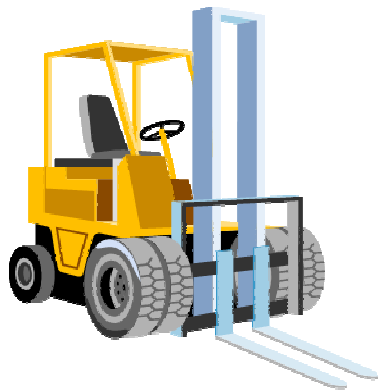




JICL Consultants

Gold, Copper, Diamonds, Uranium, Nickel, Gypsum and Color Stones

WHERE ARE THE DIAMONDS?



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Outline

- Background information,
- Diamond occurrences in Tanzania,
- Types and Quality of diamonds,
- Diamond Grade, Revenue and Demand,
- Diamond Production Statistics,
- Exploration and the cost of extraction & processing,
- Factors impacting local & foreign supply of rough diamond in Tanzania
- Required procurement strategies in sustenance of the Project's Economy

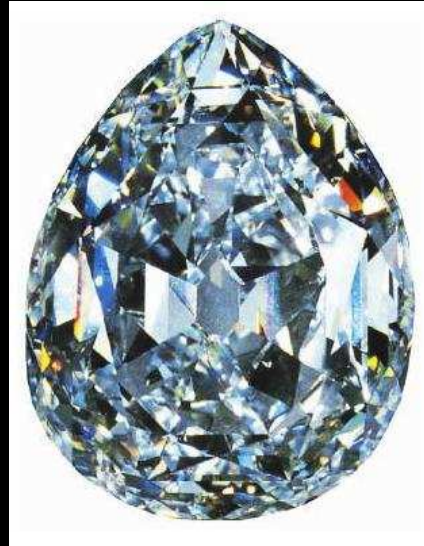
Background Information

■ What is Diamond?

An octahedral mineral variety of crystalline carbon and it's purely composed of carbon.

- Greatest hardness (10),
- High refractive index (2.42),
- High specific gravity (3.52),
- High thermal conductivity,
- Adamantine luster

The Golden Jubilee (545.67 Carats - Premier), The Star Of Africa (530.20 Carats – Cullinan), A Light Green Octahedron (79.7 Carats – WDL)



