Tanzania's Precious Minerals Boom: Issues In Mining and Marketing

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Abstract

Since Tanzania began liberalising and privatising the mining sector a decade ago, the substantial economic potential of the industry is more and more apparent. Two key policy decisions set off a mining boom. One was the decision in the late 1980s to end the State Mining Company (STAMICO) monopoly and allow any Tanzanian to register a claim and sell minerals. The second was the liberalisation of currency controls, beginning with permission to exporters to use their export proceeds and culminating in the floating of the currency in 1994. This doubled the benefits of mining, as the foreign exchange proceeds could be used to finance imported consumer goods, equipment and spare parts, which had long been scarce. These all set off an immediate artisanal mining boom

The purpose of this study is to provide an understanding of artisanal marketing patterns, their logic and their economic impact. This study has come at a time of sweeping changes in Tanzania's mining sector, and in the larger national economy. Tanzanian policy-makers face a unique opportunity in the swelling mining boom. They also have to prepare for its inevitable subsequent decline. The liberalization of mining has brought poverty alleviation to rural areas in the 1990s on a scale far surpassing the impact of donor-funded job-creation efforts. Working with that trend, future donor-funded efforts can multiply their impact. On the other hand, if this sudden growth is neglected or misunderstood, the benefits of sudden growth in mining could be transitory. The impact could be negative if future inflation and other economic distortions are not controlled, if arms or drug dealers, or money launderers infiltrate the trade, or if greed, corruption or ethnic tensions are allowed to build around resource riches. None of these negative situations is currently an imminent trend in Tanzania, but all have occurred in other mineral-rich countries.

Acknowledgments

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Background

The substantial economic potential of Tanzania's mining industry is increasingly being appreciated since the country began liberalising and privatising the sector a decade ago. Two key policy decisions set off a mining boom. One was the decision in the late 1980s to end the State Mining Company (STAMICO) monopoly and allow any Tanzanian to register a claim and sell minerals. The second was the liberalisation of currency controls, beginning with permission to exporters to use their export proceeds and culminating in the floating of the currency in 1994. This doubled the benefits of mining, as the foreign exchange proceeds could be used to finance imported consumer goods, equipment and spare parts, which had long been scarce. These all set off an immediate artisanal mining boom. From a few thousand artisanal miners in the 1980s, activity grew rapidly in the 1990s. In 1993, 330,000 were involved, and by 1995 550,000 Tanzanians earned at least some of their income from mining. Gold, diamonds, tanzanite, and a multitude of precious and semi-precious coloured stones were found throughout the rural areas.

Unexpected outcomes of this study included documenting the startling impact that this has had in relieving rural poverty, putting cash into circulation in rural towns, and allowing some individuals to accumulate significant investment capital. The question remains whether these trends are sustainable, and what Tanzanians can do to make the benefits most balanced and sustainable.

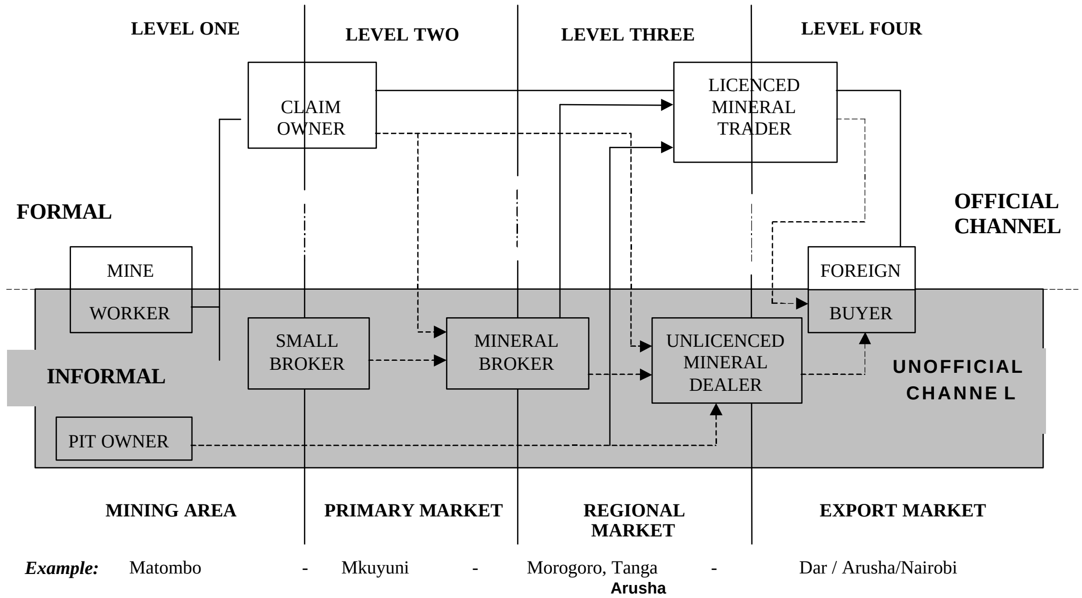
Large-scale mining exploration began almost simultaneously with the artisanal rush, stimulated by trade and investment liberalisation, active promotion of Tanzanian mineral potential, and a reform of the legal and fiscal regime applicable to mining. By 1998 Tanzania attracted the most mining exploration investment dollars of any country in Africa, US$58 million. The first new formal gold mine began production in late 1998, and ten large gold mines are expected to come on line in the next three years.

The Study

The present study was conceived in 1995 and initiated in 1996, at a time when the artisanal boom was in full swing, but government was still experimenting with a marketing system to replace the defunct State Mining Company (STAMICO) monopoly. Gold buying had at first been conferred on the Bank of Tanzania (BOT), and gem exporting on licensed dealers. But the BOT scheme had collapsed in 1994 and the regulations for licensed buyers were not yet stable. There was a lot of smuggling, but it was difficult to know how much, where it was going, and why it was happening.

Nairobi had long been a hub of regional gold and gem trades for countries throughout East Africa, the Great Lakes countries and what was then eastern Zaire (today Democratic Republic of Congo [DRC]). It was suspected that much of the trade was going there, but it was not known what other outlets existed, or what competitive advantages Nairobi offered.

Figure .1 MINERAL MARKET CHANNELS



The main original purpose of this study was therefore to provide an understanding of the actual artisanal marketing patterns, their logic and their economic impact. The study was conducted in dialogue with a Policy Advisory Committee comprising stakeholders in the sector, including ministries, professional associations, and researchers. It used rapid appraisal methodology, and later a series of questionnaires, to interview participants at every level of the chain, from mineworker, to pit-financier, claim holder, broker, and dealer. The Ministry of Energy and Minerals, the dealers association (TAMIDA) and the miners' organisations (FEMATA and its regional branches) greatly facilitated the work.

The team started with the hypothesis that, in the face of easily concealed goods and porous borders, an incentive system was more likely to succeed in attracting trade to legitimate Tanzanian channels than the use of force. Tanzania was going to have to compete with Kenya for the trade.

