispose of unwrought precious metal (cf. definition of unwrought precious metals below). In other words, if the person is not a refining licence holder, an authorised dealer, a producer of unwrought precious metal, a holder of a precious metal beneficiation licence or been issued a certificate or special permit by the regulator, or in the employ of such a licence or permit holder, he or she would be in breach of the Precious Metal Act, 2005. The Act also stipulates that only certain persons may “make up, smelt or change the form of any unwrought precious metal in his or her possession”. Holders of refining licences are required also to keep a register of all transactions in precious metals and submit these to the regulator on a quarterly basis; holders of beneficiation licences and jewellers’ permits need to submit annual financial accounts.

In the Act, “unwrought precious metal” is defined as:

- “(a) precious metal that
 - (i) is unrefined (including concentrate and matte), or has been refined to a purity less than 99,9% and has not undergone any manufacturing process other than being refined or formed into a bar (but not a minted bar), an ingot, a button, plate, sponge, powder, granules, (excluding granules made from precious metal that has been refined to or beyond 99,9% purity, and carat gold alloys), solution; or
 - (ii) is prescribed as any substance, material or product of similar form to any such substance, material or product listed in paragraph (a)(i); or
- (b) any article or substance containing or consisting of precious metal contemplated in paragraph (a)”.

There are many other legislative and regulatory frameworks applicable to the mining and precious metals industry, including but not limited to environmental legislation, health and safety, transformation, taxes, etc. However, these are not directly relevant to the theft and illicit trade in precious metals, and will therefore not be discussed in this document.

The role of the Department of Mineral Resources (DMR) and the South African Diamond and Precious Metal Regulator (SADPMR)

The mandate of the Department of Mineral Resources is broadly affected by the Minerals and Petroleum Resources Development Act (2002), the Mine Health and Safety Act (1996) and the 1998 White Paper on the Minerals and Mining Policy for South Africa. As the legitimate custodian of South Africa’s mineral wealth, the DMR’s function is the promotion and regulation of South Africa’s minerals and mining industry

for transformation, growth, and development, ensuring that all South Africans derive sustainable benefit from the country's mineral wealth. The DMR formulates and implements policies to ensure optimum use of the country's mineral resources, regulates health and safety, mine environmental management, mineral legislation, etc.²¹ Its Mineral Regulation and Administration department manages prospecting and mining rights, licensing, and compliance with the Mineral and Petroleum Resources Development Act (2002). Issued prospecting and mining rights and permits contain the terms and conditions that the mine rights holders must conform to. Regular inspections (environmental and mining charter) are performed to ensure compliance (National Treasury, Annual Report, 2013/14).

The South African Diamond and Precious Metals Regulator (SADPMR) reports to the DMR. The SADPMR was established within the context of the Diamond Amendment Act (2005), the Diamond Second Amendment Act (2005) and the Precious Metals Act (2005), and replaces the former South African Diamond Board. The new legislation expanded the regulator's mandate from regulating control over the possession, purchase, sale, processing and export of diamonds to include the regulation of precious metals. The SADPMR issues licenses and permits related to the trade in diamonds, gold and platinum; additionally, it monitors activities in the diamond, platinum and gold sectors. Licenses of relevance for the precious metals trade include (Virtual Metals Research & Consulting Limited, 2006):

- Refining license - authorises the holder to buy, receive, refine or dispose of unwrought precious metals. Refining licenses are granted for a period of 25 years and are renewable for further periods of 25 years. Holders of refining licenses are required to keep a register of all transactions in precious metals and to submit this register quarterly to the Regulator. The SADPMR issued 19 refining licenses in 2013/14.
- Beneficiation license - authorises the holder to buy, receive, change, add value to and dispose of semi-fabricated metal. Beneficiation licenses are granted for a period of 10 years and are renewable for further periods of 10 years. Holders of beneficiation licenses are required to submit annual financial accounts after the end of each financial year. The SADPMR issued 22 beneficiation licenses in 2013/14.
- Jewellers' permit - confers the same rights as beneficiation licenses but are granted for a period of five years, renewable on application for further periods of five years. As for beneficiation licenses, it is obligatory to submit annual financial accounts. The SADPMR issued 133 jewellers permits in 2013/14.

In 2014 the SADPMR reported that it issued 250 licenses (including 50 beneficiation licences) to enable diamond and precious metals trade. The SADPMR hold regular compliance inspections and audits and conducted 1300 inspections during the 2014/15 financial year (National Treasury, Annual Report, 2014/15).

The Second Hand Goods Act, Act No. 6 of 2009

The Second Hand Goods Act, Act No. 6 of 2009 was promulgated in April 2009 with the aim to "regulate the business of dealers in second-hand goods and pawnbrokers, in order to combat trade in stolen goods; to promote ethical standards in the second-hand goods trade; and to provide for matters connected therewith" (Second Hand Goods Act, 2009).

The act requires all second-hand goods dealers to report suspicious transactions or suspected stolen goods. This is especially relevant to the trade in copper wire, other scrap metal and jewellery transactions (cf. heading "illicit economy and illicit financial flows (IFF)"). Dealers need to be registered, with registration valid for 5 years. Dealers are required to keep a register or record book with the relevant contact details of sellers (including copies of identification documents), descriptions of the goods acquired, purchase price, etc.

Section 25 of the Act makes it obligatory for a dealer involved in the recycling of any controlled metal to register as a recycler. In the case of the recycling of precious metals a person must comply also with the Precious Metals Act as discussed earlier. In terms of the trade in stolen metal cable (such as copper cable), the act stipulates that the dealer may not acquire or be in possession of metal cable of which the cover has been burnt (unless a reasonable explanation is provided and it has been reported to a police official). Similarly, deals concerning scrap metal that has been tampered with in order to alter appearance and conceal identity, must be reported.

Section 28 of the Act authorises the police to inspect the premises of dealers to investigate compliance.

21 Further information on the Department of Mineral Resources is available on the DMR website: www.dmr.gov.za/about-us.html

The Hazardous Substance Act No 15 of 1973

The Hazardous Substance Act (Act No 15 of 1973), and its subsequent amendments, “provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, etc.”. It has been suggested that sections 3 (sales and use), 3A (possession) and 4 (licensing) are sufficient to enforce control with respect to the use of mercury in the gold extraction process (cf. heading “Environmental impacts, environmental crimes and health risks”) (Van Graan 2015, *pers. comm.*, 13 April).

Border control

The Customs and Excise Act was published in 1961 and has been extensively amended over the years. The need for an effective customs control system (as a mechanism for revenue collection, protection of society and combating of crime), as well as demands of growing global trade and illicit activities, required the modernisation of customs systems in order to minimise their disruptive effect on legitimate trade and tourism as much as possible. The rewrite of the customs legislation began in 2003, and the Customs Control Bill (Bill 45 of 2013) and the Customs Duty Bill (Bill 43 of 2013) were published in 2013 (Customs News Bulletin). The current legislative framework is split into three separate pieces of legislation replacing the Customs and Excise Act from 1964:

1. Customs Control Act (Act No. 31 of 2014): establishes a customs control system for all goods imported into or exported from the Republic and that prescribes the operational aspects of the system.
2. Customs Duty Act (Act No. 30 of 2014): provides for the imposition, assessment and collection of customs duties on goods imported or exported.
3. Excise Duty Act (Act No. 32 of 2014): provides for the imposition, assessment and collection of excise duties.

The Customs Duty Act is relevant to the import and export of precious metals. South Africa has a number of requirements for the export of goods, and apart from the exporter requiring an appropriate licence from the South African Diamond and Precious Metal Regulator, the following forms (now mainly processed electronically) are of relevance to the export of precious metals:

Form SAD500 (Customs declaration form). This form has to accompany goods exported from South Africa, whether by road, rail, air or sea. Among others, provision is made on the form for a description of the goods and the value thereof (free on board and actual). The value and description of goods have to be accurate, so that correct customs duties can be charged. Form SAD500 is accompanied by an invoice, prepared by the exporter, which has to accurately describe the goods and values in question.

Form 178 prepared by Banks on behalf of the Reserve Bank, in which the exporter undertakes repatriation of capital within a certain time frame.

Section 179 of the Customs Duty Act states that a person clearing goods is “guilty of an offence if (among other things) he provides false or misleading information with the intention to mislead; makes a false statement or supplies incorrect information which that person knows is not true or could not reasonably have believed to be true; have caused the goods to which the document relates to be subject to a duty or to a higher amount of duty; or conceals the true origin of the goods”.

The South African Border environment is strategically managed by the Border Control Operational Coordinating Committee (BCOCC), an affiliated structure of the Justice, Crime Prevention and Security Cluster¹. The following Government institutions are involved in the Border Control and Security Framework: the National, Departments of Home Affairs, Transport, Public, Agriculture, Health and Defence, as well as the South African Police Service (SAPS) and the South African Revenue Service (SARS). In terms of countering illicit trafficking in precious metals, the South African Police Service and the South African Revenue Service play an important role.

Customs and Excise (a division of SARS) manages the administrative control and levying of excise duties and taxes on imported or exported goods, as discussed earlier.

Figure 11: a cargo of medium grade precious metal product concealed as part of a delivery of vegetables. A hidden compartment underneath the truck contained additional product (Lebombo border post, 2006).



Every country monitors and regulates its borders. Border controls are put in place to control the movement of people, animals and goods into, as well as out of, the country. With an extensive land border (Swaziland, Lesotho, Mozambique, Zimbabwe, Botswana and Namibia), people and goods can be trafficked across borders unnoticed. Investigations on the movement of illicit precious metals indicate that most consignments enter or leave the country via one of the many border posts (land ports). Consignments despatched to overseas destinations leave the country via international airports or harbours.

Each country has its own laws and regulations for the importing and exporting of goods. National tax authorities enforcing and responsible for collecting those duties are usually called customs and excise, revenue and customs or another variant of this. Similarly the acts or laws also refer to customs, revenue or excise in their titles (e.g. the UK's Commissioners for Revenue and Customs Act, 2005; Kenya's Excise Duty Act, 2015; The Customs Code of the Russian Federation, 2015). As these Acts are frequently amended, it is recommended that for more detail the relevant documents are studied.

An interesting case concerns the European Union Customs Union (EUCU), which consists of all the member states of the European Union and some of its neighbouring countries. The EUCU has harmonised the basic custom laws that members impose, including a common external tariff on all goods entering the European Union. No customs are levied on goods travelling within the customs union (cf. heading “Illicit economy and illicit financial flows (IFF)”). The principle of common external tariffs has been adopted also by the Mercosur countries (Brazil, Argentina, Venezuela, Paraguay and Uruguay).

European countries were also instrumental in establishing the World Customs Organization (WCO), whose mission is to enhance the effectiveness and efficiency of Customs administrations. This is achieved by means of a range of technical and advisory committees, training services and member support initiatives (modernisation and capacity building). The WCO represents 180 Customs administrations across the globe that collectively process approximately 98% of world trade⁴. The WCO plays a vital role in stimulating the growth of legitimate international trade, but is recognised also for its efforts in combating fraudulent activities.

Border control varies from country to country and can be quickly adapted as a reaction to e.g. terrorist activity, pandemics or an influx of migrants, as demonstrated by the implementation of border checks in Europe (Cook, 2016). In Europe, tax controls among member States have been abolished and there is free movement of goods among member states. In practical terms, this means that shipments between EU members can be dispatched without special customs documentation. Border protection services in the various countries targeted (either as producing countries or destinations) experience similar problems as their South African colleagues in terms of detecting and recognising illicit precious metal consignments.

Regulatory frameworks in other African Countries

As in South Africa, mining laws in other countries deal with the State’s regulatory power regarding the exploitation of a country’s minerals. These vary from the principle that the mineral resources belong to the nation (with the state as custodian, as in South Africa) and to individual ownership, which is more common in English speaking countries (Roman-Dutch common law and English common law).

A perusal of some of the mining laws show that they have been enacted to regulate ownership, licencing (prospecting, mining, etc.), royalties and taxes, environmental remediation, etc. Mining Acts in African countries usually make reference to licencing for artisanal or small scale miners.

In Namibia, the Minerals Act (Act No 33 of 1992) has a section on the dealing in, or possession of, high value minerals (“unwrought precious metals and rough and uncut emeralds, ruby or sapphire, etc.”), the permitting thereof and obligations (in terms of keeping a register etc.).

Kenya and Botswana have specific acts regulating the trading in unwrought precious metals (Mining Act, 2012; Mines and Minerals Act, 1999). These show many similarities with the South African law. However, in most countries the trade in precious metals is unregulated.

In Tanzania, the mining sector is governed by a number of policies, laws and institutions. According to Mwakaje (2012), the Mining Act (1998) formulated to implement the Mining Policy, could curb illegal mining and trading if properly implemented. The Act also addresses environmental issues, assists small scale miners in operating in a more organised manner, provides for technical support to small scale miners, and promotes viable small-scale mining activities. However, there is a concern that the institutional framework governing the Mining Sector is not suitable for ASM, and innovations are required to effectively govern ASM activities (Mwakaje, 2012). A new mineral policy was established in 2009 (The Mineral Policy of Tanzania, September 2009), and the new Mining Bill was passed by Parliament on 23 April 2010 (Mwakaje, 2012).

The regulatory framework of the Russian Federation

In Russia, the export of raw materials containing precious metals is strictly regulated (the Russian definition of precious metals also includes silver) by the Russian Federation legislation on precious metals and gemstones (Federal Law on Precious Metals and Gemstones, 1998).

The list of precious metals includes gold, silver, platinum and platinum group metals (palladium, iridium, rhodium, ruthenium and osmium). This list of precious metals may only be changed by Federal Law. Precious metals may be in any condition, and any form, including native and refined form, as well as contained in raw materials, alloys, semi-finished products, industrial products, chemical compounds, jewellery and other goods, coins, scrap and production and consumption waste.

The legislation covers the ownership of the mining (extraction), processing, refining and sale of precious metals and gems.

Areas of importance for trade in precious metals, such as licensing, certification and requirements for registers (e.g. accounting and reporting), including the use of approved (licenced) refineries and the certification of products, are covered. It also refers to licence requirements for scrap and waste collection and conversion and processing in order to obtain concentrates and other intermediate products intended for refining. The procedure for handling mineral raw materials containing precious metals prior to refining is defined by the Government of the Russian Federation (Federal Law on Precious Metals and Gemstones, 1998). Specialised equipment and the presence of armed security guards to protect the cargo are obligatory during the transport of precious metals, gemstones and products thereof. Special procedures are set also for customs, controls on the import and export of precious metals and gems.

The regulatory framework of Switzerland

In Switzerland, which has a long tradition as one of the world's leading centres of commodities trading, there is no legislation prohibiting trade in unwrought precious metals. This is similar for other European countries. Using Switzerland as an example, there are, however, a number of initiatives linked to tackling the illicit trade in precious metals that are relevant and that have been adopted by the Swiss Federal authorities (see also heading "Application of the technique" which lists some of the suggested criminal behaviours linked to the illicit trade in precious metals).

In general, the Federal Council "expects of all companies operating in or out of Switzerland to conduct themselves responsibly, and with integrity, in complying with human rights, environmental, and social responsibility standards, both in Switzerland and abroad" (FDF, 2012). As mentioned in several case studies, money laundering is frequently linked to the illicit trade in precious metals, and Switzerland has implemented the standards recommended by the Financial Action Task Force (FATF). Switzerland also participates in the Extractive Industries Transparency Initiative (EITI), and, in this way, promotes the disclosure of payments. It monitors international developments in this area, including regulatory projects in the USA (Dodd-Frank Act) and in the EU (financial reporting and transparency directives). Switzerland also subscribes to the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.

Based on analysis conducted by Damarapurshad (2005) and data collected, table 8 summarises the restrictions on gold possession and buying in some of the important gold trading or producing countries.

Table 8: Restrictions/regulations on gold possession and buying procedures in some of the important gold trading or producing countries (Damarupurshad, op. cit.).

