

Sustainability of Zimbabwe's Platinum Mining Sector

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Abstract- Sustainability of platinum Group Metals exploitation in Zimbabwe continues to be a cause for concern due to a number of factors. One therefore takes a look at factors necessary for optimum incremental beneficial mining. Mining business confidence gives better prospects for mining business growth. Prospects of mining profitability, under pinned by an enabling sustained terming of mining costs, stability in investment flows and reduced exports constraints.

Access to cheap capital, stability and dependability of fiscal policies, improved economic enablers such as electricity, transport and water, and indeed coherence and consistence of relevant mining policies. Contribution of the PGMs sector to national GDP continues to grow. Creation of decent work and general employment remains high. This paper extrapolates performance issues in the PGMs sector and proffers possible remedies to these constraints to unlock the potential Zimbabwe can enjoy. The paper further proposes linkages, both upstream and downstream in the PGMs sector ensuring that exploitation of this finite resource can translate to development of other sectors of the economy.

Exogenous and endogenous factors influencing, not only the commitment to supporting the national mining vision but additional socio political and socio-economic questions requiring strategic response in our quest for full blown PGMs exploitation. Of major concern and of strategic response is the uncertainty surrounding policies on mining title, royalties and licensing and administration. To conclude the paper shall provide direction on PGMs mining growth, profitability, investments, markets, employment and skills, as well as the country risk profile.

The PGMs sector response to a number of interested stakeholders whose interests vary. These include the shareholders, management, employees, suppliers, government and investors. What is the size of the PGMs cake in Zimbabwe? Who gets what? Who is the largest beneficiary? Does it make economic sense for the investors to continue to grow their investment? What are potential constraints? What is the ownership pattern of the resource? How does it compare with global best practice?

Index Terms- platinum group metals, government policy, royalties, taxation, value chains, licensing transparency

I. INTRODUCTION

Zimbabwe's mining regime has traditionally undergone debilitating self-inflicted challenges, and has threatened the viability of the entire sector. These challenges range from adverse mining operating conditions as a result of bad mining policies, weakened value chains, low levels of economic sector linkages and a general negative impact of global economic conditions.

Mining, as an industry, is a capital-intensive industry and requires huge capital investments to sustainably exploit the mining resource. Attracting domestic direct investment in this sector is a difficult because the local economic capacity is unable to bankroll large mining projects. This leaves the country to hunt for external investors capable of committing long term money into the sector. Historically, Zimbabwe has been an envy of the world because of the wide range of quality mineral endowments in Gold, diamonds, chrome, coal, copper lithium, nickel and platinum group metals. Successful Exploitation of these minerals depends on a number of exogenous and endogenous factors. These include a currency conundrum whose effect over the years has increased the cost of mining, crippling power shortages, unavailability of external lines of credit and offshore funding, politicised labour regime and disparaging mining, fiscal and monetary policy regime. The sustainability of mining in Zimbabwe in general and the platinum group metals in particular is therefore under spotlight, requiring in-depth evaluation.

II. BACKGROUND TO PLATINUM MINING IN ZIMBABWE

Platinum group metals exist in the Great Dyke of Zimbabwe and form the world's second largest deposit only to South Africa. Historically the Great Dyke is home to some of the biggest mineral deposits some of which exist in the same rock formations as platinum, Gold, silver, asbestos, chromium and Nickel. It stretches from Northern Zimbabwe through the central parts to the southern parts of Zimbabwe. Its spans to approximately 550kms.

According to Hughes, C. (1970). Lateral Cryptic Variation in the Great Dyke of Rhodesia, the great dyke was first described in 1867 by a surveyor named Karl Mauch with no information on the existence of Platinum till around 1920s. Stribny, B., Wellmer, F., Burgath, K. et al in their article Unconventional PGE occurrences and PGE mineralization in the Great Dyke, metallogenic and economic aspects, the great dyke became a strategic mineral economic resource, holding base metals and PGMs of various concentrations including copper and cobalt. Geographical spread of the Great Dyke covers areas such as, Darwendale, Lalapanzi, Makwiro, Mutorashanga Mvurwi expanding to Wedza, Shurugwi and Zvishavane. Early exploitation of gold, chrome and chromite dominated early mining in this area. The coming in of BHP Minerals, an Australian investor around the Makwiro Area opened up organised exploitation of PGMs in Zimbabwe. Due to complex geological and macroeconomic factors BHP disinvested to pave way for South African Based impala platinum. Exploitation of PGMs in oxidised surface ores, potential existence of approximately

400metric tonnes of ore makes business sense for platinum producers to sink in excess of 5billion dollars investment over the last decade. Anglo-American in joint venture arrangements with both Aquarius and Impala Platinum have taken advantage of the easy accessibility of this resource setting up mines in Selous, Ngezi, Shurugwi and Zvishavane.

According to the 22nd Annual Investing in Africa Mining Indaba investment guide of 2017, there are four complexes holding PGMs in Zimbabwe. The biggest is Hartley Geological Complex mined by Zimplats, holding approximately 85% of the resource. Mimosa and Unki share the remainder, with prospects of another Russian Investor, Karo Resources, potentially locating a \$4.2billion investment in the Darwendale area.

III. RESOURCE NATIONALISATION AND VALUE CHAIN ANALYSIS IN THE PLATINUM SECTOR

The paradox of resource endowments in Africa against stinking poverty exposes Africa state leadership. Obsession with state ownership of all strategic mining assets continues to derail effective sustainability of exploitation of these resources because states in general and Zimbabwe government in particular lacks an accountable framework to eradicate opportunism and theft. Nationalisation of mineral resources has led to a resource curse in most African countries. D R Congo has persistently undergone incessant conflicts. Angola, among other highly endowed countries, remain a least developed country. Zambia is swimming in debt and continues to seek debt forgiveness against a backdrop of copper endowments of monumental proportions.

Major Players in the PGMs sector include Zimplats, Mimosa and Unki mines. A few new Russian and Chinese players have also entered the terrain intending to operating Karo Resources and Global mining respectively. All these assets are privately owned save for the new players whose ownership is still to be disclosed. For full scale economic transformation of Zimbabwe, the role of government must clearly be defined. It is to create an enabling environment for private businesses to thrive. According to Gumede 2015, Zimbabwe would benefit immensely if she moves from economic transformation to economic development. Economic development will fast track accrual of benefits to support employment creation, housing, healthcare, local enterprise development, social relation and indeed a developed infrastructure. According to Walter Rodney 1973, the rationale of Europe under developing Africa was to exploit mineral resources to serve Europe's industrialisation. It is therefore imperative that the national conversation in Africa in general and Zimbabwe in particular, changes from broad based ownership of mining assets to systematic and sustainable exploitation for economic development.