The Markets

The first phase of the study showed that there were two to four market levels in the regional marketing chain, up to the point of export. The first point of sale is the mine, where mineworkers sell their minerals to either the claim holder or mine brokers. At the second point of sale, in nearby villages mine brokers and some claim holders sell to long-distance brokers, who carry the minerals to one of the regional export markets. Some claim holders are also licensed dealers, and export their minerals directly. Most dealers are based in Nairobi, Arusha, or Dar es Salaam. Many have branch offices in Mwanza, Shinyanga, Singida, Mbeya, and one of the southern towns (Tunduru or one of a half dozen other sites). The third point of sale may be a branch office, and the fourth the actual export to a foreign buyer. Participants throughout the chain forward and backward integrate whenever they can. Mine workers love an opportunity to sell directly to a foreign buyer and vice-versa. But for most sales, time and travel costs still make it more economic to go through the chain.

Competing with Kenya

At each point of sale, the team asked participants how much of the goods were sold where and why that market was chosen. The result is shown on Map 1. From the Lake zone and northern part of Tanzania, in 1996 90-95 percent of the gold and about 60 percent of gems were going to Nairobi.

The main reasons were simple: price and convenience. The gold was going out because there basically were no Tanzanian buyers. The few dealers who had tried to register were harassed by local tax officials, who overestimated the mark-ups in the sector and overstated the tax obligations.

For gems, analysis showed that Nairobi could offer better prices and convenience for two main reasons: (1) dealers there paid no transaction taxes (although their corporate income tax rate was identical to Tanzania's), and (2) they had more capital than Tanzanian dealers, so they paid cash on the spot. Tanzanian dealers often bought on consignment, and waited until they were paid to pay their suppliers.

The impact of smuggling on GDP was less than officials had thought, because much of the value-added is in the reserves themselves and the lower levels of the marketing chain. The following charts of regional value-added through the marketing chain of gold and gems illustrate this point.

Figure 8.3 Regional Value Added from Artisanal Gold
(77 Percent of Total Stays inTanzania despite 95 percent Kenyan Exports)

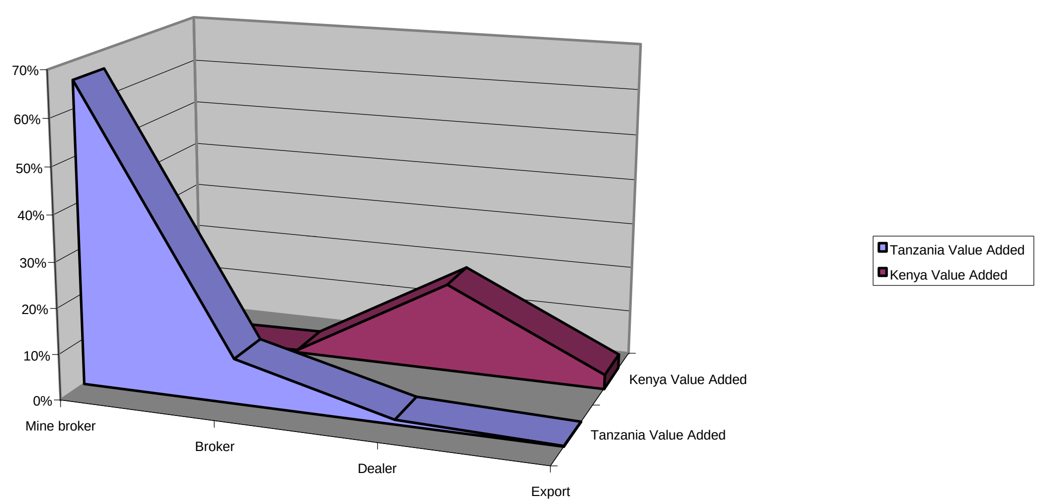
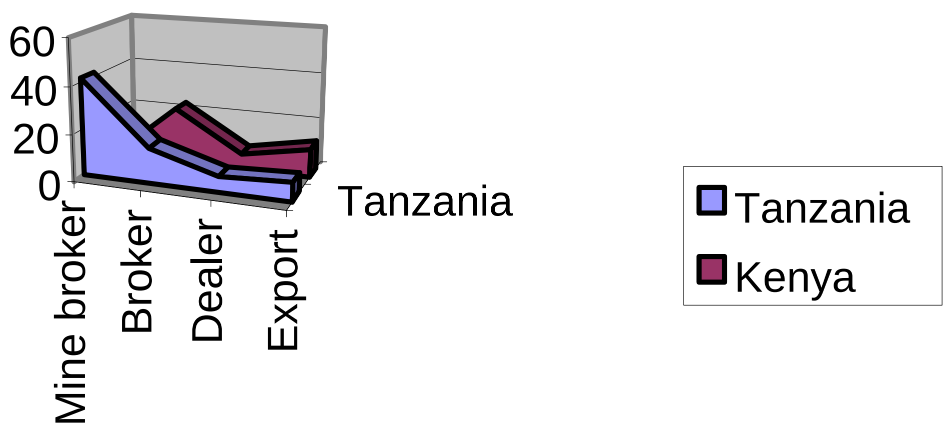


Figure 8.4 Tanzanite Value Added (63% Stays in Tanzania)



Taxes

Economic modelling of a dealer's operations, comparing Nairobi and Arusha and paying all lawful taxes, showed that the tax structure in Tanzania was the core of the problem. Tanzania had a plethora of small taxes and royalties payable on each export, which created substantial transaction costs and drained dealers' working capital. Both dealerships in the model started out with $40,000 in working capital, and had identical purchases, sales and costs in the first year. The only difference was the tax structure. At the end of the first year the Nairobi dealership had 36 percent more working capital, and had paid 23 percent less taxes. This was mainly due to transaction taxes. But by the end of year three, the fact that the dealer had more capital meant that both dealership and government were the winners. The dealership had three times as much working capital as the Tanzanian, and the Kenyan government had collected 63 percent more tax revenues than the Tanzanian government on the same type of business with the same initial capital.

Government tested these findings by eliminating export duties, and reducing rates for both royalties and corporate tax. It also established a new joint-venture gold buying scheme. The response has been a clear growth in both the volume and the proportion of minerals exported legally through Tanzania.

Fiscal specialists followed up with broader more thorough tax study under the second phase of funding for this study. The tax team conducted financial, economic, distributive and risk analysis on the tax structures applicable to a gemstone dealership and a gold mine. It concluded that the best combination, to ensure reliable government revenues and sectoral growth, was a combination of the current royalties (minimising government risk), VAT and corporate tax (maximising revenue benefits from economic growth). Government could eliminate the remaining "nuisance taxes" on transactions (withholding and stamp tax) with little risk. It had already been shown that eliminating transaction taxes attracted exports to legal channels. Government could eliminate all nuisance taxes without losing any revenue if the response from the sector resulted in at least 10-12 percent less smuggling.

The second phase study also looked at the tax regime for large mining companies. It found that the policies were generally competitive enough to attract investment, particularly in light of Tanzania's especially rich gold and gem deposits. Tax administration, however, was found to be hampering the operations of the sector, increasing the costs of investment. Chief among the problems was poor administration of a VAT drawback scheme applicable to items that, by law, are exempt from duty during the initial construction phase of a mine. TRA had failed to credit or reimburse several millions of dollars in VAT refunds, tying up the capital needed for construction and occasioning high interest charges.