Country	Possessions	Buying
Australia	No restrictions	Consumers can buy gold in bar, coin, wafer or other tradable form. Gold ETF launched in 2003.
Botswana	Gold possession restricted to Producers (mining right holders), and jeweller's permit holders	Gold and silver buying controlled by Unwrought Precious Metals Act. Only Permit Holders may buy gold and silver.
Canada	No restrictions	Consumers can buy bullion bars, bullion coins and wafers. Investment options include gold futures/options contracts.
China	Final stages of complete deregulation	The Shanghai Gold Exchange was set up in 2002. A retail gold investment market has opened recently. Platinum futures trading began in late 2003. Some companies were allowed to import gold jewellery since May 2004.
Colombia	Implementation of Resolution 396 of 17/06/2015	Registration of jewellers, gold traders and dealers. Certificates of origin and transport certificates required. ASM producing less than 4 kg of gold or 300 g of platinum are not required to register.
Ghana	Not controlled specifically	Precious Minerals Marketing Company - appointed Licensed Buyers can buy from small scale miners.
India	Allowed	Gold bars and coins can be imported under Open General Licence by government approved Banks and Agencies. India's Multi-commodity Exchange was established for the trading of gold and silver in October 2003.
Japan	No restrictions	There are gold bullion shops and banks and direct marketing by gold mining companies. TOCOM offers a physical market and futures.
Kenya	Possession of gold, silver and platinum restricted to Mining Title, licence & certificate holders in terms of the Trading in Unwrought Precious Metals Act	Buying and selling controlled in terms of Trading in Unwrought Precious Metals Act.
Russia	Gold, silver and PGM possession State controlled through licences for mining, refining, and jewellery making in terms of the Precious Metals Law	State has pre-emptive right to purchase gold, silver and platinum-group metals from authorised miners and refiners for the State Fund in terms of the Federal Law on Precious Metals & Stones (Precious Metals Law).
South Africa	Possession and trading of unwrought and semi-fabricated gold is restricted.	Only licensees, permit holders and other relevant authorisation holders may buy and/or sell unwrought gold. South Africans can purchase legal tender bullion and proof coins made of gold and silver. Platinum coins are not available yet.
Turkey	Allowed	Istanbul Gold Exchange offers bullion bars. Dealers and jewellers sell coins.
UAE	No restrictions	Available at jewellery outlets and bullion dealers. Dubai Metals and Commodities Centre was established a decade ago. A physical market and futures are offered.
UK	No restrictions	Bars, wafers and coins are available to consumers. Gold ETF launched in December 2003.
USA	No restrictions	Bullion bars and coins available. Gold oriented Mutual Funds also available. Gold ETFs launched in 2004/5.
Zimbabwe	Possession of gold restricted to Mining Authorisation Holders; and licence or permit holders in terms of Gold Trade Act.	Controlled in terms of the Gold Trade Act.

International initiatives

In an effort to bring transparency and good practices to the extraction and trade of minerals, a number of certification schemes, mechanisms and acts have been put in place. As most initiatives are active across national borders, they often encompass “private, multi-stakeholder self-regulation”, rather than functioning government initiatives. This section will provide an assessment of those that are either applicable or related to the gold and platinum industry.

Originally beginning with the recognition that diamonds played a major role in financially supporting conflict in the DRC (the term blood diamonds was coined in the late nineties - Global Witness, 2010), monitoring and controlling the supply chain of the various commodities has been advocated by the industry, government and non-government organisations.

In general, large companies recognise reputational risks as an important component of their investment strategy. The mining and extractive industries especially regard stakeholder-related risks among the highest financial threats. Companies and associations such as the World Gold Council, the IPA and Jewellery Council are driving not only the sustainability of the industry by assessing technological and environmental impacts and requirements, but are very involved also in human rights assessments, social development projects, etc.

Table 9 presents a comparison among various international initiatives. For a brief description of the initiatives under consideration see Annex II.

Table 9: Summary of the most important features (as relevant to this assessment) of the various initiatives discussed.

	Kimberley Process	OECD Due Diligence Guidance	Protocol against the Illegal Exploitation of Natural Resources	ICGLR mineral tracking and certification	BGR Certified trading chain and AFP	The ITRI Tin Supply Chain Initiative	Conflict free smelter program	WGC Conflict free gold
Implementation date	2002	2011/2012	2006	2010	2009/2010	2010	2010	2012
Implementers	Governments	Companies	Government	Governments	Companies and Governments	Companies and Governments	Companies	Companies
Minerals or product focus	Diamonds	Conflict minerals (3T's and gold) Other minerals can be added	Conflict-prone minerals (3T's and gold) Other minerals can be added	Conflict-prone minerals (3T's and gold) Other minerals can be added	3 T's	Tin, mine to smelter	3T's and gold (smelters and refiners)	Conflict gold, Human right abuse
Main region	Original focus DRC Diamond producing countries	Central Africa (GLR) High risk areas	Central Africa (GLR)	Central Africa (GLR)	Original focus DRC Central Africa (GLR)	Central Africa (GLR)	Global	Original focus DRC and GLR Global
Main features	Import-export certification scheme on rough diamonds, supply chain management	Supply chain management, sourcing of products	Prevention of illegal exploitation of natural resources	Chain of custody tracking to point of export	Chain of custody tracking to point of export. Political stabilisation, human rights and sustainable supply	Chain of custody tracking (mine to smelter)	Supply chain management (Due diligence), sourcing of products	Supply chain management (Due diligence)
Funding	Members (Governments and industry)	Voluntary contributions from Governments, industry funding for implementation, audits, etc.	States of the Great Lakes Region, donors, International funding organisations and institutions, etc.	Governments and industry	Governments and industry, . Funding on AFP development and application by German Federal Ministry for Economic Cooperation and Development	Members (major funding source), calls for donors	Members and corporate donors	Members
Voluntary self regulation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Independent audits	Yes	Yes	Linked to the ICGLR	Yes	Yes	Yes	Yes	Yes
Supports or uses other initiatives or partners	World Diamond Council, PAC, Civil Society Organisations	iTSCI, CFS, CFG, CoC	ICGLR mineral tracking and certification system		ICGLR, Dodd-Frank Act, OECD DDG	OECD DDG, CFS	OECD DDG, Dodd-Frank Act	Dodd-Frank act, OECD DDG
Strengths	54 participants representing 99.8 % of global production Participants can only trade with other members Certification guaranteeing diamonds are conflict free Adaptable	Endorsed by 34 member countries, UN Sec council and 7 non-member countries Higher prices for traceable exports Adaptable	Signed by member states of the International Conference of the Great Lakes Region. Interaction between and consultation with member countries Promoting cooperation between member states, harmonisation of legislation, policies and procedures	Adaptation and use of current systems Certificate of origin Adaptable	Database and fingerprinting technology	Registration of minesites (incl. ASM), traders, re-processors and smelters Information must be made available publicly	Provides downstream customers with verified information about sourcing activities	Applies to World Gold Council members, available for use by other companies involved in gold extraction. Wide involvement during development Information must be made available publicly
Weaknesses	Failing to address issues of non-compliance, smuggling, money laundering and human rights abuses	Requires extensive database for tracking, associated costs, 'parallel economy for illicit trade'	Relying on other initiatives to track and certify supply chain issues	Requires data capturing, database administration, management and associated costs	Costs associated with the administration, data capturing and data basing. Fingerprint technology costly and only applied in extreme cases	Limited focus, pushes back responsibility to governments and state institutions, not addressing military involvement	77 gold smelters compliant, administrative system	Does not include social and environmental issues. Cost associated with membership. Membership represents less than 50 % of gold produced. Gold is easily processed and reworked creating a 'parallel economy'.

	London Bullion Market Association (LBMA) Responsible Gold Guidance	Fairtrade and Fairmined standard for gold for ASM	Responsible Jewellery Council CoC	The Extractive Industries Transparency Initiative	OECD Anti-bribery convention	Financial Action Task Force	Open Government Partnerships	Dodd-Frank Act (Section 1502)
Implementation date	2012	2009/2012	2009	2002, Standard 2013	1999	1989, Revised standards 2003	2011	2010
Implementers	Companies	Companies		Companies and Governments	Governments	Government	Governments	Government
Minerals or product focus	Gold Focused on Refiners (can be expanded up and downstream)	Gold	Precious metals (gold, platinum, palladium and/or rhodium)	Natural resources (Oil, Gas and Minerals)	General	Money laundering	Open and transparent government	Conflict minerals (3T's and gold)
Main region	Global (based in UK)	Original focus South America Expanding into Africa and Asia	Global	Global	Global, focus on exports	Global	Global	
Main features	Supply chain management (Due diligence), sourcing of products	Improvement of working and living conditions of ASM communities. Includes environmental standards	Segregation of chain of custody from non chain of custody material (Due diligence)	Resource Revenue Transparency, sustainable development and poverty reduction. Development of policies	Prevention, detection and investigation of foreign bribery/ corruption. Implementation and monitoring of policies	Standards (recommendations) for combating money laundering, terrorist financing and threats to the integrity of the international financial system	Multilateral initiative seeking government commitment to promoting transparency, citizen empowerment, and fighting corruption	Supply chain management (Due diligence)
Funding	Members	Partners and donors	Members	Donors	Member countries	Member governments	Governments, partners and private foundations	Industry
Voluntary self regulation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Compulsory to companies listed on the US Stock Exchange
Independent audits	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supports or uses other initiatives or partners	OECD DDG	OECD DDG	Dodd-Frank Act					
Strengths	Membership includes 73 gold refineries which represent 85 to 90 % of world gold production. Mandatory for LBMA accreditation.		Certification Adaptable	49 Member countries, 90 supporting companies Revenues paid and received must be made available publicly	Supported by 34 member countries and 7 non-member countries (representing 2/3 of world exports, -90% of total foreign direct investment outflows)	34 member jurisdictions, regional organisation, etc., representing most major financial centres Evaluation reports published	65 Member countries Reports publicly available	Compulsory to companies listed on the US Stock Exchange dealing with conflict minerals Information must be made available publicly
Weaknesses	Administrative 'due-diligence system'. Supporting evidence from other initiatives accepted.		No requirement on country of origin. Focus on illegitimate sources only	Focused on governance. Not applicable to trade in conflict minerals	Large proportion of member countries still classified as 'Little' or 'No' enforcement	Focused on governance. Not applicable to trade in conflict minerals	Focused on governance. Not applicable to trade in conflict minerals	Administration costs associated with supply chain investigations lead to companies discontinuing trade with conflict areas

The review of the various certification and tracking initiatives of relevance to this project highlights many areas of commonality. According to Te Roller (2012), the interaction among the schemes improved considerably from 2009 to 2012, and he has identified several subsets in the network that interact intensively, and with a high degree of frequency. These subsets have a more common focus, and include, for example, the initiatives focussing on the trade in conflict minerals, such as the ICGLR, BGR, CGI, ITRI, etc., and the various gold initiatives. Table 9 summarises the most important features (as relevant to this assessment) of the various initiatives. The initiatives have been ordered from the single-focus Kimberley Process, to those addressing the 3T's and Gold, through to the gold and precious metals-related programs. The last initiatives in the table address general governance issues. All of these initiatives are self-regulated and rely on voluntary participation. The Dodd-Frank Act differs by being compulsory for a specific group of companies (such as those dealing with conflict minerals and listed on the US Stock Exchange).

Initiatives focus on various aspects of the supply chain, with few being involved in chain of custody tracking from the mine site. These include the ICGLR, BGR and the ITRI initiatives. All these initiatives focus mainly on the 3Ts, although gold is included in these initiatives. As the initial trade in these conflict minerals occur either through the illegal or informal sector, transactions early in the supply chain are difficult to regulate fully (Ochoa & Keenan, 2011). Added to that is the fact that gold has a high value to volume ratio, and is used also as a form of payment for illegal transactions and is difficult to trace back to the original source (especially when illicit gold is mixed in with legitimate products). This further hinders the implementation of full supply chain tracking.

The Conflict-free Smelter Program relies on a due-diligence based system to be able to assess if processed material is conflict-free, and, in this regard, focuses on production from Central Africa (the DRC in particular). Although the system requires participants to assess the possibility of illegal gold entering the chain by smuggling and hiding (mixing with legal gold), the effectiveness of this is uncertain. The program has 77 gold smelters/refiners listed as compliant, and another 12 entering the audit process.

The World Gold Council's Conflict Free Gold Standard certifies that the gold produced by its members has not contributed to armed conflict or the abuse of human rights associated with such conflicts. Non-member companies may use also the standard - as is the case with companies that have withdrawn from the World Gold Council due to financial constraints. The World Gold Council Members represent less than 50% of the world's primary production. It does not address smuggled gold or hidden gold entering the supply chain via smelters and refiners, and thus has little impact on the informal or less responsible supply chain.

The Fairtrade and Fairmined Standard focuses specifically on artisanal and small scale mining, with the main objective being to improve working and living conditions of ASM communities. It encourages environmental responsibility by paying premium prices for "green" gold. Mainly active in South America and representing only a small percentage of all gold produced, its impact on conflict-gold is minimal.

The Responsible Jewellery Council Chain-of-Custody Standard is the only initiative that includes the precious metals of platinum, palladium and rhodium, as well as gold. It has similarities with the Conflict Free Smelter Program, but does not require detailed information on the country of origin (unless where relevant under the Dodd-Frank Act). The Council has 54 refiners as part of its membership base (Responsible Jewellery Council, 2015).

Impact of the various initiatives

Since the launch of the Kimberley Process, and the more encompassing OECD Due Diligence Guidance, a number of tools, regulations, initiatives and programs have been developed and implemented to address the illegal mining and trade of mineral resources. This chapter highlights some of progress that has been made by the implementation of these schemes in curbing the illicit trade, as well as some of the challenges that need to be addressed.

Diamonds

Although it is generally agreed that the Kimberley Process has had an impact on reducing the blood-diamond trade, one of the main criticisms against the Kimberly Process is the failure in addressing human rights issues, social and environmental problems in the diamond industry. The scheme is only applicable to the rough diamond trade, making it possible for cut and polished conflict diamonds to reach the market. Global Witness' decision to withdraw from the Kimberley Process in 2011 was based on its assessment that the process had failed in its objective, citing its failure to "deal with the trade in conflict diamonds from Ivory Coast, was unwilling to take serious action in the face of blatant breaches of the rules over a number of years by Venezuela and has proved unwilling to stop diamonds fuelling corruption and violence in Zimbabwe (Marange diamond fields). It has become an accomplice to diamond laundering - whereby dirty diamonds are

mixed in with clean gems.” (Arribas, 2014).²²

The Responsible Jewellery Council’s CoC suffers from the same problems, and, in 2010, two of its members (Element Jewelry and Open Source Minerals) resigned from the RJC in protest over the council’s support of the Kimberley Process stance on Marange diamonds (Earthworks et al., 2013).

The Kimberly Process Working Group on Monitoring, the organ reviewing the compliance of participants with Kimberley Process requirements, is composed of insiders only, which impacts the perception of a complete and independent monitoring system (Arribas, 2014). For an independent monitoring system to be implemented, and to restore credibility, funding would be required, as it is currently self-funded by participants. Arribas (2014) proposes a change in the decision-making procedure to see a shift from a consensus-based system to a majority system.

An investigative report into the Responsible Jewellery Certification scheme also accuses that the final decision on standards were made by industry representatives (Earthworks et al., 2013). The report alleges that the Code of Practice allows for mining in conflict zones without supplying adequate due diligence, does little to protect worker’s rights and fails to put targets or limits on environmental practices. Chain-of-custody transfer documents are only required if materials are sourced from the DRC or adjoining countries. The report also highlights that audits are held without the participation of civil society, labour organisations and communities and there is no requirement for an independent review. Audit results are published with little documentation (Earthworks et al., 2013). The report concludes that the scheme enables companies to gain company-wide certification without all facilities having been audited (e.g. partially owned facilities that are not managed).

Tin, tungsten and tantalum

In terms of the trade in tin, tungsten and tantalum, progress has been made in curbing the illicit trade, and it is generally accepted that the various initiatives have had a positive impact. The Enough Project (Bafilemba and Lezhnev, 2015) reports that two-thirds of the tin, tantalum and tungsten mines surveyed in the eastern Congo have been demilitarised. However, the various programs are imperfect, evolving and at times have led to conflict between companies and communities.