Zimbabwe boasts of being one of the top five produces of PGMs which locates the country at a unique position to exploit platinum global value chains. According to Kapinsky @al 2002, value chain is a process of converting primary products from their production stages to value added products ensuring that these products reach the desired markets and exploiting the value chain benefits at every stage of the product development. Zimbabwe ranks second from south Africa in PGMs endowment with high levels of proven and probable reserves with minimum life of mine of 20 years. PGMs include palladium, rhodium, iridium, osmium

and ruthenium. They are applied new technological industries among other commercial ventures.

Whilst Zimbabwe has enjoyed proceeds of organised gold and chrome mining over the years, and has witnessed the formation of Mining towns such as Mhangura, Cam and Mine Motor Kadoma, Hwange, Kwekwe, and Shangani among others, opportunities for locating the country as an African technological hub remain high. The sustainability of PGMs exploitation leads to creation of new industries in automotive, mobile telephony, health care especially cancer therapy and personal hygiene, clothing and textiles, and jewellery among other uses.

According to Anglo-American Cooperation, "A sustainable business is purposeful, competitive, resilient and agile –it's a business that thrives through both economic and social cycles" Zimbabwe needs to define its comparative advantage to competitively locate itself in global value chains in the above potential industrialisation opportunities. Trade-offs for lucrative markets, technology and relevant skills are an option to ensure local development of economies of scale in chosen PGMs industries. Foregoing gold mining, for example and exchanging all gold deposits for developing local capacity to drive global platinum value chains is a crucial medium to long term economic strategy worth evaluating. Nationalisation of the resource naturally destroys all innovation in attaining smart exploitation of the PGMs because public or state driven businesses are generally slow in decision making, bureaucratic in implementation and inefficient in cost containment. Technological Innovation and digitalisation are crucial components in the future of exploitation of mining endowments.

IV. LICENCING TRANSPARENCY IN PGMs MINING SUSTAINABILITY

Licensing and regulations associated with setting up and operating a mining business boosts appetitive for long term investments into the sector. A number of questions must be answered particularly when it comes to state facilitation of mining licencing. What is the licencing period? How many licences does one require? Which state entities are responsible for issuing out mining licencing? Is the process of acquiring mining licencing simple enough to facilitate speedy acquisition of the mining licence? How dispersed are the licencing authorities? What are the basic requirements for one to qualify for mining licence? What are the associated costs of licencing?

These questions, if all satisfactorily answered present the ease of doing business in Zimbabwe. State departments responsible for licencing vary from mining title ownership, environmental management, safety and health, use of dangerous chemical and substances, marketing and mining operating license at local authority level. Requirements of licencing and the process to comply with all the pre-requisites to obtain some of the licences are sometimes cumbersome and repetitive causing undue delays, frustrations, fatigue, and increased costs.

Investors by nature are easily intimidated if the investment compliance environment is complicated particularly on access to critical information to facilitate mining business set up. For example, the environmental management act enforces environment impact assessments. The impact assessments are carried out by experts who engage in a broad stakeholder

consultative process to avoid future conflict between the business and these stakeholders and create a collective environmental management compliance. According to the Chamber of mines, an investor receives an environment impact assessment certificate which is renewed annually. The revised policy requires the investor to pay 1.2% of the total project cost down from 10% prior to 2017. The Chamber of Mines of Zimbabwe (COMZ) specified that *“The Environmental Impact Assessment (EIA) fee at 0,8% to 1,2% of project cost with a cap of US\$2 million remains high and is discouraging execution of investment projects in the mining industry. In order to promote capital inflows into the mining sector, the chamber recommends the reduction of EIA fees to a rate of 0,5% of project cost with an upper limit of US\$10 000, in line with regional best practice,”* The consequence of this requirement is that the investor may be constrained in cashflows as they are expected to outlay compliance costs ahead of the project establishment, on its own, a significant budget which include the required EIA professional fees. Further, all local authorities are expected to license all businesses in their local areas again. PGMs mining, as a business, derive their social license to operate by ensuring they embrace, not only the local authority licensing requirements, but accept informal social engagements with the local community structures. Whilst the costs associated with the formal or informal engagement with local community leadership are minimal, local authority processes are generally a repetition of the EIA process. It is therefore an unnecessary compliance process which should be integrated into the EIA process for simplicity.

Use of substances such as explosives, processing plant chemicals and mining residue management require separate licencing. Mining uses significant amounts of water. Water management legislation requires mining companies to obtain water management licencing. One therefore expects that all these licensing responsibilities be carried out under one roof by a single government agency.

Whilst the effort by Zimbabwe Government to create ZIDA is commendable, the institution has maintained its inherent traditional inefficiencies symptomatic of the parent agencies, the one stop investment centre, Zimtrade and Zimbabwe special economic zones authority. According to Tralac, (Trade Law Centre of South Africa) *“the Zimbabwe Investment Development Agency Act [Chapter 14:37] (ZIDA Act) (1.98 MB), ZIDA Act, deals with the promotion, entry, facilitation and protection of investment in Zimbabwe. The Act was introduced as part of the government’s efforts to streamline investment laws and create a business-friendly environment attractive to both local and foreign investors”* the world bank group through IFC advises that Sub-national political entities, whether states, provinces, regional governments or municipalities, play a central role in fostering a sound business climate. The consequences of ineffective, excessive or, in some instances, inappropriate regulation generally have adverse effects on investment and economic development. Promotion of a simplified but sophisticated investment environment presents a clear pedestal for business innovation, certainty and coherence particularly in PGMs mining because the sector is not only sophisticated highly capital intensive. Creation of an appropriate well-regulated investment climate naturally attracts long-term money which in itself is a development prerogative for positive economic outcomes.

The IFC further underscored the need for integrity in instituting simplified business climate processes and procedures through eliminating impediments in investment regulation and licensing. Corruption, vice and institutionalised graft are offshoots of constraints associated with complying with bad laws, guidelines and procedures.

Issuing a mining licences “entitle the holder to prospect, peg and register claims in terms of the Act. An exclusive prospecting order confers exclusive rights to prospect for specified minerals in any identified location within Zimbabwe” ICLG 2018. Expropriation of platinum-bearing mine concession originally owned by Zimplats and offered to Karo Resources, a project expected to create a \$4.2-billion mine, has further negatively affected, Zimbabwe’s property rights record. Whilst Zimplats had no choice but to agree to cede approximately 24 000 ha of the company’s land to the state, the transaction has been misunderstood to be evidence of the state reneging on earlier investment agreements entered into by investors.