Economic Analysis

The economic analysis conducted in the first phase of the study produced some insight into policies capable of attracting more trade to Tanzania. Government has implemented some of them, and devised a new gold-buying program. Together these are today attracting a considerably larger portion of the precious minerals trade to pass through Tanzania. Officially declared export values are shown in Table 1 below.

The official figures are known to understate real precious minerals exports. Weighing the combined effects of smuggling and undervaluation on Tanzanian declarations, the following are estimates of actual values of minerals exported from Tanzania in 1996 and 1998. In 1998 as much as half of the gold and diamonds exported may not have been produced in Tanzania, but rather in eastern DRC. Goods from DRC come across Lake Tanganyika to Kigoma or through other Great Lakes countries. Combatants in DRC, as in a number of other African civil wars, use precious minerals to finance their operations.

Actual exports of precious minerals, by the above estimates, were 2 percent of GDP at factor cost in 1998, instead of the 0.33 percent yielded by declared export figures. Both precious minerals exports and total GDP were undercounted by US$113.8 million. That would mean that actual exports were greater than reported as well: US$758.8 million instead of US$ 645 million. It would also mean that precious minerals were Tanzania's largest export, accounting for 18 percent of total exports. The next largest export, coffee, accounted for 15 percent, cotton for 12 percent, and manufactures for 9 percent. Similarly precious minerals apparently were the largest source of foreign exchange. This helps explain how Tanzania could have financed a current account deficit that appears in official statistics as US$1,102 in 1998. Official statistics have shown substantial current account deficits for decades, combined with consistent budgetary deficits. One would expect Tanzania to have experienced hyperinflation and rapid currency devaluation in such circumstances, but that has not happened. Invisible exports of gold and gems go a long way to explaining why the real economy is healthier than the official statistics would suggest.

Table 1: Precious Minerals Exports, 1989-1999, Declared Value in US$

	1989	1994	1995	1996	1997	1998	1999 (proj)
GEMSTONE EXPORTS	784,060	6,464,850	7,279,930	9,583,248	7,946,819	8,127,249	11,858,079
DIAMOND EXPORTS							
Diamond mine exports	14,214,470	5,038,380	4,341,310	13,391,812	15,841,000	10,473,443	12,420,963
Rough and contract sales	9,752,720	3,218,380	4,341,310				
Cut	4,461,750	1,820,000	0	0	0	0	
Diamond exports by dealers	NA	NA	NA	461,192	4,486	7,686	0
TOTAL DIAMOND EXPORTS	14,214,470	5,038,380	4,341,310	13,853,004	15,845,486	10,481,129	12,420,963
GOLD EXPORTS							
Gold Exports by dealers			3,268,800	NA	679,611	188,860	512,541
Gold Exports by BOT/Meremeta Ltd.	1,152,060	25,679,400	None existed	None existed	1,104,646	2,947,297	2,359,824
Gold exports by large mines	Did not exist						35,492,803
TOTAL GOLD EXPORTS	1,152,060	25,679,400	3,268,800	2,185,519	1,784,257	3,328,600	38,365,168
TOTAL PRECIOUS MINERALS EXPORTS	16,150,590	37,182,630	14,890,040	25,621,771	25,576,561	21,936,978	62,644,210

1/ Source: Ministry of Energy and Minerals. Some figures inferred from weights, or projected from part year results.

Table 2: Summary of Estimated Actual Values of Precious Minerals Exports

Estimated Actual Values	**1996 (US$ m)**	**Assumptions**	**1998 (US$ m)**	**Assumptions**
Gold	62,693,943	5T @ US$ 390/oz	93,237,146	10T @ US$ 290/oz
Coloured Gems	47,916,240	60% smuggled out, rest 50% undervalued	29,553,631	45% smuggled out, rest 50% undervalued
Diamonds	22,172,217	Artisanal production, est. $6m 100% smuggled out, 25% undervalued, mine production 10% undervalued	18,854,953	Artisanal production, est. $6m, 100% smuggled, 25% undervalued, mine production 10% undervalued
Estimated Actual Total	132,782,400		141,645,731	

Poverty Alleviation

The economic analysis also produced some unexpected results. First among them was that the artisanal mining boom had contributed enormously to rural job creation and incomes. The basic income in mining towns (reservation wage) was about six times what rural men could earn doing farm labour—and very few days of paid farm labour were available in the year. A sectoral baseline study in 1995 found that 550,000 people were employed in the sector (Tan Discovery, 1996). There were then only 1.2 million total salaried jobs in Tanzania, which means that the mining sector had added another 46% of middle income jobs to the total employment, in the space of six years. Secondary economic activities that follow mining such as shops and services generate an estimated three jobs for every one directly in mining.

Moreover, the money coming out of artisanal mining appears to be staying local, greatly enhancing cash flow in isolated rural areas. While splurging after a rich find is commonplace, not all of the income is going into the proverbial "wine, women and song." Miners are building capital to move up a career ladder into brokering and dealing. Some are investing in more stable businesses such as shops, restaurants and guesthouses. No other sector or job-creation program has injected dispersed incomes into rural areas, stimulated cash flow and reduced rural poverty and on such a scale.

Mining towns, far from being the islands of anarchy associated with gold rush legends, appeared to be bringing some prosperity to neighbouring villages—modern housing, corrugated roofs, slight improvements in roads and schools. Tanzanian society has thus far been better able than other countries to control potentially damaging social developments. New mine-rush communities quickly produce elected chairmen who establish a system of law and order. Neighbouring villagers had few complaints about mining. Nearly all of their comments about the impact of mining were positive, even where few local residents participated.

Making this trend a sustainable and healthy sector, however, requires careful monitoring and management. Artisanal methods can be used safely on only the top 30 meters or so, and they are economically attractive only on rich deposits. Already the number of jobs in artisanal mining appears to have fallen off fairly sharply. Where there were 250,000 participating in the southern zone gem rush in 1995, by 1999 the team found only a few thousand miners. Along the Muhuwesi River the number of active miners declined from 41,700 in 1995 to about 610 in 1999. Interviewees there attributed this largely to the departure of foreign buyers (mainly Thais and Sri Lankans), partly pushed out by shifts in policy by different levels of government, and partly attracted out to Madagascar by rich new finds there. These buyers had had enough working capital to keep the sector flourishing, whereas Tanzanian dealers generally have less capital and therefore finance less mining. It was also evident, however, that the "easy pickings" of alluvial mining had been exhausted, at least in the original areas. In the boom years this virgin mining area produced some spectacular sapphires, alexandrite, chrysoberyl and a host of other semi-precious stones from the top couple of meters of riverbank gravel. Now miners were having to try to divert water to get at the actual riverbed. They had not yet the means to find or exploit the veins from which the alluvials had washed.