Companies are seen as paying lip-service to the “ethical” principals without having effective monitoring systems in place to investigate their supply chain or asses the human rights impact of their trade (Global Witness, 2009). Donor governments are being accused of focussing on technical solutions rather than addressing the fundamentals of the conflict (Global Witness, 2009). The OECD (2015) reports that traceability efforts on Tin (iTSCi) have been implemented slower than anticipated. The implementation of tracking schemes, such as the mineral bagging, tagging and due diligence scheme run by ITRI, have lowered the wages of miners, as they can only sell their products to registered traders, who are accused of setting low prices.²³ The decrease in income for the miners (due to the lower prices offered) encourages smuggling.

Smuggling is further encouraged by differences in royalty payments between the various countries, and a harmonisation of national legislation, as well as regulatory requirements, has been proposed. In terms of the Coltan international trade, Rwanda is deemed to be a preferred trading destination. Apart from its geographic location, minerals imported to Rwanda can be declared as produced in Rwanda, if undergoing further processing there (upgraded in value by ~30 %), and can then be legally exported without being taxed. Global witness goes as far as to call Rwanda a laundering centre in international trade (Bleischwitz et al., 2012).

Gold

While progress has been made on controlling the trade of three out of the four conflict minerals, conflict gold remains a major obstacle to peace in the DRC, as well as a driver of the black market economy, with armed groups trading gold for weapons and ammunition (Insight 2014; Bafilemba and Lezhnev, 2015).

22 Further information is available on Global Witness website: www.globalwitness.org/en/archive/global-witness-leaves-kimberley-process-calls-diamond-trade-be-held-accountable/

23 Further information is available on Global Witness website: www.globalwitness.org/mining-for-our-minerals/

Overall, interventions have had little impact on the gold trade, with an estimated 98% of the gold produced by ASM being smuggled out of the country. Although some positive steps have been taken in terms of the various due-diligence schemes discussed earlier, the ease and anonymity with which gold can be traded stifles the implementation of gold tracing schemes. The illegal trade is driven also by the DRC's high gold taxes (overall gold tax is 13%), compared to average rates of between 1 to 5% in other countries (Bafilemba and Lezhnev, 2015).

To assist with applying the OECD DDG scheme, IPIS mapped 550 mining sites in the Eastern DRC, providing important information on the presence or absence of non-state armed groups and public security forces at mining sites and trading hubs. The mapping exercise was extended in 2013/2014, resulting in the latest map encompassing nearly 1100 mining sites (a total of 1574 mines mapped, estimated to be about half of the consolidated number of mining rights and active quarries). Most of the new mines visited (76%) were gold mining sites, highlighting a shift in production away from tin, tantalum and tungsten. According to the research data, the shift from T3 to gold, as well as the current scale of artisanal gold mining, has important consequences for armed group and criminal network financing (OECD, 2015).

Criminal networks within the DRC's armed forces are seen as the predominant source of armed interference at mine sites, and interference is dominated by illegal taxation, followed by involvement in trade and direct participation in digging.²⁴ The wide-spread distribution of gold throughout the DRC, especially considering the manifestation of gold in very remote areas, provide many opportunities for armed groups to finance their activities. This is made even easier because artisanal gold production is unrecorded.

ICGLR Certification became effective in the DRC in January 2014, but initiatives taken to enhance verification, traceability and monitoring are hampered by lack of resources, lower commodity prices and an unstable security situation. The advancement of mining reforms has been slow, and budgetary constraints and security problems mean that the large majority of artisanal sites (especially gold mining sites) remain outside of the legal trade. According to Bafilemba & Lezhnev (2015), certificates for gold export issued by the DRC are not compliant with ICGLR standards, as only a small percentage of gold mines have been validated and a viable tracing scheme has not yet been adopted. With the DRC now requiring all gold exports to have ICGLR certificates, gold from conflict-affected mines is allegedly relabelled as conflict-free production. Corrupt government officials, mandated to ensure the safety and build capacity of miners, are also often a source of harassment and corruption, demanding under-the-table fees and other unofficial production taxes in order to legalise the miners' activity and the gold produced.

Castilla et al. (2015) allege that large companies who subscribe to the various initiatives, such as the LBMA, RJC CoC and the CFSI, have been the recipients of illicit gold from Latin America. Investigations in Colombia indicated that more than 97% of the gold exported by one of its big companies went to an American company. Both these companies subscribe to the LBMA responsible gold guidance, which incorporates a risk-based approach to avoid sourcing gold from areas subject to conflict. Their policies also include commitments to take action when there is a reasonable risk the supply chain is being used to launder money.

It is alleged that this American company continued to buy from the Colombian company, even after it was contacted by Colombian tax authorities in connection with two transactions in which it reported receiving nearly USD 200,000 more from the American company than the USD 5.7 million it actually received – a classic money laundering technique (Bergent and Norby, 2015). According to Bergent and Norby (2015), these transactions continued for at least eight months after Colombian prosecutors stated publicly, in August 2013, that they suspected the company of money laundering.

The American company refuted the allegations and indicated that they met their commitments in sourcing gold responsibly and terminated the relationship with the Colombian company shortly after media reports about the prosecutor's investigation emerged. According to Bergent and Norby (2015), the American company's anti-money laundering director of security and its compliance officer declined to comment. With these allegations, the effectiveness of the various initiatives, and willingness of companies to adhere to the guidelines, are called into question.

24 "Significant gains have been made in raising the volume of responsible 3Tminerals produced in eastern DRC, though criminal networks within the DRC's public security forces (FARDC)" (OECD, 2015).

General comments

According to Te Rolle (2013), it is difficult to assess what impact these schemes have on the fight against conflict-mineral production. This is due to unreliable reporting (mainly underreporting) of production data and the lack of participation in the areas where most of the conflict mining occurs.

Bleischwitz et al. (2012) argue that the focus on a limited number of conflict minerals may only serve to shift the illegitimate activities to other profitable minerals, and they suggest that the scope of these initiatives should cover all applications and commodities for conflict regions. This is clearly demonstrated by the shift from 3T to gold smuggling, as reported by the OECD in 2015.

According to Mvemba Dizolele (2013), the implementation of due-diligence schemes does not necessarily put an end to armed conflict. Dizolele expresses the opinion that the Dodd-Frank Act was based on the erroneous premise that minerals were either the source, or at the centre, of the conflict, and that cutting militias' access to the mines would lead to peace. She sees the mineral trade as part of a wider war economy, and to properly implement Section 1502 requires the buy-in of the "very negative actors it seeks to tame". According to Dizolele, there is no evidence that Section 1502 has reduced violence in the targeted region. Furthermore, the Dodd-Frank Act was implemented without engaging the DRC's government, imposing an outside solution that undermines DRC national initiatives. The Act also tasks the US Security and Exchange Commission with the implementation of the law, a task for which it is ill-equipped, according to Dizolele.

It is important to keep in mind that most of these initiatives focus on large companies, which have their reputations to protect and have the financial means to implement due-diligence policies, and, as such, comply readily with the various programs. Other parties involved in conflict mineral extraction may be less sensitive to reputational attack, and less concerned about the sources of their raw products. Rebel or army groups involved in the illicit trafficking, as well as human rights abuses, have little fear for reputational damage, and, unless caught, cannot be prosecuted for these violations (Lehr, 2010). The smuggling across borders and mixing of conflict-related products with legal trade will therefore continue, despite the implementation of various initiatives.

Mining operations may create also conflict zones, and government forces, not armed rebel groups, may be involved in human rights abuses. The World Bank Extractive Industries Review received "many testimonies concerning the military and police being involved in securing company control over territory, and protecting their operations (Earthworks et al., 2013). Although a copper-cobalt producer, and not involved in the 3Ts, Australian-Canadian mining firm Anvil Mining allegedly provided Congolese soldiers with logistical support in an operation in 2004, in which more than 70 civilians were killed.²⁵ Even though the company was acquitted, human rights advocates claimed that the legal proceedings did not allow for proper scrutiny of the company's actions regarding the massacre (ACIDH, ASADHO/KATANGA, Global Witness, RAID, 2007).

In a separate incident, Human Rights Watch alleged that a gold producing company made payments to the Congolese Nationalist and Integrationist Front (FNI) (Bafilemba and Lezhnev, 2015; Earthworks et al., 2013). The company publicly acknowledged its involvement, but stated that these payments were made "under protest and duress", after FNI threatened the "safety of staff and the company's assets." This response shows the high risks associated with operating in conflict zones; companies put their own workers at risk and in some cases are "forced" to support unethical practices.

As advocated by Lehr (2010) in his investigation on the governance approach to the conflict-mineral problem, a multi-stakeholder process will most likely be required to address the challenges. Lehr sees the problem of conflict minerals as a subset of a wider political and economic breakdown, which requires a "complimentary and interlocking web of new and old governance approaches". This not only concerns those countries that are hosts to conflict minerals, but also the international community.

Apart from a purely industry-driven approach, governments must address the roots of conflict through other mechanisms, such as diplomacy, demobilisation of armed forces, economic development, and supporting changes to the trade and mineral regimes of conflict-affected states (Lehr, 2010). It is here where the initiatives, conventions and partnerships have a role to play, as they have a much wider focus and are either government driven or include large government involvement. These are less focussed on conflict minerals and address corruption, bribery, money laundering and good governance on a wide front.

Although learning from these initiatives are relevant to the issues of illegal mining, which is rife in South

25 Further information is available on Business and Human Rights resource Centre website: www.business-humanrights.org/en/anvil-mining-lawsuit-re-dem-rep-of-congo

Africa (e.g. zama zama), and for the theft of precious-metal bearing material from producers in South Africa, Russia, Latin America, etc., implementing one or two of the initiatives will not solve the problem. Although the violence and human rights abuses associated with zama zama activity is reminiscent of the conflict-mineral problem, the issues of theft of products from operations, tax evasion and custom violations are more typical of criminal activity.

Precious metals fingerprinting

One of the main problems law enforcement agencies are experiencing concerns proving that precious metals (in whatever form) found in someone's possession have actually been stolen. The science of fingerprinting is used to identify the sources of the precious metals proving that a crime has been committed. The process usually includes the identification of the material confiscated (the material is customarily held as evidence), the value of the material, the identification of the source of the material and presenting this evidence during legal proceedings. Fingerprinting has been practised on gold (Watling, et al., 1994), as well as the platinum group metals, and also on precious stones -including diamonds (Watling et al., 1995).

Gold fingerprinting

Some of the first references to the gold fingerprinting technique are from the 1990s (Watling, 1992; Watling et al., 1994; Anglo American Corporation, 1996) when John Watling, with assistance from the Anglo American Research Laboratories, refined the methodology and initiated a gold reference data bank of known fingerprints to which unknown samples of gold could be matched (Anglo American Corporation, 1996).

The technique is based on the presence or absence of trace impurities in gold, on the premise that gold mineralisation is the result of specific events resulting in specific trace element signatures. This information can be obtained by laser-ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS), an analytical technique which provides direct analysis of trace elements present in solid gold at very low levels. It is not the specific quantities of trace elements present, but the ratios of specific elements to each other that provides a unique fingerprint. For certain deposits, isotopic ratios of specific elements, such as lead in the case of the different Witwatersrand deposits (Grigorova et al., 1998), are extremely useful as they remain relatively unchanged, regardless of the refining process. Data is usually interpreted with the aid of a principal component analysis (a well-known statistical technique), which aids in establishing the differences or commonalities between the samples' chemical profiles.

The validity of the gold fingerprinting process is a function covered by the database. The database needs to comprise reference samples from a large number of deposits, as well as a variety of samples from these deposits (including geological or mine samples or gold concentrates and doré gold). Processing of gold ores, using processes such as carbon in pulp, carbon in leach and smelting, modifies the ratios of some of the elements relative to their pre-processing natural abundance. Although this can assist with the source identification, the material can only be properly matched if such a sample is included in the database. In Australia, where the size of the database is relatively small, this problem is negated by the collection of reference samples from the possible mine(s) identified. In this case, the forensic scientist plays a crucial role in reviewing the history of the gold sample, which requires an understanding of not only the various gold deposits, but also the various gold processing techniques.

In South Africa, the gold database has been expanded by making it a legal requirement, as per the Precious Metals Act 37 of 2005 sect 22(1), for mining companies, as well as importers of gold, to supply samples to the SAPS FSL on a regular basis.²⁶ In terms of producers, the sample submission needs to take place every six months, cover the various shafts on the mine property and must comprise unprocessed and processed gold (Precious Metals Regulations, 9 July 2007). The gold database also includes gold obtained via donations

26 The Precious Metals Act 37 of 2005, Sect 22: "(1) Any producer or any person who imports precious metals must submit to the Forensic Science Laboratory of the South African Police Service such specimens of any precious metals produced or imported by him or her as may be prescribed.(2) The Head of the forensic Science laboratory or a person designated by him or her must create and maintain a database containing such information in respect of the precious metals contemplated in subsection (1) as may be prescribed."

from universities (visible gold specimens) and the Reserve Bank (doré gold). The main reason for regular submissions is that the nature of the gold, as well as the processing, changes over time, requiring the database to stay current. As stolen gold might only be recovered at a later stage, the database's old fingerprint information will stay relevant. At the time of writing, the SA Gold database had access to approximately 2500 reference samples from South African gold mines, and plans to be extended to include gold from other southern African countries.

According to published information, gold fingerprinting technology can distinguish between gold mined from various South African Witwatersrand mines and even accurately identify the shaft from which the material was mined (Anglo American Corporation, 1996). It also differentiates between gold processed in a refinery and illegal smelting processes, as the latter would traditionally have higher levels of certain impurities (Crundwell, 2008).

The use of forensic science and the gold fingerprinting technology is currently being tested in a South African court.

Gold fingerprinting challenges

Since the implementation of gold fingerprinting in the 1990s, the technique has been continuously updated and improved. Developments have been supported by advancements in computer programs to assist with data comparisons and interpretation, as well as the more general availability of instruments required to obtain chemical fingerprints (e.g. LA-ICP-MS). However there are still a number of challenges that need to be addressed.

Size of the database:

As mentioned, one of the biggest challenges is the size of the database, which ideally should cover as large a variety of deposit types as possible, different mines operating the various deposits, as well as the different products originating from the processes used. This would make it possible to counter any argument put forward stating that the gold came from another country. As this will be an impossible task, the argument can be countered by the prosecution requesting material from the mine the gold allegedly originated from and comparing that with the unknown sample. However, a large data bank will still be required to prove that gold from different areas exhibits different fingerprints, and that the technological principles of the technology are sound. This is especially important in cases where mines are operating on the same gold-bearing reef, which would make it very difficult to identify the exact mine from which the gold originated using only one or two samples.

Currently, two gold databases exist, one in South Africa and one in Australia. It would benefit the various law enforcement agencies and the industry if the databases would be made accessible for investigations on theft that occurred outside the borders of these two countries.

Costs of maintaining and expanding the database:

Submission, receipt of samples, sample preparation and analysis, entering information into the database and further development of the database is a costly exercise. In South Africa, this is a legal requirement and the cost currently rests with the SAPS FSL. The Precious Metal Act 37 of 2005 sect 22 not only ensures that samples are submitted by the various mining companies, but also places responsibility of maintaining and expanding the database with the SAPS FSL.

In Australia, the Chamber of Minerals and Energy industry made the decision that a gold database is not a priority (ABC News, 2006). The Chamber has withdrawn its sponsorship from the West Australian Police Forces Gold Stealing and Detection Unit, and as a result, the unit has closed down. However, with the support of the Centre for Forensic Science at the University of Western Australia, gold fingerprinting court cases concerning gold theft are still taking place on a case by case basis, and, according to John Watling (pers. comm., 29 January 2016), last year there were a total of 98 prosecutions and convictions.

Sample submission challenges:

Although a legal requirement, smaller mining companies are not necessarily aware of the need to submit samples, or do not have the proper processes in place for sampling the required gold-bearing material. Samples submitted need to be as representative as possible of the area mined. Samples of concentrates and doré gold are usually mixtures from various underground areas or even shafts, and, as such, are usually representative of the process.

Many South African operations have changed the names of their mines or individual shafts; additionally, there have been take-overs, mergers, etc. This makes it difficult to relate current database samples to those taken a few years ago, unless specific entries to this effect are made in the database. In Australia, samples taken for the gold database are linked to GPS coordinates, which would overcome this problem.