Licensing therefore plays a crucial role in sustainability of PGMs exploitation in Zimbabwe. Insulating the licensing regime from the vagaries of political manipulation, enforcement of populist policy decisions which may affect existing agreements and ill- thought regulatory changes will deal a fatal blow to future investment potential particularly in cases of wholesome reversals of agreements previously entered into between the state and external investors.

V. THE MINING EXPLORATION FOR SUSTAINABLE MINING

A compelling PGMs mining investment depends on the availability of the mining resource, availability of skills to extract the resource and more importantly the return on investment. Whilst the above is a necessary condition for arriving at a decision to invest, a conducive macro-economic environment in broad terms, is a catalyst to making a decision to establish a mining venture. The gestation of a mining project is long term and long-term investments by nature require long term money. policy clarity is a necessity and sufficient to enhance attracting investment into the PGMs sector.

Property rights are equal central to give certainty to ownership of mining assets targeted and must be observed as precondition to attract capital in mining exploration. Mining exploration budgets are called sunk budgets. Zimbabwe currently exploits four known platinum ore deposits all found in the great dyke. Ownership of mining assets called claims, special mining grants and mining leases are recognised in the mines and minerals act in Zimbabwe.

Zimbabwe is currently under explored. General negative perception that Zimbabwe has an awkward mining title management system, which is characterised by difficulties in applying the system, old and easily manipulatable, militates against the ability of the country to attract both internal and external exploration money. Lethargy and resistance to computerise mining title management system is misunderstood to be harbouring institutionalised corruption, hence the continued existence of mining title conflicts beyond the PGMs sector. Discovery of any minerals has largely been from old workings which has been a culmination of the existence of historical geological information rather than virgin land with no known

exploration history. Advanced exploration techniques will shape the future of exploration work in Zimbabwe particularly where private exploration companies are engaged.

Conditions sufficient for attracting the most reputable exploration firms include the harmonisation of the role of the state in the exploration process. The risk appetite and averseness for exploration financing depends largely on the country risk profile particularly with high value metals such as platinum. Exploration phase is the mineral discovery phase with potential to generate

relative value. It takes average 10-15years to explore, discover, engage in a prestart up feasibility assessment and engage in full scale mining. Exploration policy incentives whether they are legal, fiscal, regulatory and monetary take into account potential huge losses associated with this process.

The policy consistency, coherence and complementarity

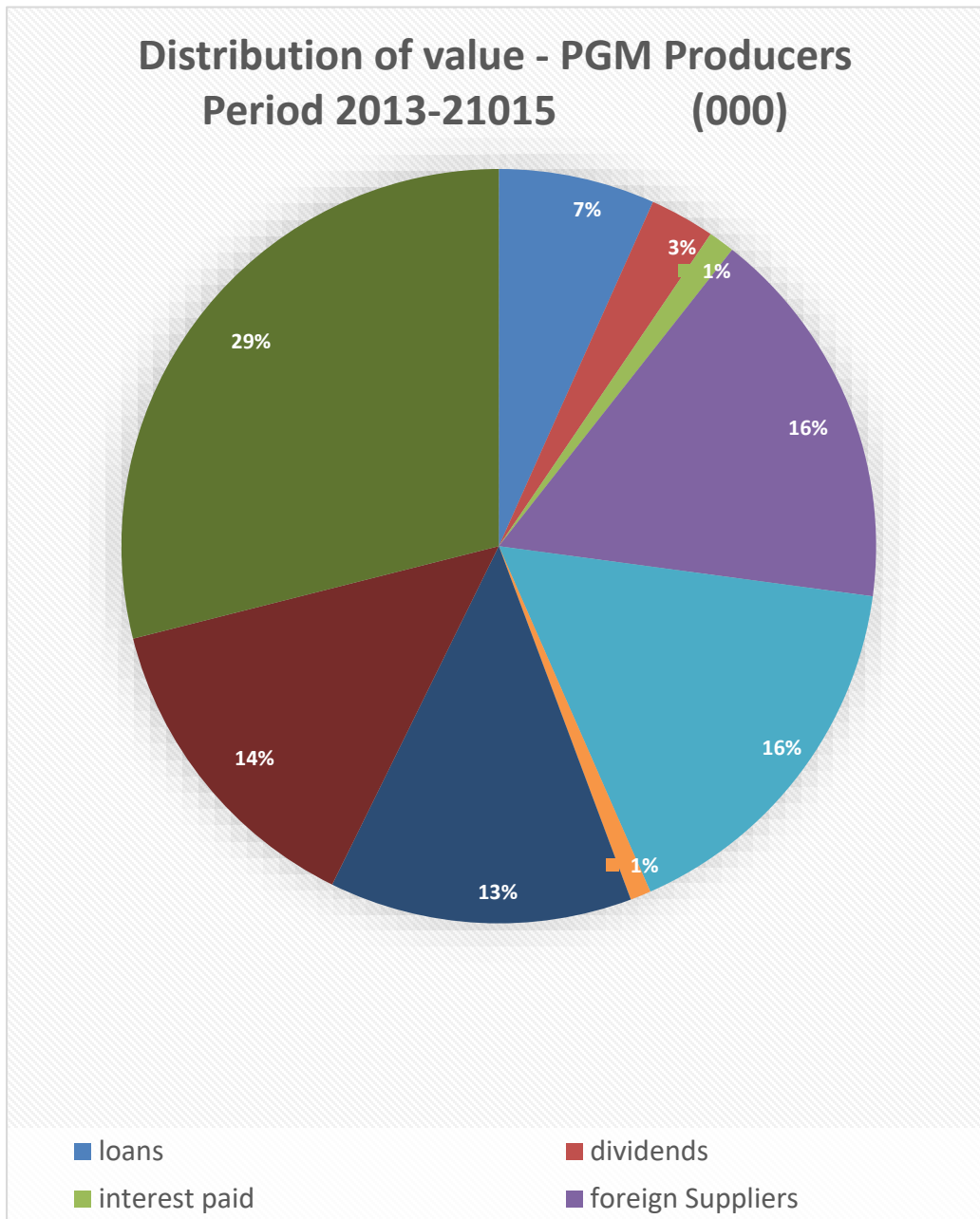
Distribution of PGMs Value

Table 1

3 Year Period to 30 June 2015	(0000)
Export proceeds	2 713 360
Payments	
Local Suppliers	893 401
Employees	425 270
Government – duty, royalties and taxes	400325
CSR & Community Trust	27 462
Capital Expenditure – Local	503 084
Foreign Suppliers	509 627
Interest Paid	34 693
Loan Repayment	206 881
Dividends	86 000
Platinum Production and shared benefits (2012-2015)	3,086,743