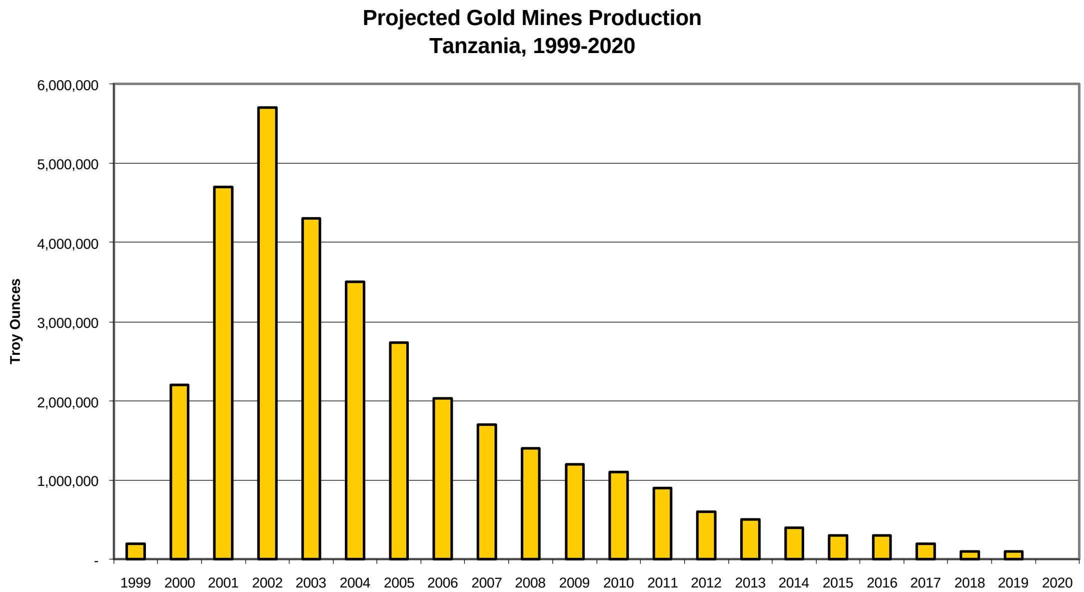
A second factor that is contributing to the decline in jobs in artisanal mining is displacement by formal mining. Artisanals generally coexist with international mining companies during the exploration phase. When the companies are ready to fence and mine, some artisanals have to be displaced. About 30,000 artisanals were thus removed in 1998 and 1999 when the first two modern gold mines began construction.

Health, safety, social and environmental problems that developed with mining need careful attention. AIDS, malaria, and other contagious diseases spread readily among mobile, predominantly masculine mining populations. Poor mining techniques and use of explosives cause far too many serious injuries and deaths. Mercury used in purifying gold contaminates the air, soil and water, entering the food chain. The main impact so far is on those actually doing the purification. Artisanal mining pits pock the landscape, and the runoff silts up streams. Low-cost retort systems are available to control mercury, and miners can be trained and regulated in the use of explosives. But no solution has yet been found for land rehabilitation in artisanal mining areas. The costs of these negative externalities of mining is born mainly by local communities and miners themselves. Any cost-benefit analysis of artisanal mining needs to weigh these costs, but at present the team found no way to quantify them.

Balancing Artisanal and Large-scale Mining

Tanzanian government policy is to encourage the growth of both small-scale and large-scale mining. Each brings a unique set of benefits. Large-scale mining exploits deposits up to several thousand meters in depth that cannot be reached by artisanal or small-scale formal mining. It brings investment, improvements in infrastructure (roads, electricity, and water supply) that can benefit local populations as well as the mine itself. It brings advanced technology and transfers skills to Tanzanians that will prepare a core group to participate in the global economy at a sophisticated level. It generates royalties many times greater than the maximum achievable from artisanal and small-scale mining. While it generates fewer jobs than artisanal mining, they are better quality jobs. The incomes of their Tanzanian employees and a significant part of the incomes of expatriates are spent on the local economy.

International gold mining companies have started what is expected to be a rapid escalation of exports. The team produced the following chart of the projected combined production schedules of nine projects that were considered certain to go ahead as of 1999.



The rapid growth is exciting much attention at present. The projected decline needs to attract even more. As the smaller mines are exhausted and the few large ones face higher production costs, total production will decline quickly. That means that the revenues accruing in the next few years are windfall revenues. To generate sustainable development they need to be invested wisely.

Artisanal and large-scale mining inevitably compete for a small portion of the rich mineral deposits in Tanzania. There is currently a dual claims system whereby small-scale claims are issued, exclusively to Tanzanians, through zonal mining offices. Large companies get their licences through the Ministry in Dodoma and Dar es Salaam. Claims often overlap, without either claim-holders or the different levels of administration necessarily knowing. When large and small claim-holder meet in the field in such circumstances, each side feels that the other was invading its territory. Government plans to remedy this situation by creating a unified register of claims in Dar es Salaam, which will be regularly updated. The new mining law of 1998, which was promulgated as of August 1999, will require half of each prospecting and exploration licence to revert to government upon expiration of the original term. This is intended to allow Tanzanian miners to peg claims on smaller deposits documented by international standards, but deemed uneconomic for large companies to exploit. Many of these can be exploited successfully by smaller companies with lower costs of production.

Strategic Analysis of Tanzania's Potential for Sectoral Growth

The report includes a thorough survey of international gold, diamond and coloured gem markets, an analysis of sources of supply and demand for each, recent trends and market structures and behaviour. Recent theories of economic development stress on going strategic analysis of competitive advantage, involving all stakeholders in a sector. (Porter, 1982, 1990; Fairbanks and

Stace, 1998) Such participatory analysis and dialogue is what the present study has sought to accomplish. The research process was led by a well-connected think tank (ESRF), and the team were in constant consultation with a stakeholder advisory committee. To cap it off two workshops brought together participants throughout the sector, one in Mwanza organized by the Chamber of Mines in September 1999 and the other at ESRF in December 1999. Five of the principles Fairbanks and Stace emphasize were particularly relevant for this study:

1. Avoid Overreliance of Basic Factors of Advantage
2. Improve Understanding of Customers
3. Know your Relative Competitive Position
4. Know When and When Not to Forward Intregrate
5. Improve Interfirm Cooperation

Each of these applies to the minerals sector in Tanzania.

1) Avoid Overreliance of Basic Factors of Advantage

Tanzania's comparative advantage in the minerals sector relies primarily on the existence of rich deposits of valuable minerals. There seems to be little doubt that if it adheres to the current policy framework for large-scale mining and implements the policies reasonably reliably, Tanzania's large-scale mining sector will grow fairly rapidly—barring a major international market collapse. Projects are already underway that will escalate production tenfold in the next three years. For artisanal and small-scale miners the outlook is also good, although considerable less well documented.

Sources of dynamic competitive advantage include Tanzania's stable democratic government, relative social harmony, low violent crime rate, and modernising economic policies.