Equipment, expertise and manpower:

Although LA-ICP-MS is a fairly standard technique, sample preparation and operating the instrument does require analytical expertise. As mentioned earlier in this discussion, interpretation of the results necessitates knowledge, not only on the geology of the various gold deposits, but also on the various process that are used for gold extraction and how these impact the fingerprint of the exhibit. This combination of knowledge is relatively scarce and if the database needs to be further developed and used to drive the fight against theft and illicit trafficking of precious metals, proper manpower planning is required.

If the database concept is to be expanded to cover a larger number of gold producing countries, the creation of a specialised facility (or facilities) needs to be considered. Obviously the location, manpower and equipment requirements (etc.); capital and operating costs; and especially the funding mechanism will require careful consideration.

Platinum group metal products fingerprinting

Details concerning the application and developments on the fingerprinting of platinum-group metals containing products in the public domain are very scarce. Nevertheless, the identification of recovered mine and plant products is not a new concept, and has been put in practice by several mining houses (Perelygin et al., 2008; CIP Project report, 2008).

An upsurge in the prices of platinum group metals since the mid-1990s onward, resulted in an increase in the theft of platinum refinery and smelter products, and, unbeknown to each other, two of the major producers of PGM, Norilsk Nickel and Anglo American Platinum, started applying standard processes in a systematic manner to routinely identify recovered platinum products. These are the only PGM companies that developed fingerprinting systems.

Following several meetings and workshops, Norilsk Nickel, in collaboration with the Institute of Criminalistics of the Federal Security Service (ICFSS) of the Russian Federation, approached the European Network of Forensic Science Institutes to validate their Complex Identification Procedure (also referred to as CIP) from an analytical and forensic perspective. The Anglo American Platinum identification process was used for testing against the CIP. After the detailed validation process, the review board concluded that “the CIP is based upon accepted, reliable analytical methods.” The CIP was described as appropriate for the identification and source determination of Russian PGE-bearing materials (CIP Project Report, 2008). The review board recommended that development of the identification process continue and that “the CIP could be regarded as a starting point for development of methods by which consistent, comparable data can be obtained across the various producers.”

Both the CIP and the Anglo American Platinum process differ from the gold fingerprinting process in that they are based on a combination of chemical and mineralogical techniques. Although chemical data can be used to easily differentiate between products originating from the various platinum and nickel-PGE deposits using a combination of PGE-ratios and PGE contents, these deposits are commonly exploited by a number of mining companies producing similar intermediate and final products. Due to the variability in chemical element distribution within a mining area, and between mining areas, a comprehensive database of all ores from all deposits would be required to be able to differentiate between the various producers (CIP Project Report, 2008). Unfortunately, published information is limited and of variable quality. In practice, it has been found that a purely chemical fingerprinting technique is incapable of differentiating between products from operations in the same mining province.

Both the CIP and the Anglo American Platinum identification process use a systematic approach, commencing with chemistry to determine the main producing area, after which more detailed mineralogical techniques are used in an attempt to further identify the specific product and pinpoint the producer. Slight variations in processing between different producers in the same mining area result in small differences in the products' textures and compositions, which can be picked up by using specialised techniques. These techniques include a combination of X-ray diffraction, automated scanning electron microscopes and electron microscopes.

The CIP and Anglo American Platinum identification techniques are very similar, and the few differences between the identification processes are linked more to the differences in grade between primary platinum producers (such as the Bushveld producers) and those that have platinum group metals as a by-product (i.e. Norilsk Nickel), and differences in the precious metal extraction processes. Since 2006, there has been improved cooperation between Anglo American Platinum and Norilsk on the application and development of the process, with the companies exchanging reference materials and participating in inter-laboratory tests. The two different techniques are supplementary and compatible with each other, and, depending on the grades and type of product, either one or the other technique would be suitable for identifying the unknown. Both companies are also the custodians of the databases:

The Norilsk Nickel database, which contains information from 2004 onwards, comprises almost 18,000 samples, embodying information on over 170 “at-risk” product profiles (Norilsk Nickel products). It is updated twice per year. The Database mainly contains information on precious metals-bearing feed-stock, processed semi-products and final products of the Polar Division of PJSC MMC Norilsk Nickel and JSC Kola MMC. The materials which are most “at risk” are represented by about 100 batches of each product. These “at risk” products are rich in precious metals and are mainly from the PGM Concentrator of the Polar Division and the Chemical-metallurgical Section of JSC Kola MMC. All activity related to the Database, including its maintenance, updating, and use is the sole responsibility of the Chemical-Forensic Office of the Security Service (Norilsk Nickel).

The South African database is housed at Anglo American Platinum (on behalf of the SAPS FSL) and contains information on the typical “at-risk” products (smelter and converter mattes and feeds to the precious metal refineries) from the 4 largest producers on the Bushveld complex. The South African database is updated twice a year with new information and is slowly being extended to include lower grade products (including flotation concentrates from smaller operations). The South African database contains over 800 entries, covering production from 2007.

Application of the technique

The fingerprinting of platinum group metal-containing products has been applied in several court cases. Examples from both a South African as well as the Russian application are summarised below.

In 2009, a European Refining Company contacted the South African Police in connection with a consignment of dubious source, which they expected to be of South African origin. After detailed characterisation, the material was identified as products from 2 South African producers. The value of the consignment was calculated as USD 815,977. Based on the fingerprinting and other evidence, the court ruled in favour of SA’s allegations that the material originated from SA.

Also in 2009, and with the assistance of a European refining company, Norilsk Nickel provided evidence to the Criminal Court of Antwerp that the delivery of 2.8 tons of slimes to the refining company represented stolen material. The trading company involved was charged under Article 505 (legalization and laundering of criminally-obtained property) of the Criminal Code of Belgium. Having examined the evidence collected, the court found these sufficient to make a final decision and found the trading company guilty of the charge. It was fined €2000 and ordered to compensate Norilsk Nickel Group for legal costs, in the amount of €30000. The amount related to the value of the processed slimes (an amount of €150,000) was returned to Norilsk Nickel.

In 2012, sampling of a consignment suspected to represent South African Platinum products took place in Geneva. Full characterisation of the material identified the product as a mixture of smelter products, and it was possible to determine the provenance of the material as coming from a specific Bushveld producer. The value of the consignment was calculated as USD 533,000. The case, which has not yet been concluded, highlighted the following issues:

- Double incrimination: for States to judicially cooperate with one another, a condition is that the charges in the case must be considered a crime in the requested State. If the requested State does not have illegal exploitation of natural resources or illicit trading of metals in its legislation, this may create problems if these are the only crimes mentioned in the request for judicial cooperation. Lesson learned: also include in a request for judicial cooperation other criminal behaviour, such as fraud, theft, forgery of documents, and money laundering.
- The transportation of precious metals can be very fast, and therefore sending and processing of judicial cooperation requests must be swift.

- When seizing precious metals, the (illicit) origin of the precious metal containing product(s) must be confirmed; otherwise, there is no legal ground for them to be seized: the quick and efficient assistance of the requesting State is essential in order to determine the illegal origin of the precious metals.
- The seized metals can often only be returned once there is a final confiscation order issued in the requesting State. It is important that the criminal proceedings progress, and where there is a conviction, that the subsequent confiscation order is issued (Miriam Spittler, Swiss Attorney, Deputy Federal Prosecutor, pers. comm., 1 December 2015).

Platinum group metal products fingerprinting challenges

Size of the database: Combined, the two databases cover a large percentage of the total annual platinum and palladium production.

However, the South African database only extensively covers three products of the four largest producers, and does not include any of the products derived from the intermediate process. If any of the intermediates (and there are many areas from which intermediate products could be stolen) form part of the unknowns, specialist knowledge would be required to assist with the identification. In these cases, current reference samples from the likely source(s) would have to be collected for a direct comparison. As for the gold fingerprinting process, expert knowledge on the various processing techniques would be essential in this regard. The database is slowly being expanded to include flotation products involving the smaller PGM producers. These products are usually toll-smelted at one of the larger producer's operations. With the larger producers also either smelting or refining products from the Great Dyke in Zimbabwe, the database also includes Great Dyke producer data.

The Norilsk Nickel database only covers Norilsk Nickel products, and high-grade precious metal products from other producers in Russia are not represented in the database.

Extending the database to include the various deposits from North America as well as China (see heading "Gold and Platinum mine global distribution") should be considered. In this case it is recommended that the work of Schouwstra (Appendix 8, CIP Project, 2008), which summarised the differences in the converter matte products from various producers, is used as a starting point. With the smelter products being one of the more easily identifiable 'at-risk' materials, the expansion of the database should focus on the smelter products. Once the smelter product database has been established, the database could be further expanded by including the other 'at-risk' products, such as the high-grade refinery feeds.

Costs of maintaining and expanding the database: As for the gold database sample submission, receipt sample preparation and analysis, entering information in the database and further development of the database is a costly exercise. In terms of the fingerprinting of PGM products, the costs are significantly higher due to the use of specialised mineralogical instruments and techniques. In South Africa, the costs are borne by Anglo American Platinum, who has undertaken to drive this process on behalf of the SA producers. Anglo American Platinum is carrying also the cost of the independent expert that has been appointed by the SAPS to assist the FSL with investigations. The cost of developing and maintaining the Norilsk Nickel database rests with Norilsk Nickel, who have a team of experts dedicated to the database and fingerprinting investigations.

Sample submission challenges: In South Africa, the submission of products is a legal requirement. This is currently restricted to imports (hence the database includes products originating from the Great Dyke of Zimbabwe, which are smelted or refined in South Africa), smelter products and refinery feeds. A recent trend in the theft of flotation concentrates will necessitate the expansion of the database to include concentrator products (this will increase the costs associated with the database as well). In order to include samples from products from North America, China and other Russian products will most likely require the assistance of the IPA and government institutions.

Equipment, expertise and manpower: PGM product fingerprinting is a more elaborate process than gold fingerprinting and requires experts on analytical chemistry and mineralogy and instrumentation. According to the CIP Review board, "effective interpretation of the characterisation results within the context of legal casework requires specialist knowledge and an understanding of the mining and beneficiation of PGE-bearing materials." This is even more important where the products are intermediates or mixtures of various products, and in situations where the materials do not fully match those in the database because of undocumented variation (CIP Project report, 2008).

As stated in the summary on gold fingerprinting, this combination of knowledge is relatively scarce. To worsen the situation, both databases and experts involved in the investigations are supported by mining companies and are therefore not always seen as independent experts. In South Africa, the expert used is an independent consultant contracted by Anglo American, while in Russia the experts are employed by Norilsk Nickel.

A possible solution for ensuring that the forensic investigations are seen as independent and unbiased is to set up a specialised facility, combine and expand the databases, and further develop methods to improve the characterisation techniques. As there are similarities with gold fingerprinting, the process could be combined, reducing the overall requirements in analytical and forensic expertise and instrumentation. As mentioned earlier, the location, manpower and equipment requirements, capital and operating costs and especially the funding mechanism will require careful consideration.

Section four: risk assessment and way forward

Strength-Weakness-Opportunities-Threats (SWOT) analysis

Based on the information collected and analysed in this report, a comparative SWOT analysis was developed to assess and evaluate the capacity of countries and institutions to counter illicit trafficking in precious metals. The SWOT analysis takes into account internal and external factors, and combines the strengths and weaknesses of the current international precious metal environment with the opportunities and threats related to the precious metal supply chain process. The analysis is aimed at assisting in setting up the second phase of the project, which has, as a key objective, the implementation of an international strategy to demonstrate how a comprehensive system can effectively prevent and combat illegal mining and trafficking, associated crimes and harmful social conditions. The SWOT analysis was grouped into four different subject areas:

- **Legislation:** covers the laws, regulations and conventions in place at the national and international levels to control and administer the mining, processing and trade in precious metals.
- **Enforcement:** refers specifically to the protection of the precious metal supply chain by the law enforcement systems in place in a country, which includes protection of mines and refineries by company security. The prevention and investigation of crimes requires awareness, capacity, specialized knowledge by police, border control and forensic laboratory staff and equipment. Public-private partnerships, as well as mechanisms to prevent and investigate cross-border crimes, are part of the enforcement analysis.
- **Judiciary and prosecution:** a strong legal and enforcement system is the first step in preventing and securing the precious metals supply chain. The probability and efficiency of prosecution and sentencing are the next determining factors in the fight against precious metals-related crime. The analysis assesses the knowledge and capacity of the judiciary related to the illicit trafficking in the precious metal supply chain. Instruments such as asset forfeiture, restitution to victims and appropriate sentencing serve as important aspects that are evaluated.
- **Prevention:** the presence and importance of ASM for certain regions or countries, and the exploitation by criminal networks or militant groups, need to be assessed. This includes the existing certifications systems and applicability to specific regions or countries.

The full assessment and SWOT analysis are available in Annex III. They highlight many gaps, varying from jurisdictional loopholes along the supply chain, general supply chain weaknesses, gaps in law enforcement capacity, a lack of sharing of information among national agencies and international organisations, and knowledge and training. To close these gaps, optimise the tools available, and develop additional tools for combating the illicit trade in precious metals, it is recommended that an effective and appropriate precious metal regulatory system is established and implemented to prevent, detect and combat the illicit trade and trafficking of precious metals and associated criminal activity. The following specific objectives are crucial for developing comprehensive systems to combat trade and trafficking in precious metals:

- Reinforcing national capacities for comprehensively securing the integrity of the precious metals supply chain.
- Reinforcing cooperation between the Private and Public sectors.
- Enhancing knowledge and awareness of identified threats and the effectiveness of countermeasures in place.

Establishing an international mechanism to secure the integrity of the precious metals supply chain (a National Precious Metals Action Plan). Although an objective on its own, the Plan will support the first three mandatory objectives. The framework for this action plan is discussed below.

Although not part of this assessment, it is quite evident that many of the problems experienced in the diamond and gemstone industry are not that dissimilar to what is being experienced in the precious metals industry, and the implementation of a precious metal regulatory system could be extended to include the former.

Conclusions and way forward

International strategy to promote security and integrity of the precious metals supply chain

To ensure that the various and distinctive efforts are incorporated into one coherent approach to build and strengthen national precious metals regulatory capacities for a comprehensive enforcement response, it is proposed that an international strategy is established.

The strategy, based on the findings identified in the assessment, is mainly aimed at preventing and combating illegal mining and trafficking, associated crimes, and harmful social conditions (including the exploitation of women and children in the mining sector). It entails four specific objectives:

1. Reinforce national capacities for comprehensively securing the integrity of the precious metals supply chain.
2. Reinforce cooperation between the Private-Public sectors.
3. Enhance knowledge and awareness of identified threats and effectiveness of counter-measures in place.
4. Establish an international mechanism to secure the integrity of the precious metals supply chain.

The above-mentioned objectives can be reached through the following methods and means:

1. Reinforce national capacity for comprehensively securing the integrity of the precious metals supply chain
 - Needs assessment (at national / regional level) to develop a tailored technical capacity building package including training, development, adaptation and testing of tools, harmonization of policies and procedures.
 - Possible establishment of a national / regional team to coordinate efforts and establish synergies at local level in securing the precious metals supply chain.
2. Reinforce cooperation between Private-Public sectors
 - Develop standardized procedures and tools for communication and information sharing between governments, customs, LEAs, the private sector and civil society representatives and improve transparency and security of the precious metals supply chain.
 - Increase public awareness and reinforce political commitment, governmental endorsement and private sector engagement to ensure sustainability of the initiative.

3. Enhance knowledge and awareness on threats to supply chain security and possible counter-measures
 - Analyse data to identify threats and effectiveness of counter-measures in place.
 - Produce and disseminate info/results and support decision makers in producing informed policies on security in the precious metals supply chain.

4. Establish an international mechanism to secure the integrity of the precious metals supply chain, and ensure that, through a traceability system, metals are mined and sold by legitimate operators and that appropriate exports' revenues are transferred to the producing countries
 - Increase public awareness and reinforce political commitment, governmental endorsement and private sector engagement to ensure sustainability of the initiative.