Source: Zimbabwe Platinum Producers Association

Figure 1



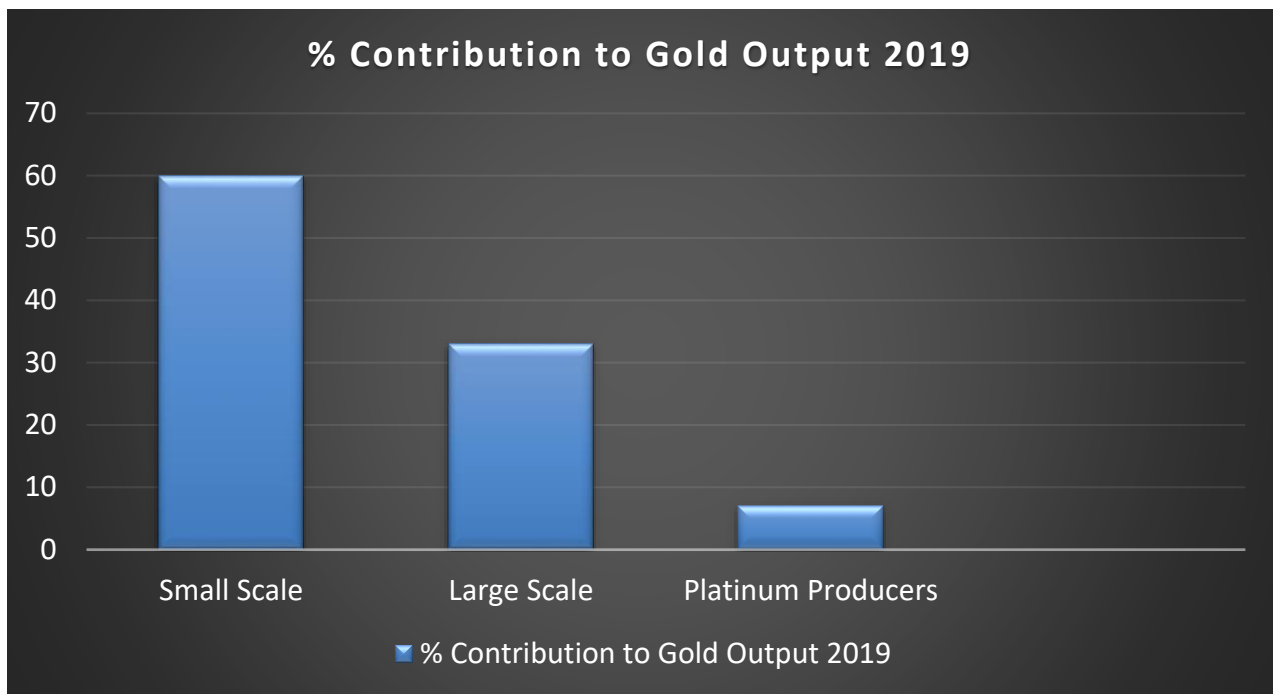
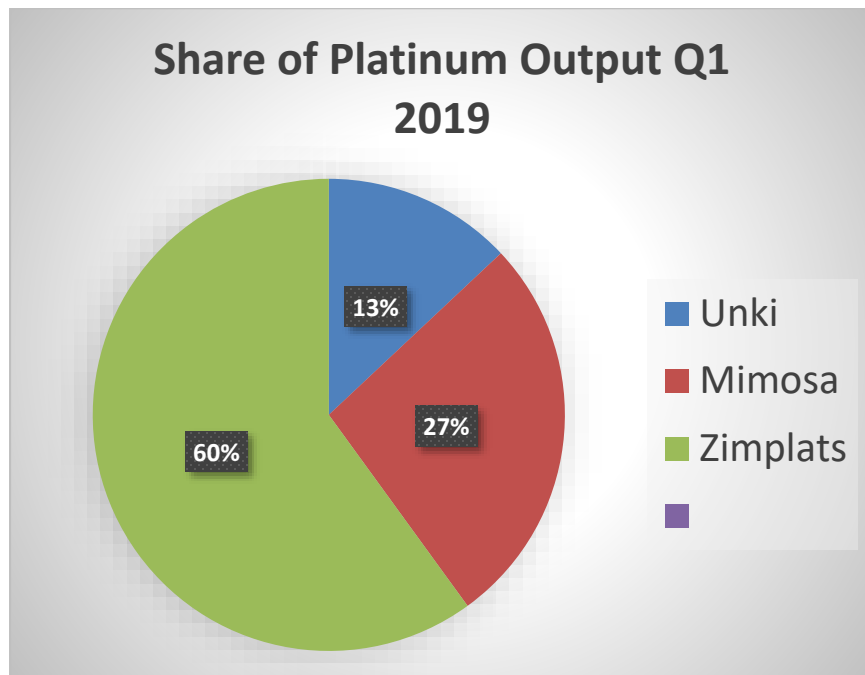


Diagram 1
Source: Chamber of Mines Q1 Journal



Source: Chamber of Mines Journal

The prominence of artisanal mining demonstrates catastrophic failure of Zimbabwe’s mining policy. None of the studied public policy theories best suit Zimbabwe’s policy development architecture, the unintended consequences of which are the obtaining high company mortality rate of organised gold producers, capital flight, disinvestments and reduced capacity utilisation among the few surviving mining companies. Simply put, public policy making postulates the construction of a set of processes, procedures and systems to enhance optimal

management of public assets. Policy making invites multiplicity of interests and according to the garbage-can theory these interests cut across inside and outside government. The systems theory of public policy making further includes the involvement of individuals, special interest groups, and countries depending on the problem at hand.

Policy dialogue between existing mining operators, according to the chamber of mines, remains “suboptimal” Emerging issues affecting existing mining investments include a

complicate legislative regime, more complicated fiscal and monetary regime, and an even more complicated foreign exchange management regime. Mining operators are uncompetitive, with very low opportunities to access low-cost capital and coupled with uncertainty on continued ownership of existing mining title. Volatilities of exchange rates against major currencies, punitive surrender requirements and the blanket enforcement of the 2% electronic money transfer tax are part of a basket of complexes of policies the PGMs sector is grappling to conform to.

Therefore, the role of government policy in sustainable mining in Zimbabwe is to give direction to citizens, corporate or individual, providing them with leadership in optimum exploitation of platinum resources and their by-products. The basket of preferred policies must be complementary, coherent and consistent. Fiscal and monetary policies by nature give impetus to mining and exploration policies, resulting in creation of competitive mining environment that attracts the best and globally reputable extractors.