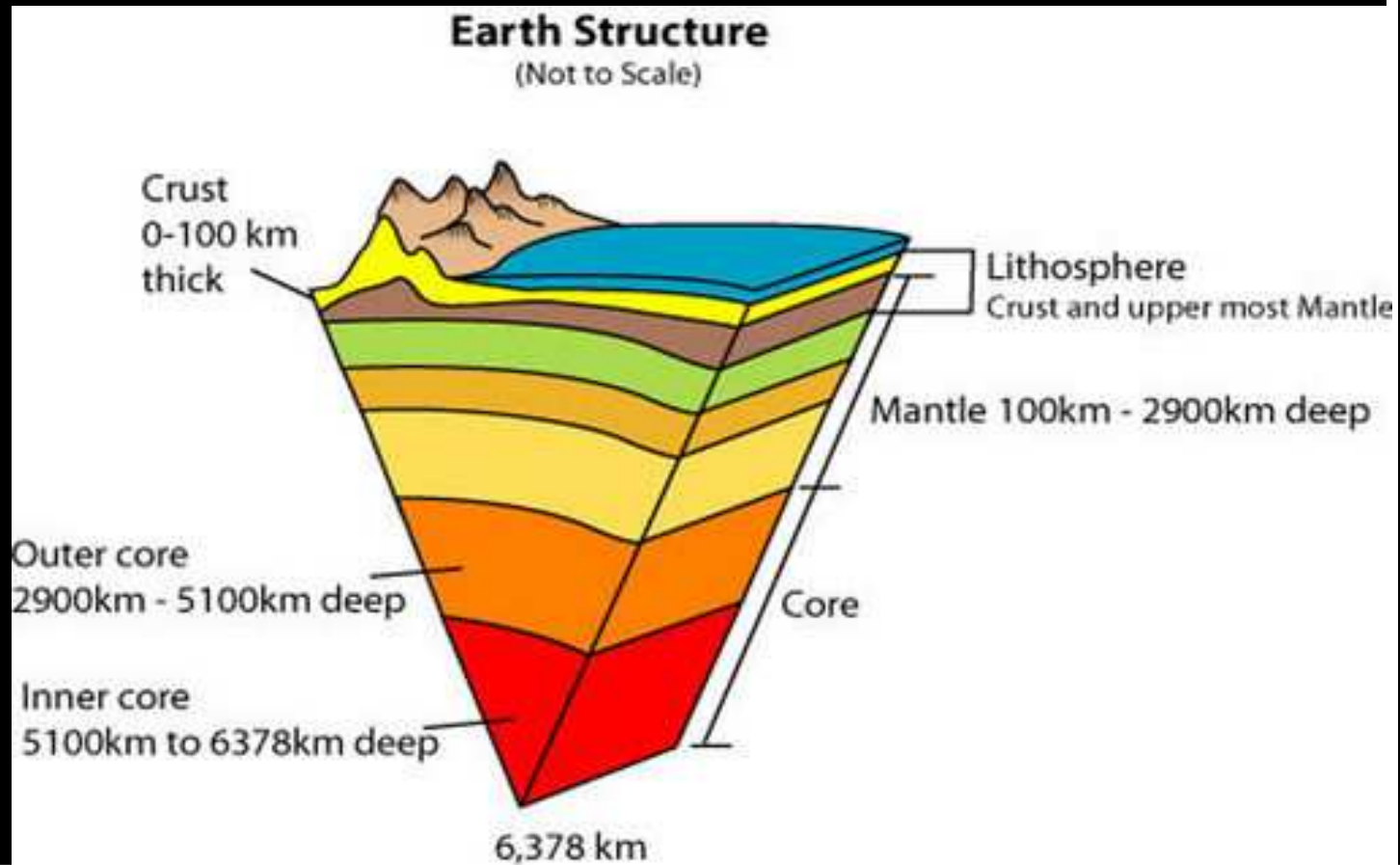
Background Information

- Where & how does a diamond form?

Diamond is found in alluvial deposits and insitu in ultrabasic rocks called Kimberlite and Lamproite pipes.

- A Kimberlite pipe deposit is formed from high temperature magma in the upper mantle where the molten magma undergoes differentiation as it rises upward to the surface through fracture cavities.
- Alluvial deposit forms by accumulation because of its inert chemical nature, its great hardness, and its fairly high specific gravity

Diamondiferous Kimberlites are believed to originate at a depth range between 140 – 190 km in the upper mantle.



Kimberlite Open Pit Mine



12/07/10

Alluvial Diamondiferous Gravel



Types & Quality of Diamonds

Two main types:

- Natural diamonds (kimberlitic & alluvial)

Diamonds that crystallizes naturally within the earth's upper mantle or accumulates through surface geological process

- Synthetic diamonds

Diamond crystals that are manufactured in a laboratory by a high pressure high temperature (HPHT) processes or chemical vapor deposition (CVD) as opposed to natural diamonds.

Types & Quality of Diamonds

Diamond Quality is mainly categorized into two:

- Gem diamond and
- Non gem (industrial) diamond

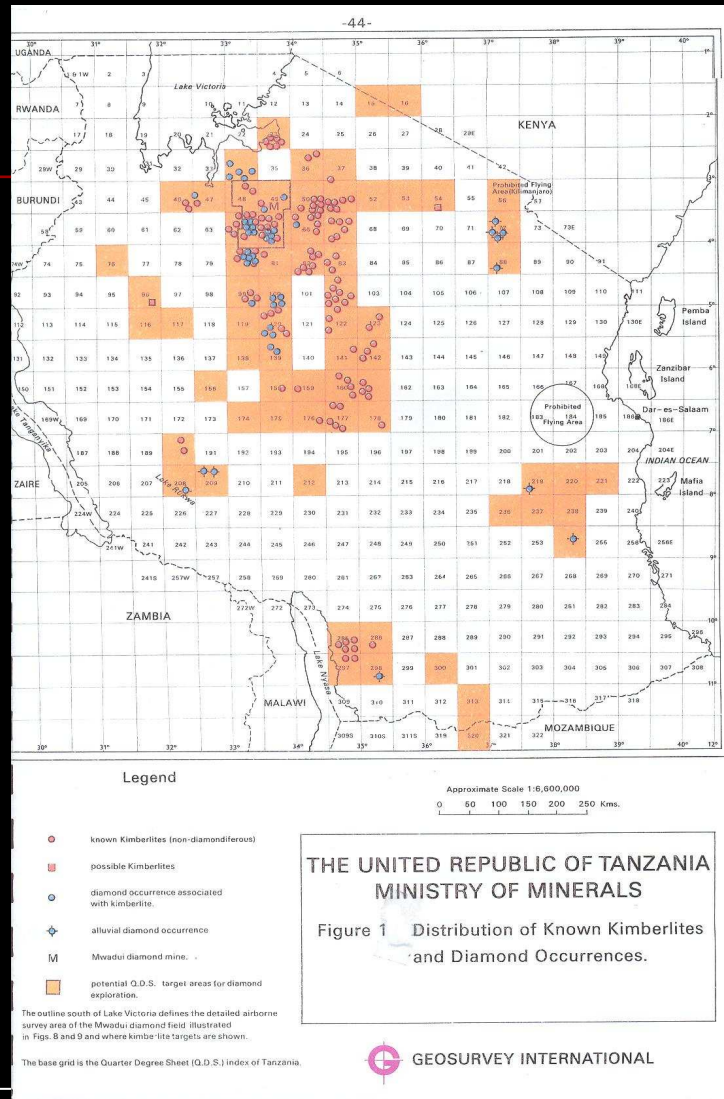
However, quality and value of diamond is also determined based on physical and chemical characteristics such as:

- Shape,
- Colour,
- Size,
- Purity,
- Cracks, etc.

Diamond Occurrences In Tanzania

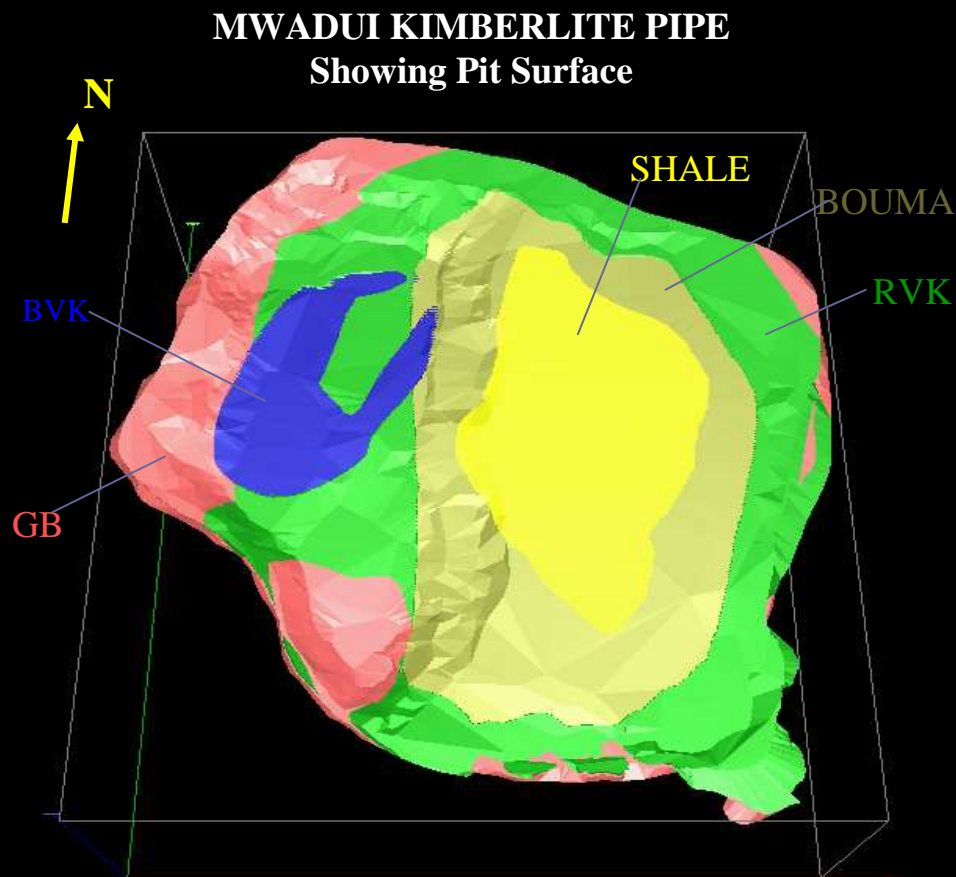
- Over 400 kimberlites have been discovered in Tanzania, 54 of which are diamondiferous. Both kimberlite and alluvial occur in the Country
- Majority of the known kimberlites in Tanzania are magnetic. A detailed airborne magnetic survey with electromagnetic techniques would probably identify additional targets.
- Some kimberlites probably remain undetected by the regional airborne survey because of their small size relative to the flight line spacing of 1 km and because not all kimberlites are magnetic.
- 1910, first discover of alluvial diamond at Mabuki and in 1925 production started. The success at Mabuki attracted many prospectors to Tanzania and by 1939, several pipes had been found.