To implement this international strategy, UNICRI in cooperation with OECD has prepared an Action Plan composed of 6 actions:

1. National Risk Assessment.
2. Regional Lab.
3. Data Analytics.
4. Financial Impact Assessment.
5. Training.
6. Table-Top Exercise.

In Annex IV an example is provided on how to develop a National Precious Metals Action Plan,²⁷ which should be regarded as an assessment tool for identifying a consolidated set of priorities to enhance national capacity. For further information on the Action Plan, please contact UNICRI.

Concluding remarks

Published information, supplemented by information obtained via interviews with government departments and the precious metals industry, confirms that the precious metal supply chain is exploited at various levels by illegal miners, organised criminal groups, rebel groups, etc., with some of the proceeds possibly used to fund terrorism.

The assessment also highlighted other crimes associated with these illegal activities, such as violent crimes, human trafficking, human rights violations, environmental transgressions, and many more.

A good measure of the extent of the problem, the losses being experienced by the industry, and the cost to industry and governments to address risks resulted difficult to obtain. However, it is quite clear that the problem has a negative impact on the profitability of the industry, royalty payments, revenue, taxes, etc., and reduces the money available to the industry, as well as governments, for socio-economic uplift projects.

Several international tracking, certification and due-diligence schemes are in operation. However, most of these schemes were established to bring an end to the exploitation of mineral resources, used as a mechanism for funding conflicts in the Great Lakes Region. These schemes were not designed to combat the theft and global trade in precious metals. Furthermore, non-governmental organisations accuse companies

²⁷ The development of this section was based on various sources, among which it is relevant to mention the 'Strengthening the Legal Environment for the Elimination of Falsified and Substandard Medicines: Uganda Report' published by the World Bank, UNICRI, IDLO, O'Neill Institute in 2015, and the 'Wildlife and Forest Crime Analytic Toolkit' (2012), prepared by UNODC with the support of CITES, INTERPOL, WCO and the World Bank.

of only paying lip service to the due-diligence requirements advocated by these schemes.

As an illegal practice, the theft, trade and trafficking of precious metals is occurring external to the legal supply chain, and only enters the legitimate process as close as possible to the finished product. As such, identifying the product as stolen and determining the original producer or producing country is a complex task. This problem is being dealt with by using forensic ‘fingerprinting’ techniques, which are practised in South Africa, Australia and the Russian Federation. These techniques rely on a database of products from various mines and areas, which are used for comparison purposes. If these techniques are to be applied to other producing countries, the databases will need to be enlarged.

The assessment also revealed weaknesses in legislation, law enforcement and judicial systems that make it difficult to decisively combat theft, illicit trade and trafficking in precious metals. In order to improve responses to threats associated with the precious metal supply chain and allow for effective regulation and control, transnational investigations into transgressions, in terms of the precious metal regulatory system and successful prosecution, the following three areas would need consideration:

- An all-inclusive and complete set of legislative provisions within the State, providing relevant administrative and enforcement powers to the various competent authorities, needs to be developed. This will allow the various authorities to effectively regulate and administer the precious metal supply chain.
- Provision of sufficient and sustained resources to various competent authorities in order to enable them to carry out their assigned functions.
- An appropriate response to the precious metals incidents (i.e. notifying the competent authorities of an incident involving precious metals; investigate, prosecute and obtain confiscation orders in terms of asset forfeiture procedures).

A preliminary SWOT analysis at the end of this assessment highlights a number of strengths and weakness as relate to effectively combating threats to the precious metal supply chain. The opportunities identified during that process led to the development of a framework for introducing the concept of a National Precious Metals Action Plan. This plan is anticipated to bring about the establishment and implementation of a mandatory legal mechanism, which will ensure compliance with the precious metals regulatory framework.

Annex I: gold and platinum processing

Gold processing

Gold occurs in a variety of rock types and different mineralisation styles, varying from high grade visible gold in quartz veins, to “invisible gold” occurring as inclusions in various sulphide minerals. Special extraction methods have been developed and optimised for these different mineralisation styles. This chapter presents background information on these processes as they are relevant to the later discussions on the theft, trade and the various initiatives to counter illicit trafficking in precious metals.

Mining: Mining of gold takes place in hard rock as well as in unconsolidated sediments (placer mining). Hard rock mining can take place as open pit mining where deposits occur close to the surface or underground for deeper or more steeply dipping reefs / veins.

Hard rock mining requires larger and more costly equipment. As a result, this is normally the domain of medium and large mining companies. In virtue of larger scale operations and using more technical extraction methods and processes, these producers are able to mine lower-grade material.

In many of these hard rock deposits, gold occurs together with sulphides (either as tiny inclusions or attached to the sulphides), and after crushing and milling, the process usually involves an upgrade of the heavier sulphide minerals by flotation. This results in a sulphide-rich concentrate, which also contains gold. If larger (when visible gold flakes are present in the deposit) the flotation process may be preceded by a gravity process (tables, Knelson concentrator, or other gravity concentration techniques) in order to take out the coarser gold.

The flotation concentrate can be treated in various ways. At one stage, breaking down the sulphides to expose the tiny inclusions of gold was performed by using a roasting process. It involved the heating up of the concentrate, driving off sulphur (and other elements such as arsenic), which resulted in an iron oxide rich material that could then be leached to extract the gold. Although still practised, greener options have been developed, such as ultra-fine milling, high pressure oxidation and bacterial leaching to break down sulphides and expose gold. There are many variations of this process, such as heap leaching, where the crushed ore is stacked in heaps and the lixiviant is sprayed on and percolates through the heap slowly dissolving the gold, which is then recovered. For some deposits (such as most of the Witwatersrand ores in South Africa) the total gold bearing reef is milled and leached to extract the gold.

Despite many developments in the gold industry, most gold extraction and recovery processes are based on cyanide chemistry. This process was first commercially applied in the late 1880's on the Witwatersrand deposit as the deeper, fresh (non-oxidised) ores were more refractory and required a different method for extracting gold. Prior to the use of the cyanidation process, the miners used the amalgamation method, where gold was extracted by mixing the crushed ore with mercury to form a gold-mercury amalgam (Buranelli, 1979). Vaporising mercury by heating the amalgam in a furnace left a gold-rich product behind, which could then be further purified by smelting.

Gold dissolved during the cyanidation process is usually extracted from the leach solution using activated carbon. Both the carbon-in-pulp (CIP) and carbon-in-leach (CIL) processes are common in the industry. The carbon (commonly coconut shell charcoal) has a high surface area due to its microporosity and can recover more than 99.5 % of the dissolved gold (as a gold cyanide complex) in an 8 to 24 hour time period. Where other metals interfere with the process, specially developed ion exchange resins can be used (polymers).

The loaded carbon (typically 4000 to 8000 g/t) is stripped by a process called elution (usually using a hot caustic aqueous cyanide solution) and plated onto steel wool (cathodes) using an electro-winning process. Acid burns off the cathodes and other absorbed metals (such as copper) and leaves a gold sediment, which is further cleaned, dried and smelted to form a doré bar. The carbon can be re-activated and re-used.

Although the cyanidation process is used worldwide with great success, it is not always effective in extracting gold from ores containing naturally occurring carbonaceous material, which absorbs the gold cyanide complex in a similar manner as activated carbon. The toxicity of cyanide has been also a concern for a long time, leading to the development of other, less toxic lixiviants, the most common being thiourea and thiosulfate. However, these lixiviants are also toxic (thiourea is classed also as a carcinogenic) and all require safe handling and user practices (Hendrix, 2009).

Placer mining differs from hard rock mining in that it involves the extraction of gold from unconsolidated gravel, sand and soil. Placer mining requires less technical knowledge and equipment, and, as a result, many artisanal (and illegal) operations concentrate on placer mining. Techniques used to recover gold are all gravity methods, making use of the high density of gold compared to that of the associated materials. Gold-bearing material can be scooped from these unconsolidated materials using simple tools such as spades, excavators and dredges. The gold is then recovered from the material by washing away the lighter soil, sand or gravel, leaving a gold-rich concentrate behind. Methods for concentrating the gold include panning, blankets, rockers, sluice boxes, and trommels. Depending on the scale of the operation the equipment used can be quite sizeable and advanced. Once the gold has been concentrated it can either be smelted (gold from alluvial placers can be very pure), extracted using mercury (amalgamation) or leached and recovered using a cyanidation process or equivalent. Low-tech operations (such as ASM) usually sell their products as is, or make use of an amalgamation process resulting in health and environmental issues.

Platinum processing

Platinum placer deposits do occur, but they are rare and usually of a limited size. Small amounts of platinum group minerals do occur in gold placers. However, as they do not react with mercury, these minerals are quite easily separated. In alluvial platinum deposits, gravity methods are employed to concentrate the platinum group minerals, which are then subject to further refining and smelting. Colombia is the largest producer of alluvial platinum and produced 8,359 ounces in the 2011 fiscal year (Condoto Platinum).

Hard rock mining of platinum (as well as the nickel operations which produce platinum as a by-product) is dominated by underground operations with some companies mining from surface operations before moving underground. The Mogalakwena mine on the Bushveld region (Southern Africa) is the largest open cast mine of South Africa and produced 357,000 ounces in 2014 (Anglo American, 2014b). The Bushveld reefs mined average between 3 to 6 g/t 4E (platinum, palladium, rhodium and gold) with copper and nickel values less than 1 %. Platinum group metals values in the massive sulphide ores from base metal operations can be of a similar order, but with a much higher base metal (sulphide) content.

The initial processing stages of all major platinum producers are similar, with the ore being crushed and milled before the sulphides and platinum group minerals are concentrated using a froth flotation process. Concentrates are sent to the smelter operation for further separation of the value minerals from the unwanted gangue. The furnace matte from the smelter, which has now been upgraded to a fairly high grade product containing mainly nickel, iron copper and sulphur, with less than 1% platinum group metals is transferred to a converter operation, where most of the iron and a large percentage of the sulphur are removed. This further upgrades the platinum group metals content. Most producers granulate their converter matte whereas others slow-cool their converter matte in ingots before further separation of the base metals from the platinum group metals. From here on, the process followed by different producers varies.

For primary producers, the converter matte is further treated at a refinery operation where most of the base metals are removed. The resultant high-grade product, containing ~50 % of platinum group metals, is then further treated via a refinery operation. Here the various metals are separated using complex dissolution and precipitation processes to produce pure platinum group metal products.

Companies producing PGM as by-products also use a froth flotation process, but due to the higher base metal sulphide content, the PGE grade of the sulphide flotation concentrates has a much lower 4E content

compared to that of primary producers. This tenor remains throughout the subsequent process up to the precious metals refining stage. Some companies produce copper and nickel rich concentrates which are treated separately.

Flotation concentrates are usually smelted and converted to form a converter matte. Subsequent processing focuses on the removal and recovery of the base metals. The residue from the base metal operations (which contains the platinum group metals) is usually shipped to an independent refining operation for further upgrading and separation of the various platinum group metals (cf. heading “Large, medium and artisanal and small scale mining”).

Annex II: brief description of international initiatives

The Kimberley Process Certification Scheme (KPCS)

The Kimberley Process Certification Scheme (KPCS) is a joint government, industry and civil society initiative to stem the flow of conflict diamonds (also known as blood diamonds) - rough diamonds used by rebel movements to finance wars against legitimate governments.²⁸ Started by Southern African diamond producing states in 2000, and supported by the United Nations, the KPCS was created in 2002 and entered into force in 2003. Although the scheme is only applicable to diamonds, it is summarised here as it was the first scheme founded to curb “illicit trade”.

The scheme is an import-export certification scheme, requiring participating members to certify shipments of rough diamonds as “conflict-free” and prevent conflict diamonds from entering the legal supply chain. It is a “self-regulation” scheme, and participating states must put in place internal control systems, import and export authorities, amend and enact appropriate laws or regulations to implement and enforce the KPCS, while also committing to transparency and the exchange of statistical data (Economic Commission for Africa, Kimberly Process Certification Scheme Core Document, 2013).

Participants can only legally trade rough diamonds with other members. International shipments of rough diamonds must be accompanied by a KPCS certificate guaranteeing that they are conflict-free. The KPCS has 54 participants, representing 81 countries (the European Union and its Member States counts as a single participant). The membership represents approximately 99.8% of the global production of rough diamonds. The World, representing the international diamond industry, and civil society organisations, such as Partnership Africa Canada, participate in the KPCS and have played a major role since its outset.

The Organisation for Economic Co-operation and Development (OECD) Due Diligence Guidance

OECD provides a forum for governments to share experiences and seek solutions with the final aim of promoting policies that will improve the economic and social well-being of people around the world. The OECD Due Diligence Guidance (OECD DGG) for Responsible Supply Chain Management of Minerals for Conflict Affected and High Risk Areas was adopted and approved in 2010, and amended in 2012 to include a reference to the supplement on gold. The standard is not binding, but reflects the common position and political commitment of OECD members and non-member-adherents (OECD, 2013). The standard covers the three T’s (tin, tantalum and tungsten) and gold, but supplements on other minerals may be added if necessary. Recycled metals are excluded from the scope of the standard. Originally developed taking the experiences in the Great Lakes region into account, the standard is applicable to any other conflict-affected or high

28 Further information on the Kimberley Process Certification Scheme (KPCS) is available on the Kimberley Process website: www.kimberleyprocess.com/

risk area. High risk areas are defined by the OECD (2013) as “areas of political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure and widespread violence”. These areas are often scourged by human rights abuses and violations of national and/or international law.

The Guidance supports transparency in the mineral supply chain and sustainable corporate engagement in the minerals sector to enable countries to benefit from their natural resources without the extraction and trade in minerals contributing to conflict, human rights abuse and insecurity issues (OECD, 2013).

The guidance advocates a five-step framework to be incorporated into company supply chain management systems to address actual or potential risks with sourcing from conflict - and high risk affected areas or suppliers sourcing from these areas (OECD, 2013; Economic Commission for Africa, 2013).

Endorsed by the 34 member countries, as well as the 11 Great Lakes Region countries, the UN Security Council and 7 non-member countries (including Brazil, Peru and Argentina), the Guidance supports the use of other initiatives, such as the International Tin Research Institute (ITRI) Tin Supply Chain Initiative (iTSCi), the Conflict-Free Smelter Program, the Conflict-Free Gold Standard, and the Chain-of-Custody Certification (OECD, 2013). The guidance recommends that countries adherent to the recommendation should “actively promote the observance of the Guidance by companies operating in or from their territories and sourcing minerals from conflict-affected or high risk areas” (OECD, 2013).

To conform to the OECD DDG, the Dubai Multi Commodities Centre (DMCC) issued the “Practical guidance for market participants in the gold and precious metals industry” in April 2012 (DMCC, 2012). The guidance, which has been mandatory from June 2012, assists DMCC licensed members and other industry participants in the UAE in imposing responsible supply chain management and due diligence when sourcing gold and precious metals from conflict-affected and high-risk areas. The guidance incorporates the 5 step OECD framework (DMCC, 2012).

In cooperation with the OECD, the Chinese Due Diligence Guidelines for Responsible Mineral Supply Chains were launched on 2 December 2015 in Beijing. The China Chamber of Commerce of Metals, Minerals and Chemicals Importers & Exporters worked closely with the OECD in preparing the Guidelines, which have benefited also from the public, industry organisers and select stakeholders inputs. Although it is currently a voluntary program, it provides the opportunity for Chinese companies to align their due diligence practices with international standards and benefit from mutual recognition with existing international initiatives and legislation. The Guidelines are applicable to all Chinese companies that are extracting and/or using mineral resources and their related products, and are engaged at any point in the supply chain of minerals (OECD, Guidelines for Multinational Enterprises, 2011).

Amendments to a proposal for a “Union system for self-certification of importers of certain minerals and metals originating in conflict-affected and high-risk areas” were adopted by the European Parliament in May 2015. The Regulation itself is based on the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Due Diligence Guidance) and the Dodd-Frank Act (cf. heading “6.1.16 The Dodd-Frank Act (sec 1502)”).