Constraints, as seen by participants and potential investors include the following:

- Poor infrastructure
  Telecommunications: costly, often unavailable in remote mining areas
  Roads: poor quality, seasonally impracticable, require expensive vehicles: costly in both time and money
  Electrical supply: costly and unreliable
  Port and air infrastructure—adequate but costly for international travel and transport. Port clearance beset by delays that increase transaction costs, raising costs of doing business.
- Tax structure
  For artisanal production and trading, tax policy is becoming more competitive with Kenya, but further reform would attract more trade.
  For large mining tax policies are competitive, but tax administration is a negative factor. The tax structure applicable to mining is favourable enough to attract investment in mining and processing for both large and small investors. Arbitrary collection practices, a

plethora of nuisance taxes, and unpredictability of tax-related costs are serious disincentives.

- Overlapping systems of claims allocation. The lack of a unified register of claims, transparently and fairly administered, has created tensions in the past. This is being rectified by the creation of a computerised record in Dar es Salaam.
- Administrative arbitrariness. Both artisanals and large companies complain of differing interpretations of regulations, changes in regulations, imposed work stoppages, sudden rises in fees, etc. This is a major disincentive for both sets of stakeholders.
- Concerns about security. While low violent crime rates have been experienced in the past, Tanzania relies on customary moral authority more than an adequate police force to provide security in remote rural areas where most exploration and mining takes place. Artisanal traders experience police as an obstacle rather than an asset to legitimate trading activity. Large companies are concerned about recent acts of armed violence and the presence of refugees from nearby armed conflicts. Theft is a significant cost throughout the sector. Payrolls and trade goods cannot be kept safe for lack of rural banking facilities.
- Lack of capital is a problem mainly in the artisanal sector. Dealers lack enough capital to buy both first and second quality goods, cash on the spot. Kenyan dealers have an advantage there. Miners lack capital to operate artisanal mining. Very few approach the capital accumulation needed to invest in formal small-scale mining.
- Lack of indigenous capital also affects large mining companies, forcing them to rely on expensive expatriate partners for outsourcing that they would prefer to do locally if partners with adequate capital, experience and quality control were available.

2) Improve Understanding of Customers

Customers for Tanzania's precious minerals are the international markets for gold, diamonds and coloured gems, each of which was described above. Tanzanian stakeholders need to understand and monitor these markets regularly.

At present lack of market information is a major constraint for the artisanal sector, causing volatility in domestic markets and limiting the development of optimal trading strategies among Tanzanian stakeholders dealing international markets. Government programs aimed at providing stakeholders low-cost access to journals, the Internet and other sources of information on international precious minerals markets is probably more important even than training in improving Tanzania's competitive position.

Lack of coherent market information is particularly a problem for the coloured gem markets. Such information is increasingly available on the Internet. Recently the cost of Internet access in Dar es Salaam has decreased sharply, which can be a competitive advantage for Tanzanian dealers. This needs to take place in Arusha as well, and training programs should focus on effective use of the Internet for researching market information and joining trading lists.

Market research on niche markets available to Tanzanian stakeholders should also be encouraged. The concept hardly exists at present. Tourists constitute one "captive" niche market that Tanzanian stakeholders should study.

3) Know your Relative Competitive Position

Tanzanian policy-makers have recently visited countries with which Tanzania competes for trade and investment: Ghana, Zimbabwe, Sri Lanka and several other African, Asian and Latin American producing countries. Only a few other Tanzanian stakeholders have any understanding of the international competition. The gold and gem deposits that today seem an immutable source of Tanzanian comparative advantage, for example, would interest international trade and investment far less if peace suddenly came to DRC and Angola, and their richer deposits were competing with Tanzania.

Similarly, Tanzania's unique tanzanite deposits could face competition if other sources are discovered. (This happened with tsavorite, for example, to Kenya's disappointment.) As the stone and its geology become better known, the search for other deposits is likely to intensify.

4) Know When and When Not to Forward Integrate

Forward integration means moving from one of the niche's in the chain into those further on, e.g. from mining into dealing/exporting. Backward integration means moving from one niche, such as dealing rough, up the chain into mining. Tanzanian participants at all levels are trying to forward and backward integrate, often with little success and little understanding of their competitive advantage in each niche.

New communications technologies have lowered marketing time and costs, making it very easy to forward and backward integrate in the trading aspects. This innovation is driven by technology, not policy. The main factor thus far is the Internet, but other telecommunications innovations are also underway. Daily the pace of business accelerates throughout the world and the importance of distance diminishes. Throughout the world, businesses at every level in the chain are putting up full information on their products and services on web sites. They have established semi-private email trading networks that reduce transaction costs and reduce the economic viability of traditional trading/brokering services. The consensus at the recent decennial gemmological symposium was that dealers/traders margins at every level of the chain have been getting narrower and will continue to do so. Fewer will find employment in dealing, and more in value-added activities.

Value-added activities:

Gold assaying and refining equipment is available for a small capital investment. Main constraint is lack of capital to buy the gold.

Cutting gem-quality material: Competition: Thailand, Sri Lanka, India and now China. All have cheaper labour, experienced cutters, ample supply of gem-quality materials to cut, and established markets for their produce.

Tanzania is unlikely to be able to compete with these countries for the mass market. On the other hand, it can rely on its access to deposits to develop a niche lapidary and jewellery industry. Taking advantage of modern information technology, they can potentially sell directly to retail customers, more than offsetting their disadvantages on labour. Participants need to target their marketing, know their customers, improve the quality of their output, and provide customers with reliable quality grading. South Africa is the closest competitor country for this approach. Tanzanian stakeholders could do some competition research there quite profitably.

Tumbling, carving, and the development of crafts and jewellery from lower quality goods are another niche market worth developing. One finds ample supply of materials at no or low cost in mining areas. The equipment is inexpensive and skills are readily acquirable. Manufactured findings for jewellery are available, although some procurement research is needed on this. Again South Africa is both a competitor and a potential source of help in developing this niche.

At the top levels of the gems-jewellery chain most Tanzanians lack the capital and knowledge of markets to succeed. Top levels include international gem-quality rough trading, top quality gem cutting and international cut stone trading. A few individuals are likely penetrate them through exceptional efforts and success.

Jewellery manufacture has many niches, some of which Tanzania can enter. Tanzanian jewellers can focus on two promising areas for the future, and one smaller one:

1) Producing moderately priced jewellery for the tourist and domestic markets, using lesser grade stone materials and purchased Asian fittings.
2) Producing middle-quality fine jewellery, which will have a much smaller tourist market and may not be able to compete on the domestic market with imports from Dubai and Asia.
3) A few talented designers may make a living selling their hand-made designs, again focusing on the tourist and domestic markets.

Jewellery distribution: Global jewellery distribution has become compartmentalised. A large proportion of the best diamonds goes to Japan, although the market for coloured stones there is limited. Three years ago, when this study began, it seemed impossible for Tanzania to compete with established marketing networks. Tanzania had neither skilled craftspeople nor experienced, well-capitalised dealers, nor good cheap telecommunications—and it was less likely to attract the capital to develop them than many other countries.

