



The Complete African Mining Team

African Artisanal Mining Opportunities

November 2017



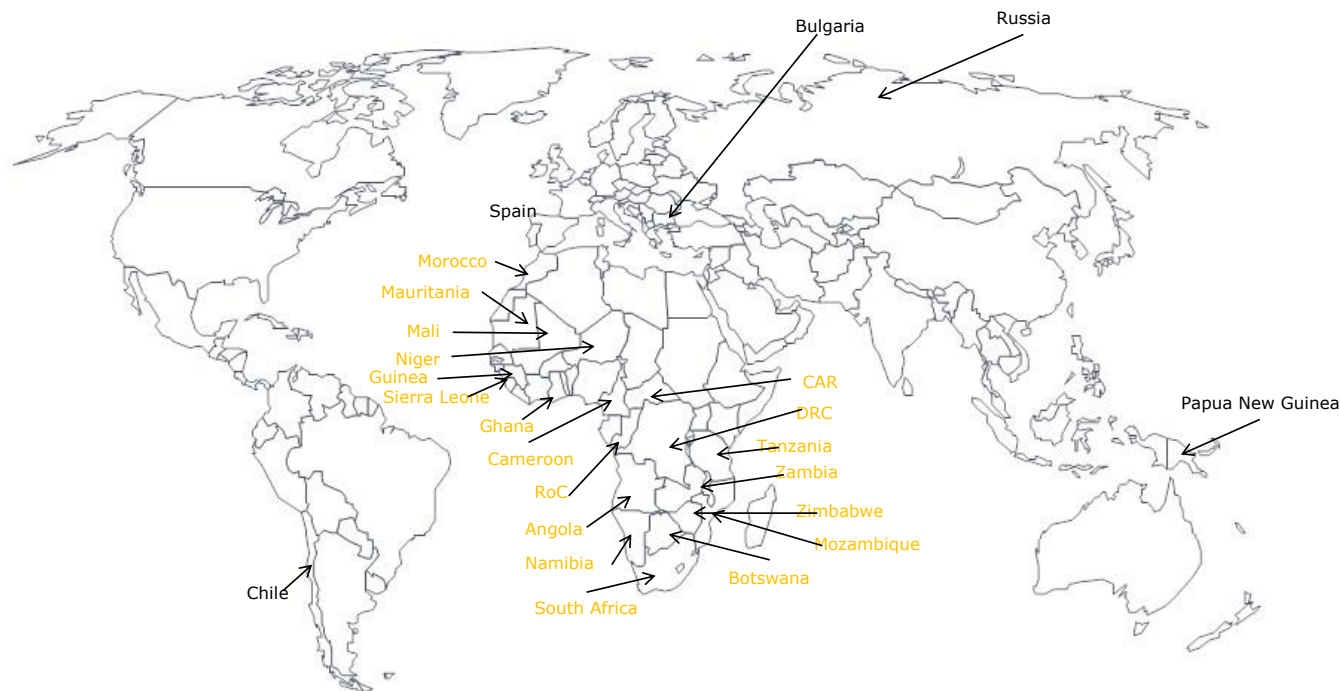
Madini Minerals

- Established in 2014, survived the commodity slump of 2015
- Run by seasoned mining professionals combining extensive operational and corporate track record
- Experienced mining entrepreneurs, developers and operators who have developed a range of small to multi-billion dollar projects
- Focused on cash or near-cash projects and projects with substantial equity upside, but able to move on compelling earlier stage opportunities
- Innovative business model to unlock the deep value exposed by the sector holding pattern
 - Equity participation
 - Services at cost
- Commodity agnostic, but recognising market fundamentals
- Country agnostic, but recognising “red zones”
- Innovative partnering approach provides many opportunities

Our innovative strategy is working

Management DNA & Track Record

- Multi-disciplinary team with strong African footprint
- Experienced mining entrepreneurs, developers and operators
- Focused on project construction & operational strategy in order to create shareholder value
- Track record in various commodities and jurisdictions