The Protocol against the illegal exploitation of natural resources

The Protocol, agreed by the heads of State and Government attending the International Conference on the Great Lakes Region at the end of 2006, supports the development of effective mechanisms to prevent, curb and eradicate the illegal exploitation of natural resources. Furthermore, it aims to intensify and revitalize cooperation among Member States, with a view to achieving more efficient and sustainable measures against the illegal exploitation of natural resources, and to promote the harmonization by Member States of their national legislation, policies and procedures against the illegal exploitation of natural resources (International Conference on the Great Lakes Region, Protocol against the Illegal Exploitation of Natural Resources, 2006).

The Lusaka Declaration (15 December 2010) specified six complimentary tools serving as control mechanisms to eradicate the main source of funding sustaining violent conflict in the region, these are:

- The creation of a regional certification mechanism for natural resource supply chains.
- The harmonisation of national legislation in member states.
- The construction of a regional database on mineral flows.
- The formalisation of the AMS.
- The promotion of the Extractive Industries Transparency Initiative (EITI) peer learning mechanism.
- The establishment of a whistle blowing mechanism (Economic Commission for Africa, 2013).

A regional certification mechanism is seen as an important tool for combating the illegal exploitation of natural resources. Article 11, entitled Mechanism for the Certification of Natural Resources, of the Protocol against the Illegal Exploitation of Natural Resources states clearly that the mechanism shall include “provisions on certification of origin including labelling, monitoring, supervision, verification and implementation, and as appropriate, capacity development and capacity building, with a view to ensuring the efficiency of such mechanism”.

In response to this, Partnership Africa-Canada proposed the implementation of a regional Certification Mechanism for monitoring the supply chain of conflict-prone minerals. The principles of the system draw on lessons learned from other tracking schemes (proposed or implemented) and are grounded also in the articles of the Protocol (Partnership Africa-Canada, 2011). The scheme is known as the International Conference of the Great Lakes Region (ICGLR) mineral tracking and certification system.

The International Conference of the Great Lakes Region (ICGLR) mineral tracking and certification system

The ICGLR certification scheme is based on a number of principles. These principles address transparency (publicly available data to harness public and civil society as watchdogs), and places most of the application on industry (responsibility for the verification of the supply chain, the application of penalties, and mandatory third party audits). To increase compliance and reduce costs, the principles allow for adaptation of current systems, where possible, and should allow for the development and incorporation of new standards into existing tracking and certification frameworks. It applies the OECD Due Diligence Guidance System to support sourcing decisions (OECD, 2013).

As for other schemes, the system requires chain of custody tracking (each sack or load) from mine sites, via trading centres, to the point of export. At this point, a certificate of origin is issued once the chain of custody has been confirmed (once in place this would be an ICGLR regional certificate). Data will be computerised to allow for regional tracking of the mineral flows via an ICGLR database. Regular third party audits and independent investigations into problems and irregularities will be performed as required.

The database is a key element in the system and will not only track, but also reconcile mineral flows. Balancing exports and imports, and purchases and sales, across the whole supply chain the database will account for all minerals produced, traded within and exported from the region. This will make it possible to highlight irregularities and should negate the possibility of minerals being smuggled into or out of the region (Partnership Africa-Canada, 2011).

The Dodd-Frank Act (sec 1502)

The USA introduced the Congo Conflict minerals Act (S.891) in April 2009, and the Conflict Minerals Trade Act (H.R. 4128) in November 2009 (Partnership Africa Canada, 2011). Elements from these two Acts were later combined and added to the Dodd-Frank Wall Street Reform and Consumer Protection Act, which was signed

into law on 21 July 2010. The provision on conflict minerals (Section 1502 of the Act - 111th Congress of the USA, 2010) imposes legal obligations with regard to due diligence measures by companies listed on the US Stock Exchanges dealing with the 3T's, Gold (Economic Commission for Africa, 2013) and also gemstones. To ensure greater transparency, companies must report to the US Securities and Exchange Commission (SEC) on the due diligence conducted with respect to the source and chain of custody of these "conflict" minerals, provide an independent audit of the report, and supply information concerning, for example, the products manufactured containing "conflict" minerals, processing facilities used, country of origin, and efforts to determine the mine or location of origin "with the greatest possible specificity". All information must be made publicly available on the company's website.

In August 2012, the US Securities and Exchange Commission recognised the OECD DDG as an international framework for due diligence measures undertaken by companies that are required to file a conflict minerals report.²⁹

The German Federal Institute for Geosciences and Natural Resources (BGR) Certified Trading Chains and Analytical Fingerprint Technology

Over many years, the mining of columbite and tantalite (coltan) in Central Africa has contributed to violent conflict in the region. Much has been written on the exploitation of ASM, child labour and lack of safety and environmental standards (Bleischwitz et al., 2012; BGR, 2008).

Following several studies the German Federal Institute for Geosciences and Natural Resources (BGR) and the Rwanda Geology and Mines Authority (OGMR) piloted the Certified Trading Chains Initiative (CTC) in March 2009. The CTC covers the tin, tungsten and coltan supply chain. As for most other schemes, the CTC is a voluntary system of self-commitment by the partners in the trading chain. The CTC aims to increase the contribution of the minerals sector to poverty reduction and the political stabilisation of developing nations, but at the same time also seeks to stabilise the supply of minerals for the processing industry (BGR, 2008). Based on 5 principles, 21 standards determine the level of compliance (the standards include gender issues and the handling of influx migration). The standards have been developed in compliance with national law, and companies involved in the CTC must comply with or exceed the requirements of the host-country laws and regulations. Compliance is audited by an independent third-party. The CTC is based on the OECD initiative and is compatible also with the ICGLR initiative.

Given the importance of mineral tracking in light of the requirements set out by the USA's Dodd-Frank Act (cfr. point "q" of this list), the CTC scheme requires companies to have a perfect score with respect to the mineral tracking requirement.

To support the process, the BGR have developed an analytical fingerprint procedure (AFP) to verify the origin of the various coltan products or concentrates along the trading chains.³⁰ The BGR is in the process of extending the AFP and database to tin and tungsten concentrates. The cost of the AFP technology means that it cannot be used as a routine method, but will only be applied in extraordinary circumstances (Economic Commission for Africa, 2013). The fingerprinting initiative is currently funded by the German Federal Ministry for Economic Cooperation and Development.

²⁹ Further information is available on OECD website: www.oecd.org/corporate/mne/mining.htm

³⁰ Further information on the BGR Analytical Fingerprint is available on the BGR website: www.bgr.bund.de/EN/Themen/Min_rohstoffe/CTC/Analytical-Fingerprint/analytical_fingerprint_node_en.html

The International Tin Research Institute (ITRI) Tin Supply Chain Initiative (iTSCi)

The International Tin Research Institute (ITRI) is an association made up of cassiterite traders and tin smelters. In response to market campaigns in the electronics industry, the London based association has initiated the ITRI Tin Supply Chain Initiative (iTSCi). As for other industry driven initiatives, recommendations must be adopted by members who also need to establish the essential management systems for compliance.

The iTSCi conforms to the OECD DGG, and also takes into account the recommendation of the UN Security Council on due diligence concerning criminal networks and armed groups. The iTSCi has three components, namely chain of custody data collection (traceability), risk assessment, and independent third party audits.³¹

Member's mine-sites (medium, small and artisanal), traders (mineral purchasers), re-processors and smelters have been registered and licensed (Partnership Africa-Canada, 2011). Mine sites and supply chain operators (including the general operating context and transportation routes) are subjected to risk assessments by an independent party. Companies are required to publish their policy concerning conflict minerals, due diligence practices and risk mitigation. Minerals are tracked from the mine site using tamperproof bags with bar-coded tags. Detailed data are entered into log books and later fed into the iTSCi database, providing a record of the tagging process and the additional data required by the OECD DDG. Data included in the database cover the following: mine site, processor/negotiant, exporter/comptoir, transporter, date and time, tag numbers, weight, buyer, price, transportation route, transport method, security and any further notes. This makes it feasible to present a detailed analysis of the supply chain providing complete traceability from mine to smelter.

All members of the iTSCi are audited by an iTSCi auditor, while smelters will be audited by the CFS (EICC®-GeSI Conflict-Free Smelter Assessment Programme).

The initiative was first piloted in the eastern DRC in 2010, but had to be put on hold due to a DRC Government-imposed mining suspension from September 2010 to March 2011 (Matthysen and Zaragoza Montejano, 2013, p. 50). The iTSCi has been implemented in Rwanda and the southern DRC province of Katanga, and may be extended to Burundi and Uganda depending on funding.

The Conflict Free Smelter Program(CFSP)

The CFS Program is part of the Conflict Free Sourcing Initiative (CFSI), which was founded by members of the Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI) in 2008. The CFSP is also a voluntary initiative in which smelter/refiner procurement and tolling activities are audited by an independent third party. The due diligence focuses on the identification of country of origin and the transport and transit system for the minerals in the supply chain. An annual re-audit is required to verify continued compliance with the Program protocol. The program focuses on mining material, recyclable material and existing stocks (prior to 2012). Mined gold from countries with a known conflict-history requires a more detailed due-diligence process. The possibility of smuggled and hidden gold (mixed with legal products) entering the chain as mined gold, by-product gold, or recycled material needs to be assessed (The Conflict Free Sourcing Initiative, 2012).

The program provides downstream customers with verified information about the smelter's/refiner's sourcing activities, enabling companies to source conflict-free minerals. The program conforms to the OECD DDG and Dodd-Frank reporting requirements.

The CFS program covers gold as well as tantalum, tin and tungsten smelters. Currently the website lists 77 gold smelters/refiners as compliant, with another 12 starting the audit process.³²

31 Further information on the iTSCi project is available on the ITRI website: www.itri.co.uk/index.php?option=com_zoo&task=item&item_id=2192&Itemid=189->

32 Further information is available on the CFSI website: www.conflictreesourcing.org/conflict-free-smelter-program/active-smelters-and-refiners-testing/>

The World Gold Council Conflict-free Gold Standards

The World Gold Council, regarded as the market development organisation for the gold industry, introduced the concept of the Conflict-Free Gold Standard in 2011 in reaction to the notion of gold fuelling armed conflict, funding armed groups and contributing to the abuse of human rights associated with such conflicts (World Gold Council, 2012). According to the World Gold Council (2012) the actual proportion of newly mined gold potentially implicated in financing unlawful armed conflict probably amounted to less than 1% of the total annual gold production.

The Standard, published in October 2012, provides a common approach, increasing trust and transparency in the gold supply chain by demonstrating that the gold produced is conflict free and not tainted by human rights abuse (Economic Commission for Africa, 2013). The standard applies to World Gold Council members, but is available for use by any party involved in the extraction of gold. It requires companies to annually disclose their conformance with the Standard. The disclosure requires auditing and an independent assurance report (World Gold Council, 2011, 2012; PwC 2012). As such, it responds to both the Dodd-Frank Act and OECD requirements (Economic Commission for Africa, 2013).

The Standard is split into five sections, starting with a conflict assessment. This relies on guidance from an appropriate body (such as the Conflict Barometer produced by the Heidelberg Institute of Conflict Research) that defines certain areas as being “conflict-affected or high-risk”.

A company assessment is required where the operation is in a high-risk area. It will have to demonstrate whether the company has the appropriate policies, systems and skills to operate in a responsible, accountable and transparent manner. The assessment includes its commitment to human rights, security aspects, payments and benefits-in-kind, and community engagement processes.

The commodity assessment focuses on the nature of gold production and control of gold at the operational stage (including steps taken to prevent theft) and due-diligence undertaken on transport providers.

Where gold is required from an external source, processes need to be in place to ensure that appropriate due diligence is undertaken on the source of the gold.

Once compliance in all areas has been demonstrated, the company must issue a “Management Statement of Conformance” to the next party in the chain of custody (World Gold Council, 2012).

Most of the world’s leading gold mining companies are members of the World Gold Council. Figure 12 illustrates the world-wide coverage of the members’ operations, while Table 9 lists the current members. The World Gold Council and its members have been very active in upholding a sustainable gold mining industry. However, due to the cost burden on producers, membership has decreased from 22 to 18 over the last 2 years (World Gold Council membership fees are based on the number of ounces produced: Manly, 2015). The four major producers that left the organisation produced more than 10 % of the world’s newly mined gold in 2014. As a result, the gold production of World Gold Council members, which was approximately 60% in 2011 (Trustable gold), now represents less than half of the world’s newly mined gold.

Figure 12: Map illustrating the distribution of operations from World Gold Council members (World Gold Council).



Table 10: Current World Gold-Council members (2015). Note that 4 major producers, i.e. AngloGold Ashanti Limited, Gold Fields Limited, IAMGOLD Corporation and Newcrest Mining Limited left the organisation in either 2013 or 2014.

Acacia Mining Plc	Goldcorp Inc.
Agnico-Eagle Mines Limited	Golden Star Resources Limited
Alamos Gold Inc.	Kinross Gold Corporation
Barrick Gold Corporation	New Gold Inc.
Cia de Minas Buenaventura SAA	Newmont Mining Corporation
Centerra Gold Inc.	Primero Mining Corporation
China National Gold Group Corporation	Royal Gold Inc.
Eldorado Gold Corporation	Silver Wheaton
Franco-Nevada Corporation	Yamana Gold Inc.

The International Platinum Group Metals Association (IPA)

As for the gold industry, major players in the platinum group metal industry have organised themselves in a guild known as the International Platinum Metal Group Association (IPA). The Association provides a platform to address issues of common concern and to jointly engage with stakeholders at the international level. IPA members represent approximately 80% of newly mined PGM production (6 mining companies) and 60% in terms of secondary refining (7 refineries, including 2 of the primary producers involved in toll refining and recycling). Health, safety and environmentally sound production, conformity with international standards and business ethics, social standards, etc. are all high on the IPA's agenda. The IPA also has a Security Committee which provides a platform for interaction with law enforcement bodies on crime trends and modus operandi pertaining to illegal trafficking of PGM bearing material.³³

³³ Further information on IPA Committees is available at: www.ipa-news.com/index/about-us/committees-und-working-groups.html

London Bullion Market Association (LBMA) Responsible Gold Guidance and the London Platinum and palladium market (LPPM) Good Delivery standards

The London Bullion Market Association (LBMA) is an international trade association which represents the London market for gold and silver bullion. The association has a global client base which includes the majority of the gold-holding central banks, private sector investors, mining companies, producers, refiners and fabricators.³⁴ The LBMA Responsible Gold Guidance is mandatory to all “Good Delivery” gold refiners in order to maintain their LBMA accreditation. There are currently 85 members and 66 associates. In total, the 73 gold refiners represent from 85% to 90% of world gold production.³⁵

The Guidance incorporates a risk-based approach to avoid sourcing gold from areas subject to conflict, and is based on the OECD DDG, as well as existing practices in “Good Delivery” refiners aimed at combating money laundering and terrorist financing. The Guidance is relevant to all of the production, regardless of the source of the feedstock, thereby ensuring that the products (large bars, kilo bars, grain, etc.) manufactured have not supported conflict, and are not part of money laundering systems or contributing to terrorist financing. An annual audit report by independent auditors is required to certify compliance with the Guidance. The report is submitted to the LBMA, and must be made publicly available (LBMA, 2012; LBMA, 2015).

Just as the LBMA is a trade association for gold and silver bullion producers, the LPPM is a trade association acting as the co-ordinator for platinum and palladium producers (LPPM & LBMA, 2008). As for the LBMA, it has a global client base, including producers (mining companies, refineries, banks and traders). The refineries of the three major South African platinum producers belong to the LPPM.³⁶

In contrast to the LBMA, the association does not currently have a mandatory “responsible guidance”. The LPPM “Good Delivery” standards refer to technical specifications only.

The Fairtrade and Fairmined Standard for Gold for artisanal and small scale gold miners (ASM)

The Fairtrade and Fairmined certification scheme for responsibly mined gold from artisanal and small scale gold miners (ASM) is the result of a joint effort between Fairtrade International and the Alliance for Responsible Mining (ARM). The standard, which was published in 2010, sets out minimum requirements for certification of ASM (Economic Commission for Africa, 2013). It addresses child labour, working conditions (including health and safety issues) and freedom of association. The standard incentivises higher environmental practices with an additional Ecological Gold premium for alluvial gold that can be gravity processed without cyanide or mercury (Responsible Jewellery Council, 2012). The Standard was not specifically designed to determine chain of custody on conflict minerals, but rather focuses on improving the development gains for communities where gold is mined artisanally (Economic Commission for Africa, 2013).