Known Diamond Occurrences In Tanzania



Diamond Occurrences In Tanzania

- Tanzania possess the second largest economic kimberlite pipe known so far in the world, the 1.46 sq km Mwadui pipe (after Camafuca in Angola).



Diamond Grade, Revenue and Demand

- Grade

MINE / COUNTRY	ORE GRADE (Cpht)
Jwaneng Mine, Botswana	125.00
Mwadui, Tanzania (Current)	6.50
Finsch, South Africa	75.00
Letseng la Terai, Lesotho	3.00
Kimberlay, South Africa	30.00
Orapa, Botswana	64.00
Letlhekane, Botswana	19.00
Venertia, South Africa	100.00
Namaqualand, South Africa	15.00

Diamond Grade, Revenue and Demand

■ Demand

- Demand for diamonds can be divided into two classes: industrial and gemstone. In Tanzania the demand is categorized into gem (50%), near gem (40%) and industrial (10%).

■ Price and Revenue

- Revenue depends on the grade of ore mined, stone sizes, the percentage recovery of diamonds and proportion of gems to industrial stones.

- Diamond prices range from US\$ 0.50 to US\$ 20.00 per carat for industrial stones, depending on the stone size and from US\$ 50 to several thousands dollars per carat for gemstones

Diamond Production Statistics

- Approximately 130 million carats of natural diamonds are mined annually worldwide, with a total value of nearly US\$ 9 billion and ~500 million carats are synthesized annually.
- Tanzania produces ~ 300,000 carats a year and has produced approximately 20.5 million carats of diamonds until end of 2008, with an average grade of 14.58 Cpht (WDL report),
- Main sources of production are the Mwadui kimberlite pipe and new alamasi gravels. Other sources (small quantity) includes; Mabuki, Mbogwe, Nyang'wale, Maganzo and Kizumbi.