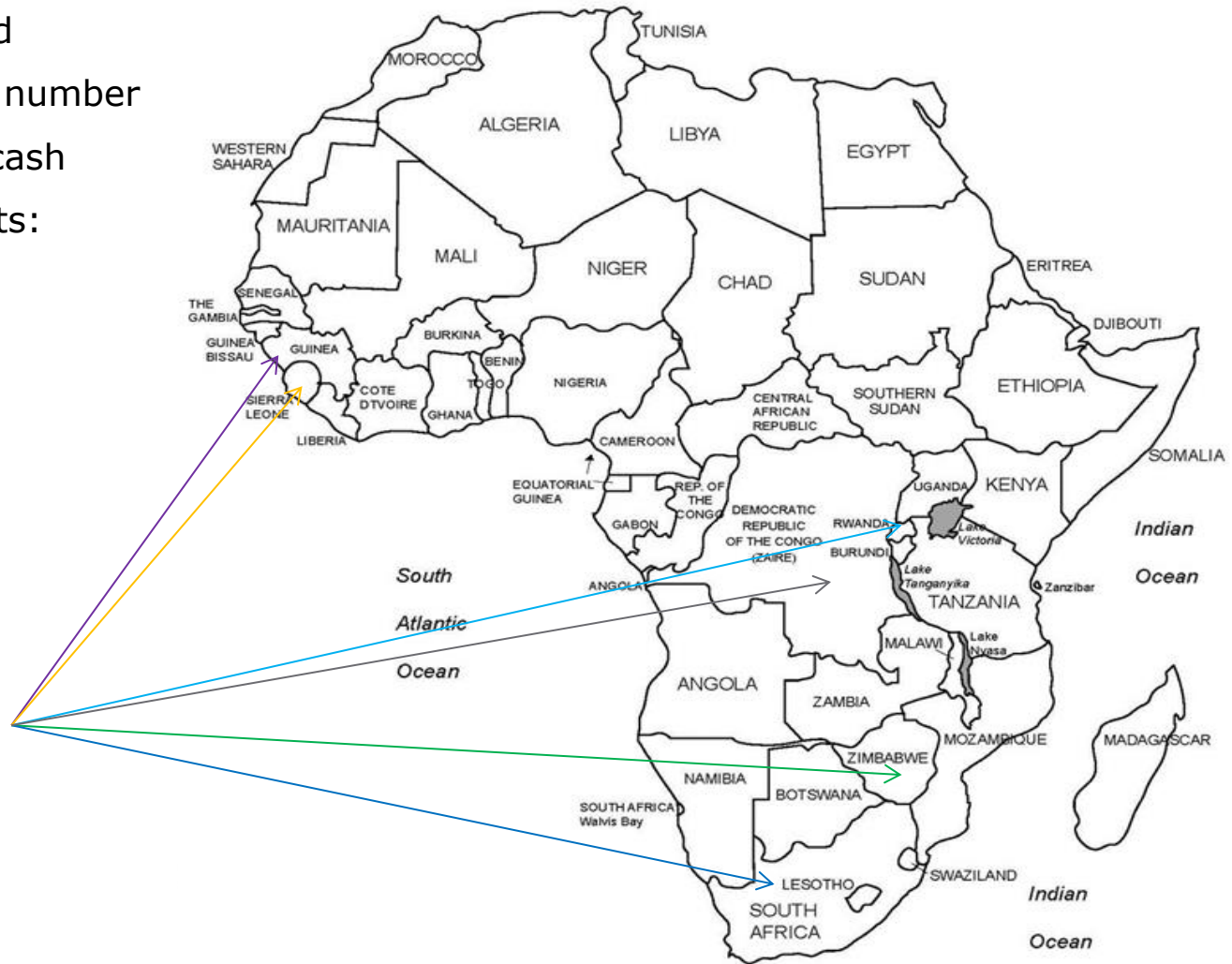


African Expertise and Focus

Current Focus

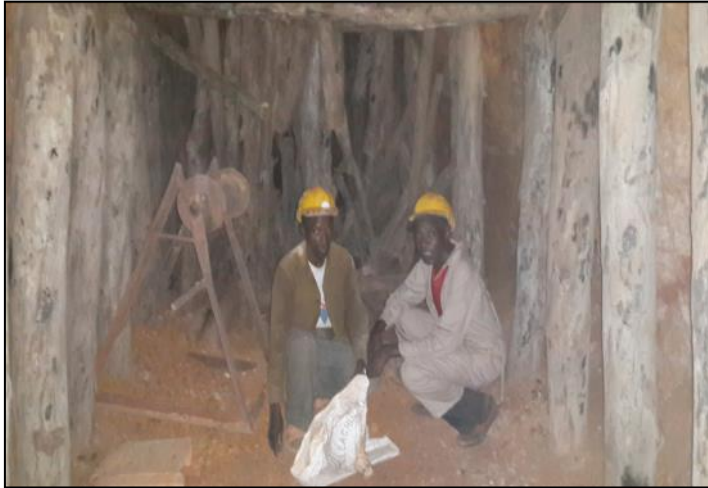
- Evaluating and progressing a number of near or in-cash mining projects:

- Guinea
- Sierra Leone
- Rwanda
- DRC
- Zimbabwe
- South Africa



Intro to Artisanal Mining

Artisanal Mining



Small Scale Mining



Artisanal & Small Scale Mining (ASM)

- The World Bank defines **artisanal mining** as “a type of manual, low technology mining conducted on a small scale, predominantly in rural areas of the developing world.”
 - Smallest and simplest of mining operations, which involves the use of simple tools with basic mining and processing techniques, resulting in poor efficiencies
- **Small-scale mining** involves the use of basic mining and processing technologies such as mechanical drilling and blasting, mechanised loading and hauling, hoisting, and processing with gravity concentrator and other similar techniques
- Traditional small-scale mining includes licensed and registered non-mechanised or semi-mechanised mining operations, usually run by individuals or organised cooperatives
- In Africa, it is estimated that **6-8m people are directly employed in ASM** with a potential 20m population depending on the sector

Artisanal Mining – a large sector in need of support

Artisanal & Small Scale Mining (ASM)

Why the focus on artisanal mining?

- The ASM sector is a largely overlooked, but prospective sector
- Primarily a poverty-driven activity that nonetheless plays an important economic role.
- ASM can be environmentally damaging and often has serious health and safety consequences
- Reduce environmental challenge due to mercury use and environmental degradation caused by ASM (as it occurs within a vacuum of government regulation and pressure)
- Improve efficiency in this sector
- Identify opportunities to improve the development impact of mining
- ASM provides proof of the presence of economic grade and is often an indicator of scale deposits

Artisanal & Small Scale Mining (ASM)

Madini Role and Objectives:

- Although Madini's primary focus is in developing industrial scale mines, it has recognised the opportunities and benefits afforded by working effectively with the artisanal mining sector
- Non-conventional space in a niche market that is generally at best seen as a nuisance
- Taking informal artisanal mining to the next stage
 - small scale planned mining with strong, but cost effective technical, operational and management support and
 - access to small to medium scale capital
 - skills and knowledge transfer
 - focus on basic SHE principles and develop these
- Artisanal mining technical assistance program backed by funding to build internal capacity in countries such as DRC, Zimbabwe and Rwanda
- Alliances with 3rd party providers to enhance sustainability and upskilling around artisanal and small scale mining projects

Expected Outcomes

- Utilising ASM and small scale mining to generate early revenues to de-risk exploration and project development
- Facilitate artisanal exploration in a controlled manner in order not to sterilise orebodies
- Stimulate sustainable development leveraging ASM and small scale mining as a road to larger scale development
- Sustainable longer term economic activity
- Upskilling
- Applying sophisticated technical and managerial approaches to ASM
- Improved environmental and safety using better technology away from mercury use in ASM
- Increased efficiency through uplifted and improved skills on ASM actors:
- Better small scale mining plans, better affordable technology, mining plans
- Better contribution to the local economy as the ASM often is largely a poverty-driven activity
- Improved practices in mining and processing target minerals
- Positive impact in the supply chain as per Initiative for Transparency in Extractive Industry (ITIEI) in the engagement between ASM and small investors

Applying our Strategy

- Experience and knowledge of working with artisanal mining dates back to early 1990s in Ghana and 1980s in DRC
- Good understanding of the socio-economic drivers for artisanal mining means that Madini can create win-win synergies
- Legislation being promoted (Rwanda one example) where artisanals are permitted to work on ground owned by a formal mining company
- Strong government support for initiatives promoting sustainable development
- Developing NGO support for development providing opportunities for artisanal miners
- In depth assessment of the project
- In depth assessment of skills availability
- Agree work/pay contract with artisanals

Artisanal Case Studies

Zimbabwe – Gold



- Madini's formal gold mine is cross-subsidising exploration and contract artisanal mining on a potentially large scale resource
- Intense small scale mining in progress (contract milling) using stamp mills
- Increased output from 2-5Kg to 15-20kg currently – still expanding
- Increased gold recovery from 50% to 88%
- Total number of employees 196
- Strategy is to leverage artisanal mining to develop a large industrial scale operation, by regional consolidation and centralisation of processing facilities

Rwanda – Tin and Coltan



- Strategy is to leverage revenues from co-ordinated small scale mining to conduct further exploration and feasibility study
- The Project has been divided into three phases;
 - Phase 1: intensify artisanal mining within 3 months of funding
 - Phase 2: semi-industrial operation within 6 months of funding
 - Phase 3: step-out exploration program and compliant resource generation within 9 months supporting DFS engineering

Innovative, inclusive approach being put into practise



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