Instead of targeting individuals, The Fairtrade and Fairmined standard applies to “Artisanal and Small-scale Miners Organisations” (ASMO). ASMO’s are audited by an independent international certification body. Certified gold is dually labelled with the Fairtrade and Fairmined Mark.

In March 2012, there were four Fairtrade and Fairmined-certified ASMOs, with others undergoing auditing or in discussions on the application process. The estimate at the time was that these ASMO’s represented 2000 miners, impacting around 8400 persons (Responsible Jewellery Council, 2012). The system originally focussed on Bolivia, Peru, Colombia and Ecuador, but is being extended to Africa (Uganda, Kenya and Tanzania)³⁷ and Asia.

34 Further information on LBMA is available at: www.lbma.org.uk/about-us

35 Further information is available at: www.lbma.org.uk/responsible-gold

36 LPPM list of members is available at www.lppm.com/members-list/

37 Further information is available at the Fairtrade website: www.wordpress.p20126.webspaceconfig.de/producers/

The Responsible Jewellery Council (RJC) Chain-of-Custody (CoC) Standard

The 2012 Responsible Jewellery Council (RJC) Chain-of-Custody (CoC) Standard applies to precious metals (defined as gold, platinum, palladium and/or rhodium). The standard is voluntary for RJC members. Application of the standards is focussed on refiners (seen as an important entry point of material for further processing) and is expected to continue to grow upstream and downstream.³⁸ Fifty-four refiners belong to the Responsible Jewellery Council (Responsible Jewellery Council, 2015).

The CoC Standard requires segregation of “CoC” from “non-CoC” material. However, it does not require mine or country of origin information, except where relevant under Dodd-Frank Section 1502. CoC material includes:

- Products mined under responsible mining practices (defined by the RJC code of practice or other comparable standards) and is conflict free.
- Recycled material (sourced from screened suppliers).
- Grandfathered (stocks produced before 2012).

CoC Certification can be granted at the Facility level and is achieved by independent, third party auditing against the RJC Chain-of-Custody Standard. CoC Certified Entities do provide information on the general source of CoC Materials via transfer documentation.

The Council launched the Code of Practices in 2013 after an 18 month multi-stakeholder review process.³⁹ The Code of Practices Certification provides evidence of responsible business practices (i.e. the practices in the facility, not the sourcing of the feed material).

The Extractive Industries Transparency Initiative (EITI)

The Extractive Industries Transparency Initiative (EITI) was launched in 2002, with the main aim to improve international resource revenue transparency. With the first principle stating that “natural resource wealth should be an important engine for sustainable economic growth that contributes to sustainable development and poverty reduction”, the Standard promotes open and accountable management of natural resources (oil, gas, metals and minerals; EITI International Secretariat, 2015). As such, the relevant Standard requires companies to report on revenues paid and governments to report on revenues received from extraction industries.

The Extractive Industries Transparency Initiative (EITI) is a global Standard to promote open and accountable management of natural resources. It seeks to strengthen government and company systems, inform public debate, and enhance trust. In each implementing country it is supported by a coalition of governments, companies and civil society working together. Assessment on the EITI implementation in member countries is via an external, independent evaluation mechanism.⁴⁰

38 Further information is available at the Responsible Jewellery Council website: www.responsiblejewellery.com/members/chain-of-custody-certified-entities/

39 Further information is available at the Responsible Jewellery Council website: www.responsiblejewellery.com/standards-development/code-of-practices-review/

40 Further information is available at EITI website: www.eiti.org/validation

The OECD Anti-Bribery Convention

The OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions establishes legally binding standards to criminalise bribery of foreign public officials in international business transactions. The 34 OECD member countries, as well as 7 non-member countries, have agreed to prevent, detect and investigate foreign bribery through the adoption of the OECD Convention and related measures. According to Transparency International (2015), the Convention is a key instrument for curbing the export of corruption globally. In 2015, the 41 signatory countries were responsible for approximately two-thirds of world exports and almost 90% of total foreign direct investment outflows. The Convention establishes an open-ended, peer-driven monitoring mechanism to ensure the thorough implementation of the international obligations that countries have taken on under the Convention. This monitoring is carried out by the OECD Working Group on Bribery.⁴¹ The latest data shows that there are still 20 countries with little or no enforcement, and nine countries with only limited enforcement. As reported by Transparency International, about half of the Convention countries have failed to prosecute any foreign bribery cases since they joined the Convention (Transparency International, 2015).

The Financial Action Task Force

The Financial Action Task Force (FATF) is an inter-governmental body established in 1989 by the Ministers of its Member jurisdictions. The FATF regards itself as a policy-making body. It has developed a series of recommendations that are accepted as the international standard for combating money laundering, terrorist financing and other related threats to the integrity of the international financial system (FATF, 2012).

The FATF currently comprises 34 member jurisdictions, regional organisations, associate members and observer organisations, representing most of the major financial centres around the globe. All FATF Member States are subjected to evaluations by the FATF to assess their anti-money laundering and anti-terrorist financing frameworks. The reports are published on the FATF website.

Open Government Partnerships

The Open Government Partnerships (OGP) was launched in 2011 to provide an international platform for domestic reformers committed to making their governments more open, accountable, and responsive to citizens. It is a multilateral initiative that seeks commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance.

Countries joining the OGP must commit to uphold the principles of open and transparent government by endorsing the Open Government Declaration. Currently, the OGP has 65 member countries through which governments and civil society are working together to develop and implement ambitious, open government reforms (Open Government Partnership, 2014).

Apart from self-assessment reports, biannual independent progress reports assess governments on the development and implementation of OGP action plans, progress in fulfilling open government principles, and make technical recommendations for improvement.⁴²

41 Further information is available at OECD website: www.oecd.org/corruption/oecdantibriberyconvention.htm

42 Further information is available on Open Government Partnership website: www.opengovpartnership.org/irm

Annex III: Strength-Weakness-Opportunities-Threats (SWOT) analysis

Legislation

Legislation covers the laws, regulations and conventions in place at the national and international levels to control and administer the mining, processing and trade in precious metals.

STRENGTHS	WEAKNESSES
Countries exploiting mineral resources typically have strong mining policies and legislation.	Mining legislation in many countries does not include regulatory and enforcement powers related to criminal or unauthorised acts involving materials containing precious metals.
Strong legislation on precious metals-related crime and associated crimes (money laundering, corruption, human rights violations, etc.).	Lack of harmonization in the management and trade of PM, and prosecution and sentencing of PM-related crimes at country/regional level. Lack of governments' commitment to regulate national and international trade, possession and transport of PM.
International conventions against transnational organised crime, corruption and anti-bribery, etc.	Lack of enforcement of international conventions on transnational organised crime, corruption and anti-bribery.
Minamata convention (protection of health and the environment from mercury and mercury compounds - includes regulating ASM).	Lack of implementation of Minamata convention.
Custom legislation and enforcement powers to control imports and exports of goods.	Lack of uniformity in customs legislation with regard to descriptions of forms of precious metals (i.e. scrap metal, material said to contain precious metals, alloy bars, etc.).

OPPORTUNITIES	THREATS
Implement strong and harmonized legislation on precious metal-related crimes.	Lack of political support to ensure enforcement of applicable laws and funding for capacity building. Lack of adequate funding for transnational investigations into the illicit trafficking of precious metals and associated crimes.
Implement strong and harmonized legislation on associated crimes (money laundering, corruption, organized crime, etc.).	Involvement of organised criminal groups.
Improve participation in and/or establishment of bilateral or multilateral treaties on enforcement cooperation.	Political conflict among countries limiting the establishment of treaties and cooperation.
Encourage member states to set up MOU's with the WCO to combat the illicit trafficking of precious metals (including capacity building, training, technical assistance, identification of high risk consignments and suspects).	

Enforcement

This analysis refers specifically to the protection of the precious metal supply chain by the law enforcement systems in place in a country, which includes protection of mines and refineries by company security. The prevention and investigation of crimes requires awareness, capacity, specialized knowledge by police, border control and forensic laboratory staff and equipment. Public-private partnerships, as well as mechanisms to prevent and investigate cross-border crimes, are part of the enforcement analysis.

STRENGTHS	WEAKNESSES
General law enforcement and intelligence mandates exist in every country to allow tactical and strategic initiatives.	Lack of multi-disciplinary law enforcement specialists dedicated to investigate precious metals and associated crimes.
Special investigative techniques (cyber monitoring, GPS tracking, etc.).	
Specialized software applications for intelligence management and analysis, as well as systems for performance tracking and reporting.	Difficulties in accessing specific databases related to import/export activities and consolidation of data Difficulties in raising alerts (current trends, new modus operandi, etc.). Lack of indicators to monitor the performance of the criminal justice system (enforcement and prosecution) in countering precious metals-related crimes.
Use of specific analysis tools like (risk profiling, risk assessments, offender profiles, etc.).	
Large and medium scale mining and refining operations have dedicated security and experienced investigative capacity to assist law enforcement.	The high cost for adequate security systems and measures limit/prohibit smaller mining companies' security.
Specific mandates of government departments to ensure compliance and assurance in relation to the processing and trade in precious metals.	Lack of regulatory framework criminalising illegal possession and illicit imports/exports of precious metals, preventing appropriate law enforcement action unless a request for judicial cooperation is lodged. Lack of equipment, skills and training by police and border control to assist with the identification of materials containing precious metals Lack of verification by customs of the legal origin (and value) of precious metals (i.e. trade authorization documents).
Fingerprinting expertise and databases of precious metal bearing products.	Lack of capacity and expertise of forensic science institutes in analyzing and identifying the origin of precious metal bearing products. Non-existence of databases in many of the precious metal producing countries (and no harmonization at global level).
Legal obligation to report crimes (e.g. corruption, bribery) Act to protect whistleblowers	Lack of accurate reporting on precious metals-related crimes from private and public entities. Lack of awareness leading to underestimation of precious metals-related crimes.
Most jurisdictions have domestic laws and mechanisms for mutual legal assistance (MLA) in criminal matters.	Lack of harmonisation among countries limit effectiveness of MLA.
Established National Coordination Team to better coordinate multiple agencies in a public-private-partnership for combating illicit trafficking in precious metals (e.g. NCSMT in South Africa). Regional group of countries promoting economic integration across the region (e.g. ECOWAS in West African States)	International cooperative agreements do not include precious metal trafficking as a specific priority. Lack of adequate exchange of information, including on ongoing investigations. Difficulties in arranging cross-border assistance and coordination among different competent authorities.
Capability of the Customs Enforcement Network (CEN) of WCO to exchange customs information and intelligence.	Lack of international cooperation and dialogue on the illicit trade in precious metals. Lack of authority and mechanisms for cooperation and coordination involving public-private partnerships.

OPPORTUNITIES	THREATS
Develop clear mechanisms and codes of conduct to monitor the performance of multi-agency enforcement teams along the precious metals supply chain.	Risk of corruption and bribery of mine officials and security, law enforcement officials and customs due to the high monetary value of the precious metal material.
Develop bilateral or multi-lateral treaties to facilitate enforcement cooperation or take enforcement requests.	Possible opposition against change in law enforcement practices and concepts, resulting in delayed or no innovative global strategies. Different national strategies and priorities in facing emerging crimes in developed vs. developing countries
Establish a central authority for international cooperation + clear operational and administrative guidelines for the effective issue/receipt of requests for cooperation to and from foreign jurisdictions.	
Create and implement a highly advanced operational intelligence system for information sharing (enabling the secure and fast management and dissemination of critical information across different law enforcement authorities).	
Establish capacity for joint investigative teams among countries for the investigation of crimes associated with precious metals.	
Develop a program to lend forensic technical assistance, expertise and equipment to assist law enforcement in their investigative needs.	
Develop regional and international training initiatives to improve detection, investigation and border control in the precious metals sector.	
Expand the capacity of the CEN to gather data and information related to precious metals.	
Standardise the nomenclature for the various forms in which precious metals that are traded and transported.	
Increase investigations tracking the financial flows coming from the illicit sale of precious metals.	
Interpol/Europol participation in cross-border enforcement and assistance to countries in gathering evidence and locating offenders and assets connected with precious metals crimes.	
Standardisation of security practices by producers and refineries (e.g. International Platinum Group Metal Association Security Committee).	

Judiciary and prosecution

A strong legal and enforcement system is the first step in preventing and securing the precious metals supply chain. The probability and efficiency of prosecution and sentencing are the next determining factors in the fight against precious metals-related crime. This analysis assesses the knowledge and capacity of the judiciary related to the illicit trafficking in the precious metal supply chain. Instruments such as asset forfeiture, restitution to victims and appropriate sentencing serve as important aspects that are evaluated.

STRENGTHS	WEAKNESSES
Most countries have an efficient prosecution system and independent judiciary.	Lack of adequate knowledge by judges, prosecutors and support staff on the involvement of organised criminal groups in the illicit trafficking of precious metals and associated crimes.
Most countries have sound cooperation between prosecutors and investigators.	

OPPORTUNITIES	THREATS
Develop an effective legal framework regarding criminal and non-criminal asset recovery, confiscation and asset forfeiture derived from the proceeds of precious metal crimes or offences.	Risk of malicious prosecution and wrongful convictions negatively impacting the integrity of the justice system and the public's trust. Non-proportionate/non-consistent sentencing would not discourage offenders from engaging in illicit trafficking in precious metals. Corruption in the judicial system.
Develop an effective legal framework regarding the confiscation of all illegally imported, exported, transported, sold, received, acquired, purchased or processed precious metal. Facilitate restitution to victims.	

Prevention

The presence and importance of ASM for certain regions or countries, and the exploitation by criminal networks or militant groups, need to be assessed. This includes the existing certifications systems and applicability to specific regions or countries.

STRENGTHS	WEAKNESSES
Sustainable approaches taking into consideration livelihoods and socio-economic impacts of ASM communities have been established by developing countries.	Lack of enforcement of sustainable initiatives in developing countries encourages precious metal-related crimes by ASM and their exploitation by organised criminal groups. Lack of social capacity building and uplift initiatives for poor communities whose livelihoods depend on ASM.
International tracking and certification schemes, voluntary standards and due diligence systems have been developed to monitor 3T and gold.	Certification schemes are mainly focused on conflict and high risk areas and are implemented by larger industry players, with little impact on or support by ASM.
In certain countries, Ministries have specific mandates to ensure compliance in the processing and trade of precious metals.	Current ASM tracking schemes are only applied to 3T. Gold due diligence schemes are mainly applied by larger mining companies, smelters and refiners.
	Involvement of insurgent and rebel groups in precious metal operations for financing their campaigns.
	Terrorist financing using precious metals (mainly gold) as a vehicle for funding acts of terrorism (including money laundering activities).
	Police and military involvement in trafficking operations and money laundering, bribery and corruption.

OPPORTUNITIES	THREATS
Develop a product database to allow for profiling to determine legal origin.	Negative impact of the illicit trafficking and trade in precious metals on state revenue, industry and socio-economic development.
Monitor the precious metals market to limit the impact of spikes in illegal mining, trade and trafficking of precious metals.	Spikes in precious metal prices may encourage illegal mining, trade and trafficking of precious metals.
Education and training for local communities and authorities to improve the knowledge and awareness related to legal and policy frameworks in the precious metals supply chain.	Lack of awareness and knowledge related to legal and policy frameworks in the precious metal supply chain hampers compliance with regulatory procedures by local communities and authorities.
Involvement of the community in mining projects (e.g. Corporate social responsibility).	Risk of parallel illegal economies, with communities supporting illegal miners.

Annex IV: framework to establish a National Precious Metals Action Plan

In articulating a national vision for precious metals risk mitigation, the National Precious Metals Action Plan should be regarded as an assessment tool for identifying a consolidated set of priorities to enhance national capacity. The plan will ensure that the implementation of capacity building projects is done in a consistent and effective manner. As outlined above, the main purpose of the National Action Plan is to facilitate a coherent and effective approach to capacity building. The plan will assist in:

- Articulating a national vision for precious metals regulatory risk mitigation and identify priorities for building a precious metals enforcement capacity;
- Facilitate the identification, elaboration and implementation of projects to be funded;
- Ensure that capacity building in the country is part of a coordinated and sustainable approach.
- The results of the national assessment will be highly beneficial in terms of building capability to counteract precious metal crimes.
- The National Precious Metals Action Plan will address the following macro-areas, taking into consideration precious metals regulatory risks:
 - Prevention,
 - Detection,
 - Response,
 - General issues, such as regional and international cooperation.