Today the picture has changed. The Internet and the tourist trade offer potential marketing tools for a Tanzanian jewellery industry that barely exists. Knowledge of marketing is extremely scarce, but at least it is possible to see how it can be developed.

Taking advantage of Internet and tourist marketing contacts, Tanzania has the potential to develop jewellery with its own cachet and market it internationally.

5) Improve Interfirm Cooperation

Stakeholders in any sector tend to focus on their rivalries with one another, e.g. large mines vs. artisanals, dealer vs. dealer, dealer vs. broker. They complain of their problems with government regulators and with people or firms in other parts of the chain, usually immediately above and below the niche that they occupy. This has to stop in order for a sector to grow. Stakeholders need to see their common interests, and focus on how best to maximise their national position vis-à-vis the world situation. If they can set a common goal and keep focused on it, they will be better able to define the strategies and policies contributing to realise it or inhibiting it.

Two major opportunities for growth through "interfirm" cooperation emerged from this study:

1) Co-operative mining and marketing of tanzanite. Competition between miners and dealers in tanzanite at present is so intense as to be counterproductive. Prices rise and fall on world markets largely due to market shocks such as a ban on dealing or on mining. The fact that deposits are concentrated in a small area invites efforts to monopolise the market. Fencing the area would have to be the first step. Then perhaps miners and dealers could get enough control of production to organise a co-operative approach. A South African entrepreneur has floated a project to gain monopoly control of the tanzanite market with a purchasing scheme similar to DeBeers' Central Buying Office (for diamonds). (footnote)// This might stabilise the market, but it would likely concentrate benefits in a few hands. Today, despite the anarchic market, the benefits are quite widely dispersed.

Adopting a policy to encourage large mines to work with artisanals who seek to mine on the large company's claim. Outside the prime mining area, most mining companies hold claims on which artisanals are currently mining. They generally ignore them, although there are occasionally conflicts. If mining companies were allowed to buy the produce of the artisanals and enforce at least minimal safe practices, a win:win situation could be created. This is being done in Zimbabwe, Mali, and several other countries, and both sides are generally happier with it than with conflict.

Recommendations

This study has come at a time of sweeping changes in Tanzania's mining sector, and in the larger national economy. Tanzanian policy-makers face a unique opportunity in the swelling mining boom. They also have to prepare for its inevitable subsequent decline. The liberalization of mining has brought poverty alleviation to rural areas in the 1990s on a scale far surpassing the impact of donor-funded job-creation efforts. Working with that trend, future donor-funded efforts can multiply their impact. On the other hand, if this sudden growth is neglected or misunderstood, the benefits of sudden growth in mining could be transitory. The impact could be negative if future inflation and other economic distortions are not controlled, if arms or drug dealers, or money launderers infiltrate the trade, or if greed, corruption or ethnic tensions are allowed to build around resource riches. None of these negative situations is currently an imminent trend in Tanzania, but all have occurred in other mineral-rich countries.

This section summarizes policy and program implications of the study, including issues that stakeholders brought out in the two workshops sponsored in connection with the study. Each recommendation is given together with its rationale. All are time sensitive and we believe that these recommendations fit the situation today. As the sector evolves, policy has to be fine tuned in order to stay targeted on the same strategic goals of economic growth with equity.

The Government of Tanzania has adopted the goal of creating economic growth in mining, while balancing the development of large-scale mining by multinationals with continued support for indigenous mining. It foresees the latter gradually transitioning from the present artisanal mode to small-scale formalized mining. The government of Tanzania's objectives are: (1) that fiscal and export revenues from mining be maximized, and (2) that mining generates 10 percent of GDP by 2025. The strategic analysis above is the main source of the following detailed recommendations.

1) Create a conducive environment for artisanal mining and marketing

All stakeholders need to collaborate on this. Currently business expansion, in both mining and supporting business opportunities, is hindered by the same handicaps that make mining costly and less than optimally efficient. The specific recommended priority actions to address the encountered problems include:

- **Create and enforce competitive formal minerals markets at all levels**

This includes elaborating new fair trade legislation (for the benefits of the economy as a whole) and liberalizing the dealer licensing regulations. The Ministry of Energy and Minerals monitors dealer activity, providing a good gauge of the level of competition in legal trading. Also, Tanzania has established business court to enforce fair trade legislation and market regulation. Trading at the mine level should be reserved for local stakeholders only. There is a legitimate security and free-trade argument for confining the operations of foreign dealers to towns. Also, foreign dealers are still allowed to team up with local stakeholders in mining and other activities.

- **Take additional measures to discourage smuggling**

Insist that all government authorities protect and respect licensed dealers, brokers and miners who conduct business legally. At present most participants in the sector expect harassment and sometimes extortion rather than protection from government authorities. There are complaints that even extraordinary efforts to operate legally receive no recognition from local authorities. Local authorities need to be instructed in the new mining law and its application, and to enforce a sharp distinction between legal and illegal operations. Create a special minerals law-enforcement unit, knowledgeable in the ways of minerals smugglers and vigilant in preventing arms or drug trading, or money laundering. This unit should liaise regularly with Interpol to prevent the intrusion of international criminal elements.

- **Continue attracting investment in mining and minerals trading**

To do this, government needs to maintain a dialogue with current investors, domestic and foreign, to eliminate or reduce remaining constraints in the business climate. Also, it is important to ensure a stable political and good governance environment. Delays, red tape, and any measures that tie up capital are constraints that raise transaction costs for all businesses. Satisfied current investors are the cores of a successful investment strategy.

- **Improve basic infrastructure and reduce usage costs**

A top priority for reinvestment of the government revenues generated by mining should be infrastructure. Infrastructure is the most glaring deficiency in Tanzania's otherwise favorable investment climate, for both foreign and domestic investors. The following specific problems were encountered:

a) Lack of telephone service and expensive telephone rates create problems for security, procurement, marketing and other business operations. The pending privatisation of the national Telephone Company offers an opportunity for Tanzanians to benefit more from competition in the sector if properly structured. Currently Tanzania Telecommunications Company charges private telecom companies a high base rate for services that they could provide internationally at much lower rates. While government revenues are one of the legitimate stakeholder concerns in the sector, very high tariffs are often not the best means of guaranteeing a stable revenue stream. Mining organizations would legitimately seek to be represented, along with other stakeholders, on an autonomous body charged with regulating the newly privatised sector.

b) Poor roads cut mines off from markets and raise the costs of doing business. Miners, both large and small, often have to build their own roads and bridges. Government is working on a program of rural road development, but it needs to move faster and provide more regular maintenance. Investment in rural roads is needed not just for mining, but also for business diversification upcountry. The private sector should be encouraged to participate in this endeavour.