Sustainable mining thrives where mining returns are good. Reporting and collating of mining returns are a collective responsibility of the mining companies and various government and quasi government arms in Zimbabwe. These include monetary authorities regulated by the Reserve bank act, Fiscal authority overseen by the finance act and a multiplicity of regulators such as mines and minerals cooperation of Zimbabwe (MMCZ), Environmental Management Agencies (EMA) and the parent ministry borne by the mines and minerals act. Whilst the national aspiration in exploiting PGMs in Zimbabwe is to create sustainable mining for the benefit the country, operations of all state entities involved in the sustainability of PGMs mining run contrary. Fragrant disregard of the laws and policies consequentially disastrous particularly when the intention is to develop a comprehensive PGMs sector development plan.

Figure 1 above shows the distribution of value of PGMs from the year 2012 to 2015. A brief analysis of the given statistics shows that a combined 83% of the total value is accumulating to the state, local suppliers' government, communities and employees. The PGMs value proposition is accruing to Zimbabwe. Declared dividend for the period under review is a paltry 3% of the 3billion dollars. Local suppliers received approximately 45% of the value. 27% of the value is external comprising of loans repayments and loan interests, foreign suppliers as well as declared dividend to those share holders who may be resident outside Zimbabwe. The PGMs sector also contributes significantly to the annual national Gold Output as indicate in diagram 1. Sustainability matrix in the PGMs sector, therefore should aspire to:

1. **Contribute to Broad infrastructure development** – social cohesion related infrastructure responding the justification of obtaining their social licences to operate in the relevant communities. Infrastructure empowers local communities. Food security, education and human security are a natural benefit accruing form infrastructure development. PGMs are a finite resource. Ensuring that the proceeds accruing from exploitation of this resource directly contributes to creation of dedicated energy and power, water bodies, roads and rail among other critical infrastructure needs is strategically important.

2. **Industrialisation** – creation of new industries, local enterprise development, forward and backward linkages, sustainable economic enabler supply side related industries and support of community-based projects.
3. **Human capital Development and employment Creation** – the availability of dedicated mining skills, development of framework to support PGMs sectors and its linkages such as engineering, human resources, exploration, processing and marketing, as well as creation of formal employment nationwide.
4. **Create value for the investors** – investors are motivated to increase investment capacity is the return on the investment is attractive. A combination of progressive public policy mix and recruitment of globally reputable mining operators leads to development of mining towns nationwide. The growth of Zvishavane, Shurugwi and Ngezi are cases in point.
5. **Contribution to government fiscus** – progressive economies survive on rationale taxation of economic players. Expropriative and exploitative policies scare away good investors. Governments are not competitors to economic players but fluid facilitators of economic activity results of which are a wider base to collect direct and indirect taxes. Where policies are conduits to erode investor value, discourage honest work, reward corruption and theft and create institutionalised economic inefficiencies, the result is investor flight.

The mineral beneficiation, value addition and industrialisation

Zimbabwe, like many countries in Africa does not derive benefit from manufactured mining exports. All mining exports are exported as primary products. In the case of PGMs, all three mines operate underground mines, extracting over and above the PGMs, gold, platinum, palladium, rhodium nickel copper, iridium and ruthenium.

Zimbabwe has no installed capacity for mineral beneficiation save for a three-stage processing. Platinum mines extract the rock and convey it as bulky ore to the process plant where it undergoes crushing and granulation to pulp. This pulp underscores further milling and smelting, in the case of Zimplats and Unki, to mate. The mate is the combination of all the above-mentioned minerals ready for export. According to Anglo American Cooperation, Major PGM mining integrates mining, refining and therefore maintain considerable processing assets that produce both refined PGMs and by-products. Zimbabwe's existing infrastructure can Mine, Concentrate, and Smelt. Refining and Fabrication facilities do not exist hence the export of mate.

For sustainability of the PGMs sector, Zimbabwe has exceptional opportunity to, not only create conditions for the growth of existing PGMs but design a deliberate framework to attract bigger investors in the sector. Refining and fabrication to produce final products depends on economies of scale. To Move the country towards full beneficiation of PGMs:

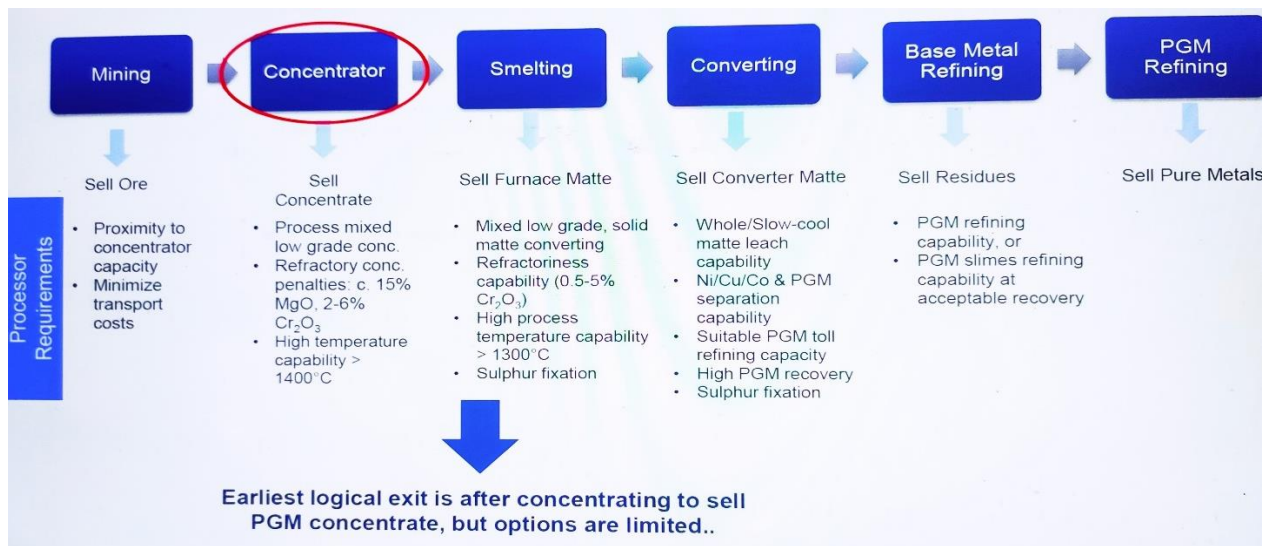
1. Role clarity is critical. Mining companies need capacity to increase rock extraction and processing as indicated

in figure 2 below. This capacity justifies development of refining and fabrication capacity.