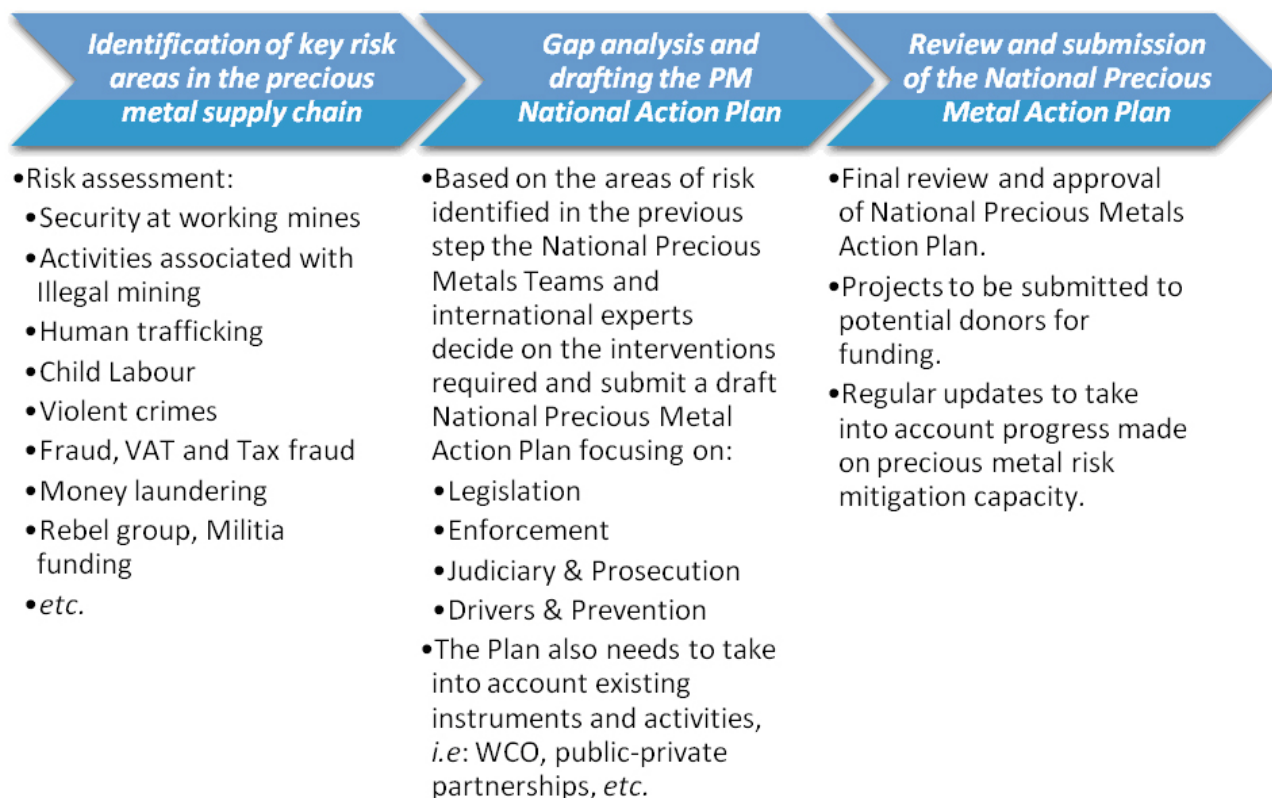
Within these macro-areas, the National Precious Metals Action Plan may identify priorities in relation to specific associated topics, for example:

- Enhancing protection of the precious metals supply chain,
- Enhancing protection of the national mining infrastructure,
- Increasing the culture of safety and security,
- Strengthening border, export and transit/trans-shipment control,
- Improving public health and environmental impact mitigation,
- Strengthening investigation and prosecution,
- Enhancing recovery of precious metals material,
- Minimising human rights violations, in particular against women and children,
- Enhancing international information sharing networks.

Preparation of the National Precious Metals Action Plan

The National Precious Metals Action Plan should be prepared using a multi-stage process, incorporating workshops to expedite the following activities (Figure 13 is a schematic diagram summarising the components of the three stages).

Figure 13: A schematic diagram summarising the main focus areas of the three stages in the development of the National Precious Metals Action Plan.



Stage 1: Identification of key risk areas in the precious metals supply chain

It is proposed that in this step a national and/or regional team(s) is formed to coordinate efforts and establish synergies at the local level. The National Precious Metals Teams should assess the main priority areas and identify problems to be addressed in their National Precious Metals Action Plan. In particular, the National Precious Metals Team will discuss specific risk scenarios and their relevance to the country. UNICRI will support this process by providing guidance and international expertise.

This step focuses on a preliminary risk and needs assessment at the national and regional level. An assessment of the illicit precious metals threats and risks affecting the country is required at this stage, and should include a description of the key precious metals risks and associated crimes (and their potential impact) that the country faces. Issues such as illegal miners, ASM, *etc.*, as well as the associated criminal linkages (cf. heading “Associated criminal linkages”) and their potential impact on the country, should be included (e.g. Table 11).

Table 11: An example of possible risks that need to be assessed as part of Step 1.

Security at working mines	Human trafficking	False invoicing and trade invoicing
Security at precious metals processing plants and refineries, including the transport of products	Illegal immigration	Tax evasion/Tax avoidance
Security at abandoned, derelict or liquidated mines (underground and surface operations)	Human Rights Abuse	Fraud, VAT and Tax fraud
Activities associated with Illegal mining	Child Labour	Corruption and Bribery
Activities associated with ASM, illegal mining committed under the guise of ASM	Transnational Organised Crime and Organised criminal groups	Money laundering
Health and safety	Violent crimes	Drug trade linkages to precious metals trafficking
Environmental crimes, illegal use of mercury and cyanide	Illicit Financial Flows	Rebel group Militia funding
	Illicit economy	Illegal trade in weapons and explosives
	Custom Violations	Terrorist financing

Stage 2: Gap analysis and drafting the National Precious Metals Action Plan

This stage requires linking the various identified risks with current existing capacities for mitigation. It is proposed that gaps for mitigating highlighted risks are identified using a SWOT analysis, as explored in the “SWOT ANALYSIS” section of this report. The capacities (strengths), weaknesses (limitations), opportunities and threats can be divided into the four headings, as discussed above (cf. heading “SWOT ANALYSIS”). The details of how the various gaps will be filled (i.e. updating of, or the implementation of new regulations, establishing public-private partnerships, capacity building, etc.), and determining the duration for implementation will be crucial components of this plan.

Based on the risk assessment and the detail of the actions identified during this stage, the National Precious Metals Teams and national experts will determine the contents and commence with drafting a National Precious Metals Action Plan. UNICRI can assist and facilitate the discussion by introducing international precious metals specialists who have knowledge of current initiatives, capabilities or experiences for mitigating the illicit trade in precious metals.

Legislation

As part of the framework, a State should establish and maintain effective executive, judicial, legislative and regulatory frameworks to govern the detection of, and response to, a criminal (or an unauthorised) act associated with the precious metals supply chain. Responsibilities should be clearly defined for implementing the various elements of precious metal regulations assigned to the relevant competent authorities.

In the establishment of legislative and regulatory frameworks in precious metals and associated crimes, the State should define the conduct which is considered a crime or unauthorised act and establish its jurisdiction over any criminal act associated with precious metals trafficking across borders. The framework should include the ASM, as well as environmental transgressions, as both of these have a major impact on health and safety matters.

It should be kept in mind that offences related to precious metals may vary from country to country. Laws or regulations can give rise to administrative, civil or criminal liability, with some States relying more on criminal sanctions, whereas others rely more heavily on the civil or administrative sanctions. Many countries, particularly states in Africa and Latin America, do not comprehensively criminalise the many activities affiliated with the illegal trade of precious metals, making enforcement difficult. In this regard, legal and regulatory reform becomes crucial for successfully combating precious metal crimes. The focus of this heading should be on:

- Domestic law,
- International law,
- Precious Metals and gemstone offences,
- Related offences,
- Regional and specialized initiatives.

Enforcement

Law enforcement is a crucial aspect for countering and reducing precious metal crimes. This should include the establishment of a well-organised public-private multi-agency approach to deter, prevent and respond to aspects of non-compliance. Highly skilled police, government, mine security, border protection and border control procedures are prerequisites to ensure a proper functioning system of enforcement.

Precious metal crimes involve complex networks of organised criminal groups that often cross national borders making effective enforcement challenging. A holistic approach involving tactical and strategic interventions targeting the entire supply chain, from production to manufacturing, becomes essential for minimizing the impact of precious metal crimes.

Currently, there are very few reliable measurements of precious metal crimes that have been conducted at national, regional and international levels. The scale of the problem, the volume of the illegal trade and the number of people involved in it are largely unknown and often impossible to calculate. Standardized procedures and tools for communication and information sharing between governments, customs, LEAs, the private sector and civil society representatives are required. Instruments that explore the availability and quality of relevant crime statistics and other data, performance measures, databases, etc. will need to be developed or enhanced to provide more accurate data sets. An improved knowledge base is required to allow for the formulation of informed policies, relevant laws and enforcement measures to prevent and suppress precious metal crimes more effectively.

Approaches to law enforcement may vary in different jurisdictions. Regulating the precious metals sectors in most cases involve a number of agencies with different mandates and powers. In some jurisdictions, law enforcement is centralized, while in other places it may be decentralized. The way in which law enforcement is carried out in these sectors depends on prevailing political and economic sentiments, as well as the social infrastructure and local tradition. Law enforcement mechanisms based upon national customs or culture, or on alternative social hierarchies, may be present as well, especially where a lack of faith in the fairness and efficiency of the official system is prevalent. The focus of this heading should be on:

- Enforcement agencies (including mine security)
- Human resources,
- Intelligence,
- Data collection and databases,
- Enforcement powers,
- Investigation procedures and techniques,
- Border control and Customs,
- International cooperation in criminal matters,
- Technical assistance and aid,
- Accountability and integrity.

Judiciary and Prosecution

A well-functioning and efficient prosecution service and an independent judiciary is required to hold offenders accountable for their actions and to protect the legal rights of various stakeholders. It is important that prosecutors, judges and their support staff be properly trained and resourced, and that their departments be adequately staffed. As with every aspect of a criminal justice system, the integrity and accountability of prosecutors and judges must be ensured, and their independence and impartiality protected. This requires measures to shield officers from corruption, nepotism and coercion.

The reality in many countries, however, is that prosecution authorities and courts function poorly for a variety of reasons. They are often understaffed, under-resourced, and face case loads that greatly exceed their financial and human capacities to cope efficiently. The training of prosecutors and judges may be weak in general and does not usually involve specific training in mining law and precious metals regulations. In some countries, corruption is rife and prosecutors and judges operate under the influence of politicians or other branches of government.

It has to be noted that in the context of wildlife and forest crime, and in the case of precious metals related crimes (and environmental crime in general), criminal prosecutions and the initiation of judicial proceedings are seen by most countries as a last resort. This is partly due to the high commitment of human and financial resources required for court action, partly because of the likelihood of penalties being imposed, and partly because it is often more efficient to reach a solution through negotiation and the use of administrative orders where necessary and possible.

The National Precious Metals Action Plan should take into account existing instruments and activities, for example:

- World Customs Organization (WCO) capacity building,
- General Assembly resolution 66/181 of 19 December 2011: “Strengthening the United Nations Crime Prevention and Criminal Justice Programme, in particular its technical cooperation capacity”. In this resolution, the Assembly reaffirmed the United Nations Convention against Transnational Organised Crime and protocols thereto as international instruments. It also reaffirmed the importance of additional cooperation between Member States and Private Sector entities.
- United Nations Convention against Corruption.
- Resolution 2012/19 of 26 July 2012: “Strengthening international cooperation in combating organized crime in all its forms and manifestations”, and Commission resolution 19/1 of 21 May 2010: “Strengthening public-private partnerships to counter organised crime in all its forms and manifestations”. The latter resolution stressed the importance of further developing public-private partnerships, and taking into account the Salvador Declaration on Comprehensive Strategies for Global Challenges: Crime Prevention and Criminal Justice Systems and Their Development in a Changing World, in which member States recognised the importance of strengthening public-private partnerships in preventing and countering crime in all its forms and manifestations.

In general, the role of International and Regional Organizations in the precious metals field and coordination with existing initiatives is of extreme importance. Consequently, the participation of experts from relevant International/Regional Organizations (e.g. the various supply chain initiatives, the IPA, Mine security and specialist investigative units, etc.) will be a key aspect of this process. Their involvement will ensure that existing capacity building initiatives are included in countries’ National PM Action Plans. The focus of this heading is on:

- Judiciary,
- Prosecution,
- International cooperation in criminal matters,
- Sentencing and sanctions,
- Restitution, compensation and restoration.

Drivers and Prevention

Precious metals offences can be induced by a variety of factors, including rural poverty, economic interests, bullion markets, as well as social upheavals, such as drought and famine. Engagement in the illegal precious metals trade can be a regular source of income for some, a safety net to meet sudden needs for others, and, in some cases, a lucrative opportunity to gain large profits. Although illegal activities in this field are linked (e.g. illegal miners that are trafficked and employed by traffickers), it is still critical to differentiate between illicit activities driven by need and poverty, and those driven by greed and the lure for high profit.

In developing countries, poverty can be a major factor behind precious metal offences. In some developing countries, traditional practices of ASM are viewed as illegal mining activities, and formal criminalisation can negatively impact attempts to regulate and improve ASM practices. This can create further hardships for people depending on gold, diamonds and precious gemstones for their livelihoods. Acknowledging the fact that a large number of people depend on ASM and the associated crime of illegal trading and trafficking of precious metals, social, political, economic, developmental and cultural dimensions need to be considered when designing effective strategies to discourage individuals from engaging in these activities.

Effective law enforcement, credible penalties and a functional legal system are crucial to control and prevent precious metal crime. However, the problems of law enforcement with respect to precious metals cannot be solved by these mechanisms alone. They must be concurrent with an improvement in mineral resource management, industrial restructuring, rural development services and poverty reduction for mining-dependent communities. A special feature of crimes related to natural mineral resources is that they can arise from underlying problems in the mineral resource and mining policies and management, and may best be managed as resource problems rather than as matters of criminal law enforcement alone. This heading focuses on:

- Context analysis,
- Social capacity-building,
- Existing Certification schemes,
- Trade and legal markets,
- Awareness-raising.

Stage 3: Review and submission of the National Precious Metals Action Plan

Within this step, countries perform a final review and approve their National Precious Metals Action Plan. In this respect, the National Precious Metals Team, experts and national officials meet in order to review and agree upon the document. Upon approval by the national authorities of the National Precious Metals Action Plan, countries will provide the plan to UNICRI and other stakeholders as deemed necessary.

Countries are thus responsible and in charge of drafting their own National Precious Metals Action Plan - it is a voluntary activity. Countries will decide which information to include in the National Precious Metals Action Plan and how it will be used and/or implemented. Any requests or concerns regarding the confidentiality of information contained in the National Precious Metals Action Plan submitted by a country will be fully respected.

Countries will receive follow-up support for implementing their National Precious Metals Action Plan. On the basis of the Plan, countries can prepare projects to be submitted to potential donors for funding. Where appropriate and feasible, potential donors and partners in the above-mentioned process should get involved as early as possible. The National Precious Metals Action Plan will require also regular updates to take into account progress made on risk mitigation capacity (for example, after the completion and implementation of national actions and internationally funded projects).

It is envisaged that the intended workshops will embrace the number of good practices already available, generate additional concepts and designs and ultimately combine these into a toolkit that will facilitate assessment of the illegal trade and trafficking of precious metals and guide the implementation of the required initiatives to combat and ultimately reduce precious metals offences and associated crimes.

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