- **Assist miners to improve security**

a) Encourage banks to create branches in mining areas with safe-deposit boxes. The government has to provide police security for such banks.

b) There is a delay in authorization of claim titles during the mine rush. Thus, it is necessary to create a mobile task force to go immediately to new mine rush areas, peg claims, brief local authorities, ensure law and order and supervise the election of authorities among the miners themselves. Such a mobile task force could mitigate smuggling and other abuses in artisanal mining, which tend to occur at the beginning of each rush. Such a task force should be trained and mobilized by the central Ministry of Energy and Minerals, in close cooperation with Regional and District authorities who are better equipped and easier to mobilize than regional mining offices. This would deter wildcat mining and smuggling, which occur now during periods of administrative delay. Under present practice, the richest surface deposits on a claim are often depleted by the time the pegging of claims and authority to mine are confirmed by central authorities. Such delays are costly for claim-filers, and the illegal production is more likely to be smuggled than legally mined production.

2) Improve the fiscal regime and the tax administration

- **Fiscal policy issues**

As outlined above, the present fiscal policy as applied to the mining sector is by and large quite positive. There are some specific areas, however, which the government and the TRA should re-examine in the context of the mining industry:

- *Multiplicity of taxes and fees*

In addition to the main stream royalty and the corporate income tax, there are many minor taxes such as fringe benefit tax and stamp duty, etc. that not only create a serious burden on the industry, but also add considerably to the cost of compliance. These taxes need to be rationalized. Some of them may have to be dropped outright, while others would only need adjusting. It may be mentioned, however, that any changes that government decides to make should not be done piecemeal. It should be a part of an overall review of the tax system. Similarly, there are different kinds of fees and other levies that need to be analysed and suitably amended.

- *Many Employment related taxes and levies*

There are three main taxes that fall into this category: house development levy, VETA (the levy for vocational training) and NSSF (the contribution to the National Social Security Fund). These should not constitute an additional fiscal burden on the mining or any other industry. If the government faces revenue scarcity for these and other similar programs, it may be a better option to examine the whole fiscal system and to see how these various taxes, often referred to as "nuisance taxes" by tax payers, may be replaced by other stable sources of revenue. For example, a royalty rate of slightly less than 5% adequately covers the revenue generated from these taxes and levies. This is by no means to suggest that royalty rates be increased in a hurry in order to get rid of these taxes, it only suggests that other options that are less burdensome in terms of compliance should be explored. Also, the paper work required for compliance on the part of the employers is lengthy and needs to be simplified.

- *Royalty on sale of raw gemstone*

There is no royalty on the export of finished gemstone (cut and polished) but a 3% royalty has to be paid on rough stones. The method used sends wrong signals to the industry and creates a strong incentive for driving the trade underground. It may be a better to abolish this royalty. This is particularly important because it affects the artisanal mining sector directly.

- *Duplication of Licensing*

Gemstone dealers who are already licensed with the Ministry of Energy and Minerals (MEM) have to get a second business license from the Ministry of Industry and Commerce (MIC) before they can undertake any trading activity. This is viewed as double licensing and seems to have no apparent purpose behind it except raising more revenues. If that is the case, it may be better to enhance the dealer or broker license fees and share revenues internally rather than create a system of duplicate licensing.

Also, the mining sector has to bear a series of indirect or hidden operating costs that are quite huge. Clearly, some of these costs are specific to the mining sector but most of them affect economic activities in general and create large-scale inefficiencies. These costs should be examined in detail and reduced to the extent possible.

- *Rationalising taxation at the local levels*

Local governments, often, impose their own local income taxes on licensed dealers in combination with local business license fees. Currently, there is too much of arbitrariness in the system. There should be well-defined norms for the level of business fees imposed by the local governments. It may be better for the central government to offer clear guidelines for licensing at the local level, collect all income taxes centrally and then have a revenue sharing arrangement or a system of devolution for revenues to be transferred to local governments.

- **Tax administration issues**

Administrative problems are more crucial to the mining industry than issues of policy. For instance, the tax administration will develop a better understanding of the special nature of the industry and administrative problems will diminish. Two things emerge from this study. First, the TRA needs to develop a better understanding of the mining sector, so that it may successfully implement the government policies, legislations and regulations most of which have been put in place after incorporating their input. Second, some of the past administrative practices are still in effect and these are creating hardships and increasing the cost of compliance for the mining industry. There is a need to examine these practices closely and make necessary changes. The longer it is postponed, the more difficult it will become to implement any changes. Thus, it may be worthwhile to invest in capacity building in the department through a well-planned training program. The senior management level in TRA is aware of this need.

Generally, further reductions in tax exemptions, rationalisation of tax regime and improvement in tax administration to curb tax evasion are some of the important measures that are required to help broaden the tax base and increase tax revenue collection. Also, as the economic analysts show, the economy benefits considerably through a gain in the foreign exchange premium.

3) Ensure development of essential support services

Countries with active minerals trading must have trustworthy sources of appraisal and market information, provided either by competent government laboratories, licensed private laboratories, or both. Unless such laboratories exist, and have the trust of dealers and consumers, mistrust and/or confusion discount the value placed on precious minerals. Presently, transaction times and costs are increased enormously by the lack of standards of appraisal. Mineral dealers and the government need to work together to develop a system of quality control. It would include, at a minimum the following:

- **Improve market and technical information**

a) Gem appraisal and certification: Gemmological appraisal is part science, part art. The Gemological Institute of America has established scientific methodology for appraising the main indices of value of a stone, carats, colour, clarity, and cut (the four Cs). These used to be understood only by trained jewellers, but the Internet has educated a much wider consuming public. Tanzania lacks certified appraisers at present, and this is felt throughout the chain, from consumer to miner. TAMIDA is the most appropriate organization to remedy this situation, by establishing criteria and certifying appraisers. Government may also have a role.

b) Gold assaying: Fortunately, gold assaying is much easier. The necessary training and equipment are available in the US, the Middle East, India or Europe for less than $500. Gold assaying offices of the governments can and do operate successfully throughout the world, including in many African countries.

c) Access to Internet sites providing world market prices for relevant precious minerals.

d) The MEM plans to remodel and equip a Minerals Centre in Arusha, which would be one place in which appraisal services and Internet access could be provided. The world price of gold and of the major locally produced gems should be printed out daily, and posted for all to see. It should be provided to radio stations and print media who should be encouraged to include coverage of world price benchmarks and trends for key minerals in the daily business news.

e) Establish and publish periodic/ frequent newspapers on the domestic price for gold jewellery. Require it to be posted in every goldsmith and jeweller's shop. Countries with any significant jewellery sector do this, with one price for 18 carat gold, another for 22 carat and a third for 24 carat. Jewellers then negotiate with customers over the labour price that should be added onto the base price established by weighing a piece of jewellery. This system establishes confidence for tourists and other inexperienced buyers, and is in effect in gold markets throughout the world. Accompanying measures include periodic inspection of scales, and reliable gold assaying.

- **Gem shows and other promotional activities**

Government support for gem shows does not have to mean subsidizing costs, but it should include facilitating efforts to publicize the event and easy access to visas for those attending. The objective is to promote or trigger investments.