2. Government must deliberately engage stakeholders in mining, finance, investments, potential markets to secure necessary guidance on how to establish inward to outward platinum group metals value chains. Establishing special economic zones aimed at attracting investment into automobile industries, healthcare delivery, technologies among other global value chains. Genuine stakeholder consultations and necessary assurances and commitments to rule of law, property rights, profits repatriation may assist in regaining lost trust and confidence from economic players.
3. Specialisation maybe a recommended starting point in view of potential integration with Zimbabwe's tradition markets in the EU and America. Whilst the opportunities are wide selection of a few areas of specialisation demonstrates organisational capacity for the country to pursue coordinated industrialisation.
4. A robust ease of doing business package to support PGMS industrialisation is necessary with a view to

establish centres of excellency particularly in local areas where the mining is undertaken.

5. Availability of statutory incentives, guarantees and indeed realigning taxation and royalties with global best practice may incentivise potential investors to consider Zimbabwe as a stable base to stablish industries.
6. Government to encourage linkages and partnerships between local Zimbabweans and potential foreign investors to ensure knowledge and skills exchange.
7. Define a consistent frame work to package government of Zimbabwe intention to achieve a 12-billion-dollar mining industry by 2030. This will call the government to unlearn a number of current uneconomic decisions they have pursued of late such suffocating businesses of the much-needed foreign exchange through crippling policies on foreign currency retention, liquidation and surrender. Deliberate effort to fix mining industry capacity constrains, a huge gap in mining industry infrastructure particularly power shortages may assist in turning around the mining sector beyond 2021.
- 8.



The rationale of royalties and taxation

Globally, mining sector realignment has been a necessity particularly when global best practice turned to fixing royalties and taxation regimes as a low hanging fruit. Mining policies and regulations have modelled mining taxation as a remedy to ensuring mining sector contribution to national economic growth particularly in large scale mining. Some countries have gone further to implement fiscal decentralisation of mining. Local governments are empowered to levy some taxes while central government also enforce other taxes.

Royalties are a form of government tax generally agreed between the government and the mining investor. There are varied royalty categories and those applicable in the platinum mining sector take into account the fiscal needs of the government, communities and local government departments. The economics of platinum mining provides a basis for calculation of the royalties' thresholds. The interest of the investor, sustainability

plans and indeed the lessons learnt from global best practice are taken into consideration.

PGMs sector in Zimbabwe remains affected by the uncertainty surrounding royalties and taxation particularly as the national resource ownership conversation has undergone widespread misinterpretation. The geopolitical terrain continues to suffocate strategic planning of the PGMs sector because national politics' obsession with ownership of all productive assets continues to grow. The adage that owning 50% of an elephant is far better than owning 100% of a rat has found no space in strategic mining economics in Zimbabwe.

Concerns of opaqueness and lack of transparency in management of royalties and related fiscal taxation of mining assets in Zimbabwe explains low levels of long-term investment in the sector particularly in the last decade. Whilst Russia and China have since expressed interest in the sector, there is general lethargy and dragging of feet in fully establishing themselves.

Fiscal Methods and Their Amenability to Fiscal Decentralization

Tax type	National Govt	Provincial Govt	Local Govt
Incomes or profit based taxes	Applicable	Partially Applicable	Not Applicable
Import duty	Applicable	Not Applicable	Not Applicable
Export duty	Applicable	Not Applicable	Not Applicable
Royalty (profit-based type)	Applicable	Partially Applicable	Not Applicable
Royalty (ad valorem type)	Applicable	Applicable	Partially Applicable
Royalty tax (unit type)	Applicable	Applicable	Applicable
Royalty tax collected nationally and % distributed	Applicable	Applicable	Applicable
Licensing fees	Applicable	Applicable	Applicable
Surface rental or land use fees	Applicable	Applicable	Applicable
Withholding taxes on loan interest, dividends, services	Applicable	Not Applicable	Not Applicable
VAT on goods and services	Applicable	Partially Applicable	Not Applicable
Sales & excise tax	Applicable	Partially Applicable	Partially Applicable
Stamp duty	Applicable	Applicable	Applicable
Property tax (on book or assessed value)	Applicable	Applicable	Applicable
Payroll based taxes	Partially Applicable	Partially Applicable	Not Applicable
Surtaxes	Applicable	Applicable	Applicable
User fees	Applicable	Applicable	Applicable

Source: The World Bank Group Mining Department

Incomes and profit-based taxes are more user friendly to apply and legislate, therefore is commonly used taxation method. The method hardly gives credence to the provincial and local governments requirements for revenue collection but allow the central government to perform an allocative function. According to Prof Professor James M. Otto setting the tax rate, and setting the rules for determining the taxable income base will be subject to the determined tax rate. He further argues that the tax is best suited to implementation at the national level because of the complexity in balancing taxable revenues and allowed deductible costs.

The sustainable and optimum royalties and taxation model for Zimbabwe in the PGMs sector would take into account:

1. The national aspiration of growing the sector to 12billion dollars
2. The empowerment of communities and deregulation of state authority
3. Local procurement and local enterprise development
4. Creation of all forms of infrastructure
5. Global Value chain development and industrial linkages

It therefore requires that Zimbabwe drastically reduces royalties and considers Royalty ad valorem type tax. Further, a flat, low rate of Incomes or profit based taxes be instituted including scarping of any forms of export duties. Incentive value creation, the empowerment of communities, Local procurement and local enterprise development. Creation of all forms of infrastructure that enhances social cohesion, facilitates creation of Global Value chains and industrial linkages.

The state ownership question?

The Zimbabwe story of state ownership of productive assets leave an after taste. In the mining sector alone, the state owns the biggest mining portfolio in gold, diamonds, coal, iron and steel among others. Whilst the ownership on paper is attractive, these assets are the worst performing.

Under complete information the early contribution by Barone (1908) proved the equivalence between the two ownership modes. More recently, Sappington and Stiglitz (1987) extended the equivalence result under asymmetric information. However, the setting and the stringent assumptions under which the result holds, which include the possibility to enforce complete contracts, are hardly met in real world cases. This make the theoretical framework of limited practical relevance in the case of developing countries, where privatization and regulation opportunities are far from meeting these stringent conditions, since contracting opportunities may be severely limited, many events, risks and choices can hardly be ex ante fully anticipated, so that are not likely to be described and then enforced in contracts. Accordingly, practical approaches should be developed to take into account of informational and incentive issues, especially in the area of implementation. Yet, little work has been done beyond the normative assumptions, neglecting the relevant implementation issues.

Source: Vagliasindi (2007)

The broad indigenisation and economic empowerment

Promulgation of the indigenisation and economic empowerment act, driven by political interest incorporated aspects of equity ceding by foreign companies to facilitate equity ownership by locals in those foreign owned companies and community participation through community share ownership schemes.

According to Herbert Smith Freehills LLP - James Watson, Rebecca Major and Jerome Hamilton, A statutory instrument was published in the Zimbabwean Government Gazette on 25 March 2011 (the "Statutory Instrument"). The Statutory Instrument's main provision is to compel mining companies with a net asset

value of or above US\$1.00 (rather than companies with an asset value of or above US\$500,000 as set out in the Regulations) operating in the country to:

- (i) submit indigenisation implementation plans to the Minister within 45 days of the Statutory Instrument's gazettal, i.e., 9 May 2011 and
- (ii) dispose of 51% of their shares to indigenous Zimbabweans by 25 September 2011.

An indigenisation and economic empowerment fund were created purportedly to assist indigenous Zimbabweans to acquire equity in foreign owned companies. The statutory instrument was not only opaque, vague and unreasonable at law but exposed the government to legal challenges that would derail the entire program. Where statutory instruments are used, their integrity is questioned because they are executive promulgations made without parliament approval. The whole program was reversed by 2017 as the costs of further implementation were outweighed by the benefits of discontinuing it.

VI. THE CORPORATE GOVERNANCE AND ACCOUNTABILITY INQUIRY

Demand for quality corporate governance in both public and private companies cannot be over emphasized. Institutional investors take great care in assessing quality of boards running with key national assets globally ensuring that those fund managers and investment giants provide critical investment guidance. Sustainability of Zimbabwe Platinum mining sector is guaranteed when:

- Investors are certain and confident on corporate culture, strength and independence of national institutions and indeed the dependability of investment policy regime.
- Law makers acknowledge that Mining investment requires long term money and is capital intensive. The integrity of legal and regulatory principles and systems has a knock-on effect on ability of investors to forward cast their future earnings and return on investment.
- Corporate governance enforcement safeguards robust performance of company boards, ensuring that their oversight role is not interfered with, accommodates diversity, provide for reasonable executive compensation, knowledge and skills exchange and enhance sustainable growth of the investor's portfolio

According to Impala platinum, Sound corporate governance is a critical foundation for protecting stakeholder value and achieving the group's strategic growth objectives. The company's governance universe demonstrates how the pillars of value are governed through their four governance segments, which are the board, finance, risk, and social and sustainability in support of the organisation's strategy and purpose. The elements in each segment are governed with appropriate processes, systems and resources to ensure the company demonstrate the desired governance outcomes. Impala Platinum is one of the critical and strategic players in PGMs exploitation in both Zimbabwe and South Africa.

Does Zimbabwe provide an optimum environment for sufficient demonstration of correct corporate governance and accountability? Promulgation and implementation of the indigenisation and economic empowerment legislation laid bare the suspicion that Zimbabwe is incapable of creating robust structures of corporate governance. Whilst one would argue that there are two key processes which were undertaken to give effect and credence to this aspect, none of the two has been implemented in later and spirit. The parastatals corporate governance legislation and the Zimcode fall short of the necessary and sufficient requirements for enforcement of good corporate governance practices.

A Case between the Zimbabwe government and Zimbabwe Platinum Mines wherein Zimplats lost part of its resource to Karo Resources continues to put question to the integrity of the Zimbabwean government particularly where respecting and honouring agreements is concerned. Commit to transparency. Dr. Nicole Bieske, Head of Program - Mining for Sustainable Development, Transparency International, *Governments should set clear, transparent and effective rules and criteria for mining approvals processes; and they should enable the public to access this information. Companies should be transparent about their operations, including their subsidiaries, joint venture partners and where they operate. They should also disclose their project rights and obligations, including contracts, licenses, and environmental and social impact and management plans.* Potential for conflict of interest between government employees, political institutions and mine operators must be eradicated.

Governments and Companies should continuously function with integrity ensuring set legal and regulatory frameworks are adhered to.

The PGMs mining best practice

Mining Policy Framework (2003) identified as best practice for exercising good governance of the mining sector and promoting the generation and equitable sharing of benefits in a manner that will contribute to sustainable development. These best practices are divided into six key pillars: the legal and policy framework; financial benefit optimization; socioeconomic benefit optimization; environmental management; mine closure and the post-mining transition; and artisanal and small-scale mining. PGM have strived to show good practise over the years in most countries through corporate programmes that cover the following areas Supply chain development, Employment, Local business development, Regional development, Infrastructure

South Africa is the world's largest producer of platinum, processing 110mt in 2018. The country's reserves of platinum group metals (PGMs) stand at 63,000mt. The significance of the Platinum mining industry to the economy of South Africa is reasonably well acknowledged. PGMS in South Africa has played a vital role in the evolution of the economy positioning South Africa in the world. The South African PGM mining has undergone a noteworthy transformation from largely exporting raw minerals to the establishment of value-addition facilities (mineral processing and manufacturing). This transition has partly resulted in the construction of a number of large-scale resource-based investment projects, such as Columbus Stainless Steel, Saldanha Steel, Lion Ferro-chrome smelter and others. This demonstrates the country's state of readiness for value addition.

PGM in South Africa have elevated local suppliers to reduce imports and created development zones in South Africa and have reduced reliance from mining through local and economic development. The PGM have invested in infrastructure especially construction of roads and water purification facilities for their mines.

Through forward and backward linkages, mineral resources present great potentials to sustainable economic growth and development (Mahonye and Mandishara, 2015). Given the above, South Africa exploits their resources for higher growth rates, technological transfer, and poverty alleviation, as well as to increase the level of per capita welfare. The South African manufacturing industry, which is now a major contributor to national income, owes its origin to the needs of the mining industry.

PGM mining have drew people out of the agricultural sector into commerce. It also facilitated the establishment and expansion of towns, thus creating new and easier markets for agricultural products, construction of railways and roads, and so forth. The higher concentration of people in such areas together with an improved transport system facilitated the establishment of various factories, banks, banking facilities, schools, libraries, hospitals, theatres, and many other services. Mining therefore stimulates the agricultural, manufacturing, and even tertiary sectors.

Russia is the second-largest producer of platinum in the world, with a 2018 production of 21mt. The country's reserves of PGMs are 3,900mt (U.S. Geological Survey.) The Russian economy has developed better than expected in recent years and the prospects for the coming years are rated as generally good due to its leading role in the mining of platinum group metals. The PGM is highly consolidated. The Strategic Investments Law, which regulates access of foreign investors to the mining industry, gives privileges to Russian companies that play key roles in the sector and restricts foreign firms from developing large, or 'strategic' deposits.

In Russia PGM companies are investing a great deal of resources in exploration and production facilities and also looking at recycling processes and procedures to ensure the continued future supply of these essential metals.