- **Training and extension**

a) While large mining companies undertake extensive training programs out of their own budgets, artisanal miners lack all types of training and information. Potential sources of training and extension for indigenous miners are many, including bilateral donor-funded training, UNIDO funded training offered through the SADC regional centre, and the government's current World Bank loan program. Training and equipment were the number one priorities of small miners attending both workshops, as well as those interviewed in the field. The government could also create incentives to formal mining companies to provide training to artisanal miners.

b) The government should facilitate visas for skilled gem cutters, trainers, business and community development specialists. They are a necessary part of developing a diversified mining-based economy, and immigration provisions designed to protect Tanzanian labour are actually hindering the growth of jobs in this sector.

c) Extension services are being introduced by the MEM, which is training zonal officials as trainers. Much more needs to be done in this regard. Each zonal mining office should have certain basic types of information available, including samples of different types of ore and typical surrounding bedrock, together with written instructions on how to recognize and differentiate them. It should also include price information and information on appraisal services. Every zonal officer visiting a mining site should carry a kit of basic information and samples with him. Moreover, the trained officers have no funding or program for providing training to miners, who repeatedly ask for it, and little incentive to take such an initiative.

4) Ensure sustainable economic development

Capital, economic activity and tax revenues are beginning to pour into Tanzania. It is hard for a poor country experiencing its first boom to decide on wise investment, economic diversification, education, and infrastructure improvements. A little celebratory splurging is a far more common response. Often a few prosper and jealousy becomes endemic. And then when the boom ends, come recriminations, in fighting and poverty again. There needs to be monitoring and control of negative externalities such as environmental and health impacts, and awareness of the need to keep out money laundering, arms and drug trading using precious minerals. The urgent task facing stakeholders is to devise a strategy to maximize sustainable development benefits of mining while it lasts. Thus, the government should expand the objectives to include, strengthening and enhancing targets for poverty alleviation, creating jobs and diversifying the economy.

We recommend a national planning commission to devise a growth management strategy. Tanzania has the moral fibber and leadership to avoid the common response to sudden wealth and to take the high road. It needs to determine in more detail than was possible in this study the pattern of growth in mining, GDP, and government revenues that can be expected. It should make concrete recommendations as to how a deeper and broader mining sector can be facilitated, so that the decline in production is not as steep as current plans would suggest. Most importantly it needs to recommend ways to diversify economic growth, to create synergies between the two major growth sectors, mining and tourism, and the economic base in agriculture, construction and trade.

Among the themes on which it should expand is the legal and regulatory structure for balancing the growth of artisanal mining and large-scale mining by multi-nationals. From a technical point of view there is little overlap in their competencies, and therefore little reason for them to see one another as competitors. With hand tools, artisanals can profitably and safely mine only surface deposits and very rich subsurface veins—to a depth of about 30 meters. Large companies, on the other hand, have huge initial overhead costs for exploration and mine construction. This is only justified when the deposit totals at least 500,000 ounces at reasonable production costs. So, large companies do not exploit many smaller deposits. Yet they often lie on their legal mining claims. In some countries large mining companies provide more effective training to small miners than government programs, and provide them with a living while doing so. Companies are often willing to allow, or even train and facilitate small miners working on unexploited sections of their claim. They need, however, assurance that such miners will not be considered their employees for liability purposes. They may also need authorization to buy and export the produce. The new mining law does not provide for this in Tanzania. Quick amendment could prevent Tanzania from missing a chance to save thousands of small mining jobs, and provide a future for small miners.

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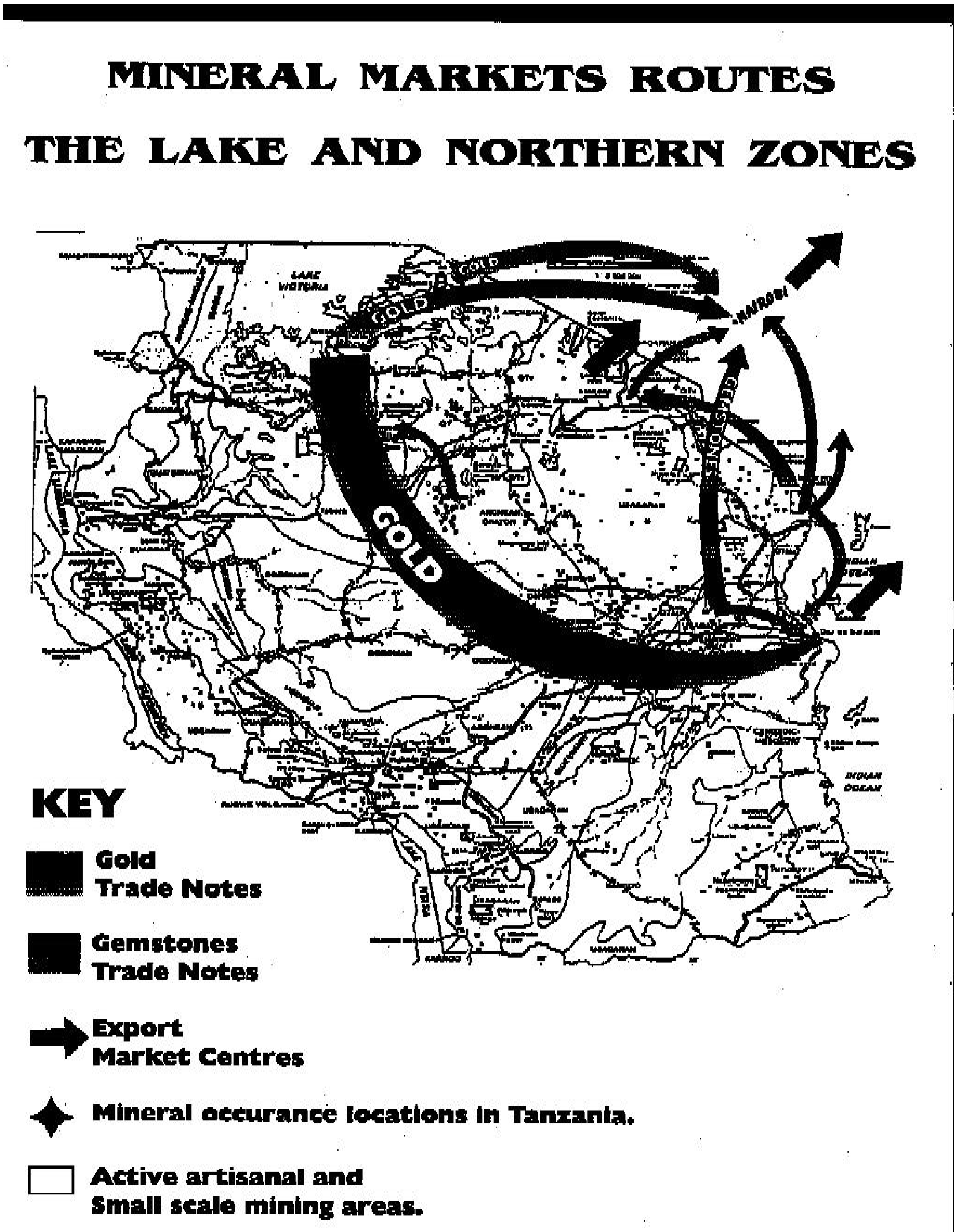
Map 1: Northern Tanzania Export Routes for Gems and Gold



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