Canada takes the fourth spot in the list of global platinum recovery, with a production of 9.5mt last year. A significant part of platinum mined in the North American country is a by-product of nickel mining. The country's reserves of PGMs are 310mt. Canada exports the majority of its output to the US.

Mining generates the much-needed revenue and raw materials required for industrial development (International

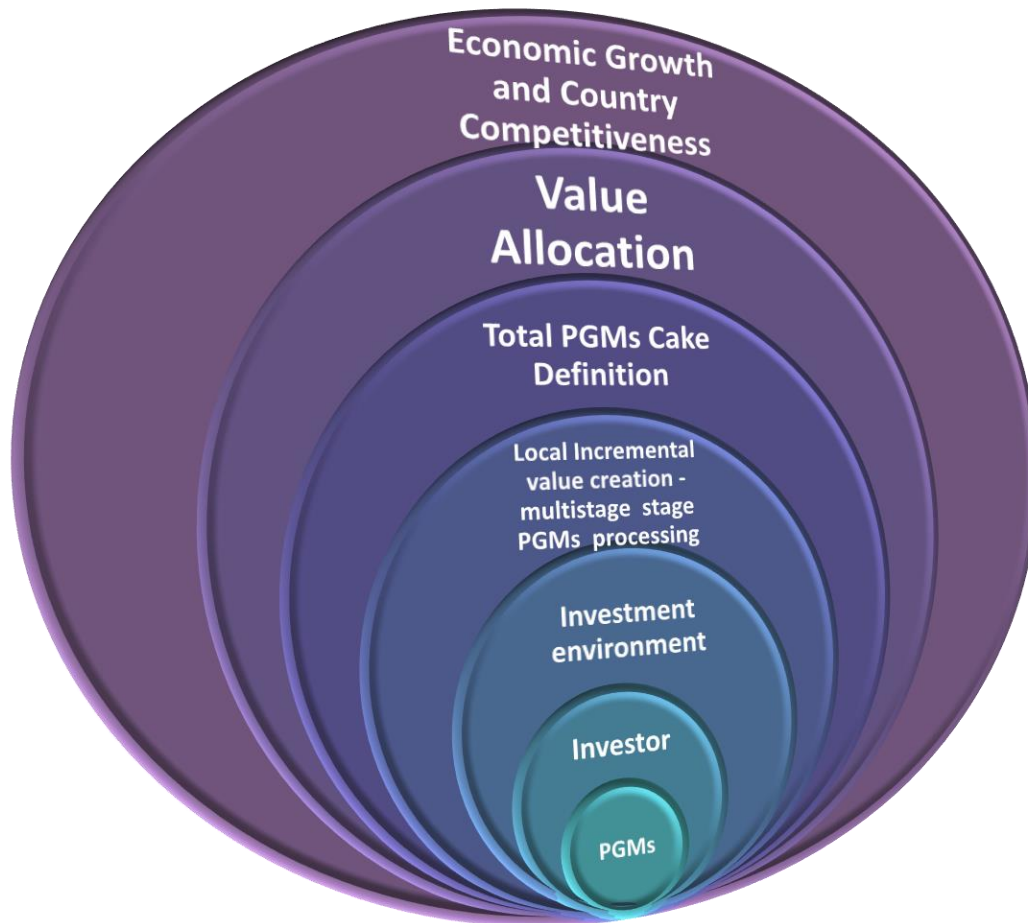
Council on Mining and Metals (ICMM), 2014). PGM mining generates the much-required capital to develop other key sectors of the economy, thus helping to address the problems of unemployment, poverty, and inequality in Canada

The US is the fifth largest platinum producer in the world, with a production of 3.6mt in 2018. The country owns two platinum producing mines including the Stillwater Mine, located in Nye, Montana, and the East Boulder Mine, which is located by Big Timber, Montana. Modernisation of the PGM industry in America is helping in ensuring global competitiveness and future sustainability. Through collaborative partnerships between PGMs and other stakeholders, United States of America has managed to shape an industry that is safer, more sustainable and efficient, and better harmonised with the needs of communities and of society as a whole.

VII. OPTIMUM PGMs SUSTAINABILITY MODEL FOR ZIMBABWE

Creation of optimum macroeconomic conditions, eradication of political and other risks and engendering a robust mining framework is the panacea to developing sustainable PGMs mining. The illustration below demonstrates the potential the country currently possesses for full scale development of the PGMs sector. This illustration gives comfort to all the benefactors and beneficiaries of the value accruing from optimum exploitation of the PGMs in Zimbabwe. It adequately captures all interests associated with the existence of the PGMs in Zimbabwe. Role clarity is therefore critical in ensuring ease of exploitation of the resource. The PGMs sector can grow from the current 3-3.5-billion-dollar industry to 20billion dollars only if we avoid losing value along the entire value chain. The state need not obsess itself with owning any of the resources but create optimum conditions for retaining all the value and proceeds of the exploitation of the resource in Zimbabwe through value addition and beneficiation, dedicated infrastructure development, industrialisation, linkages and local enterprise development as well as value chain development.

Whilst the current value distribution of the PGMs is in excess of 80%, the proposed model will broaden the expected output from the current 3billion dollars. Derivatives from value accumulation of beneficiation and industrialisation will provide a multiplier effect at every stage of beneficiation. Feeder and support industries are created with potential to harness expertise, innovation and skills to enhance downstream and upstream support industries.



VIII. CONCLUSION

This paper establishes that there is a direct correlation between an equitable investment environment and sustainability of PGMs mining in Zimbabwe. The more favourable the conditions for profitability the bigger the PGMs cake. Global best practice sustains the notion that national stakeholders derive their interest in supporting the growth of PGMs sector broadly for their selfish reasons. These include the need for infrastructure development, value chain creation, employment and skills development, poverty reduction, business linkages and industrialisation.

The paper also buttresses the position that there is a nexus between rationale government policy and PGMs mining growth in Zimbabwe. Bad government policy shuts out not only globally reputable PGMs extractors, but derail opportunity for backward and forward linkages, on its own an important process for value addition and beneficiation. The dichotomy however remains, whilst the country locates itself as the second largest holder of PGMs worldwide only form South Africa, Zimbabwe misses a unique opportunity to increase PGMs exploitation, grow the PGMs sector and create industries associated with the final products. The country only processes to matte which demonstrates that Zimbabwe is unable to directly benefit from all by products of the PGMs value chain. Zimbabwe therefore must recalibrate its

PGMs exploitation matrix to enhance its chances of driving platinum global value chains from Zimbabwe and ensure the country becomes global best practice in sustainable platinum mining and processing.

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