Diamond Production Statistics

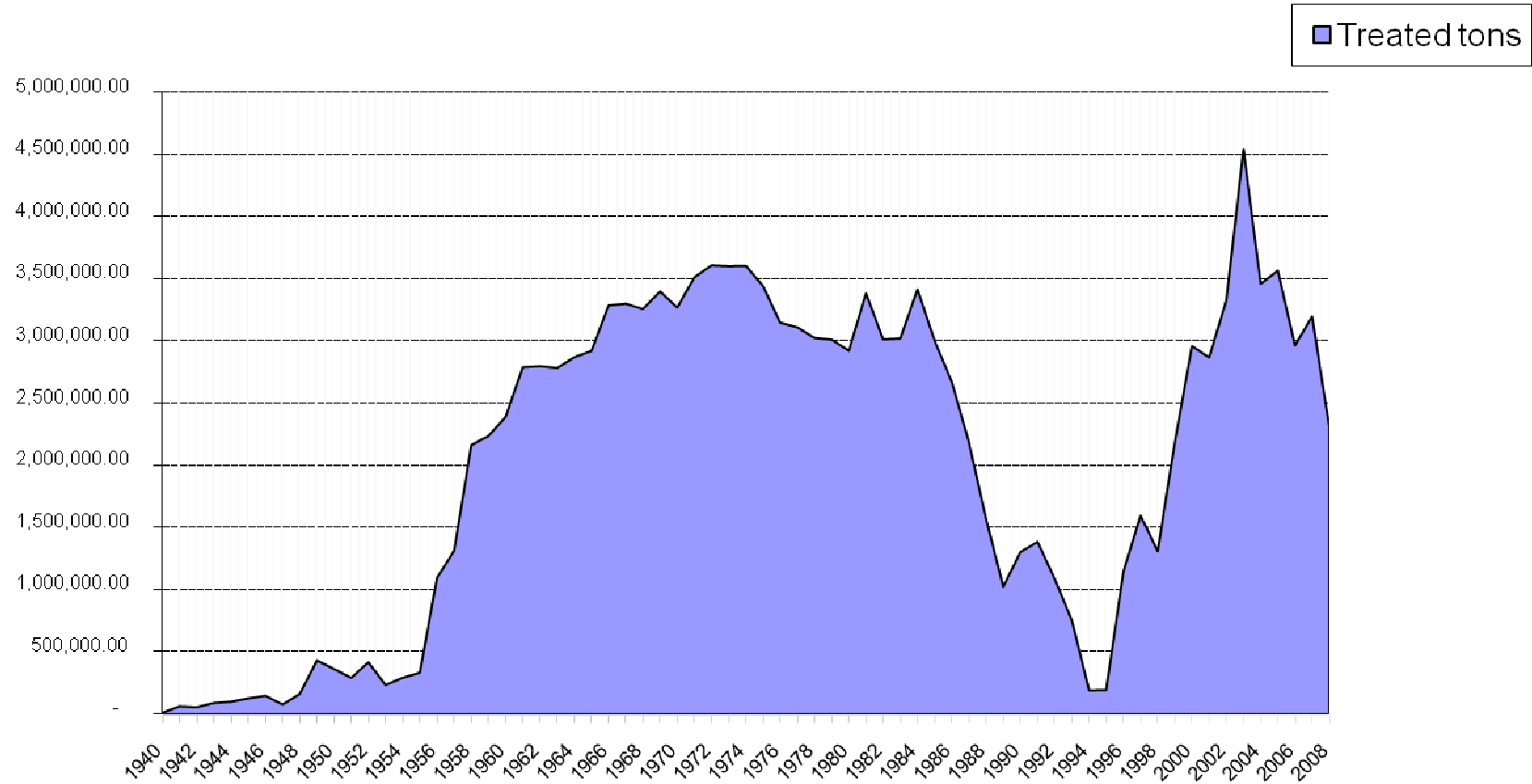
- Over 70% of diamonds produced in the world comes from Africa

- Main Producers are:

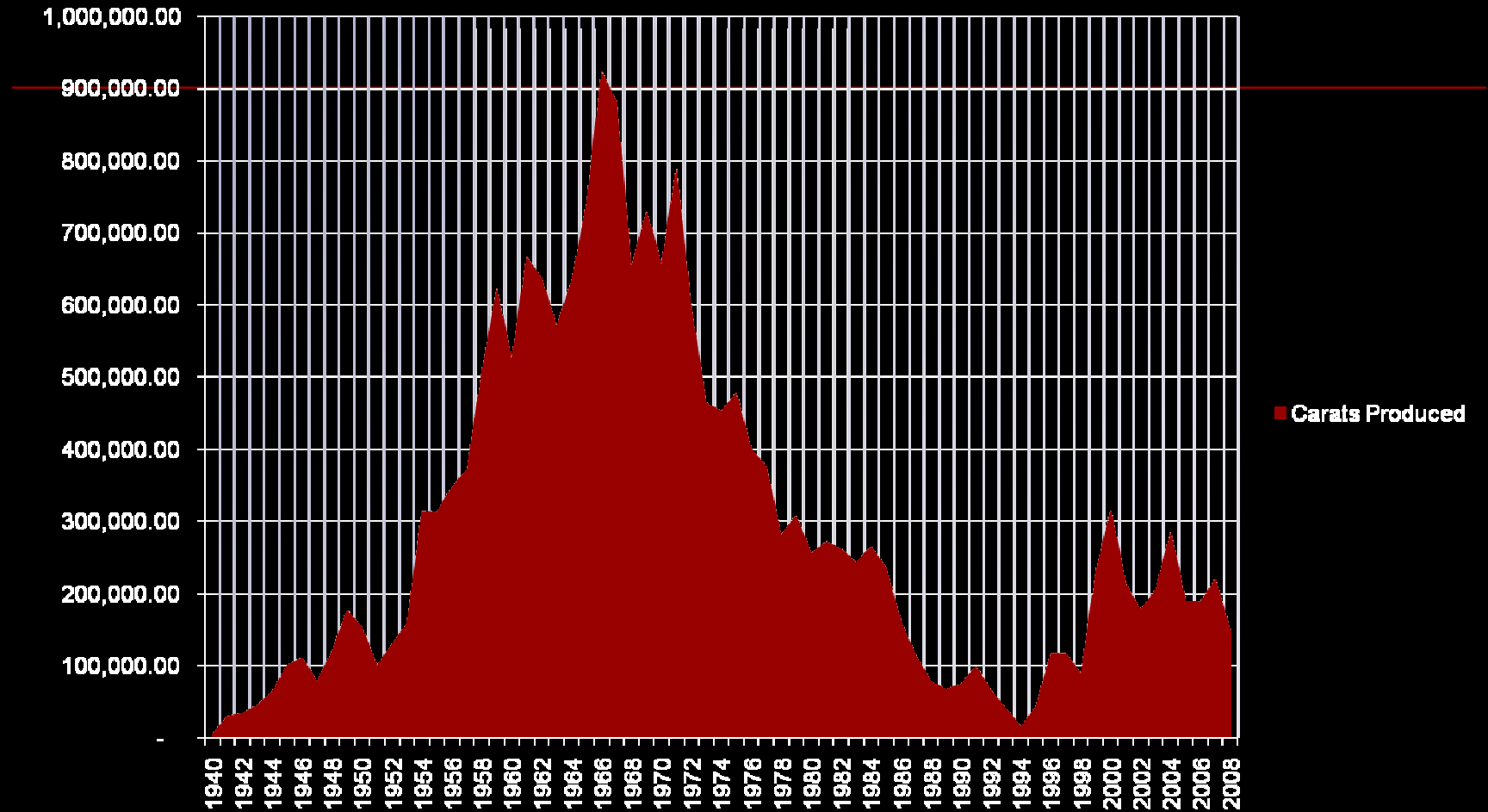
- Namibia	6.0%	- DRC	5.0%
- Botswana	29.0%	- South Africa	13.0%
- Tanzania	1.3%	- Angola	6.0%
-Ghana	3.0%	- Sierra Leone	3.0%
- Guinea	1.8%	- Central Afr. Rep	1.8%

- USSR 20.0%
- Australia 3.0%
- China 1.0%
- Canada 2.0%
- Brazil 3.0%

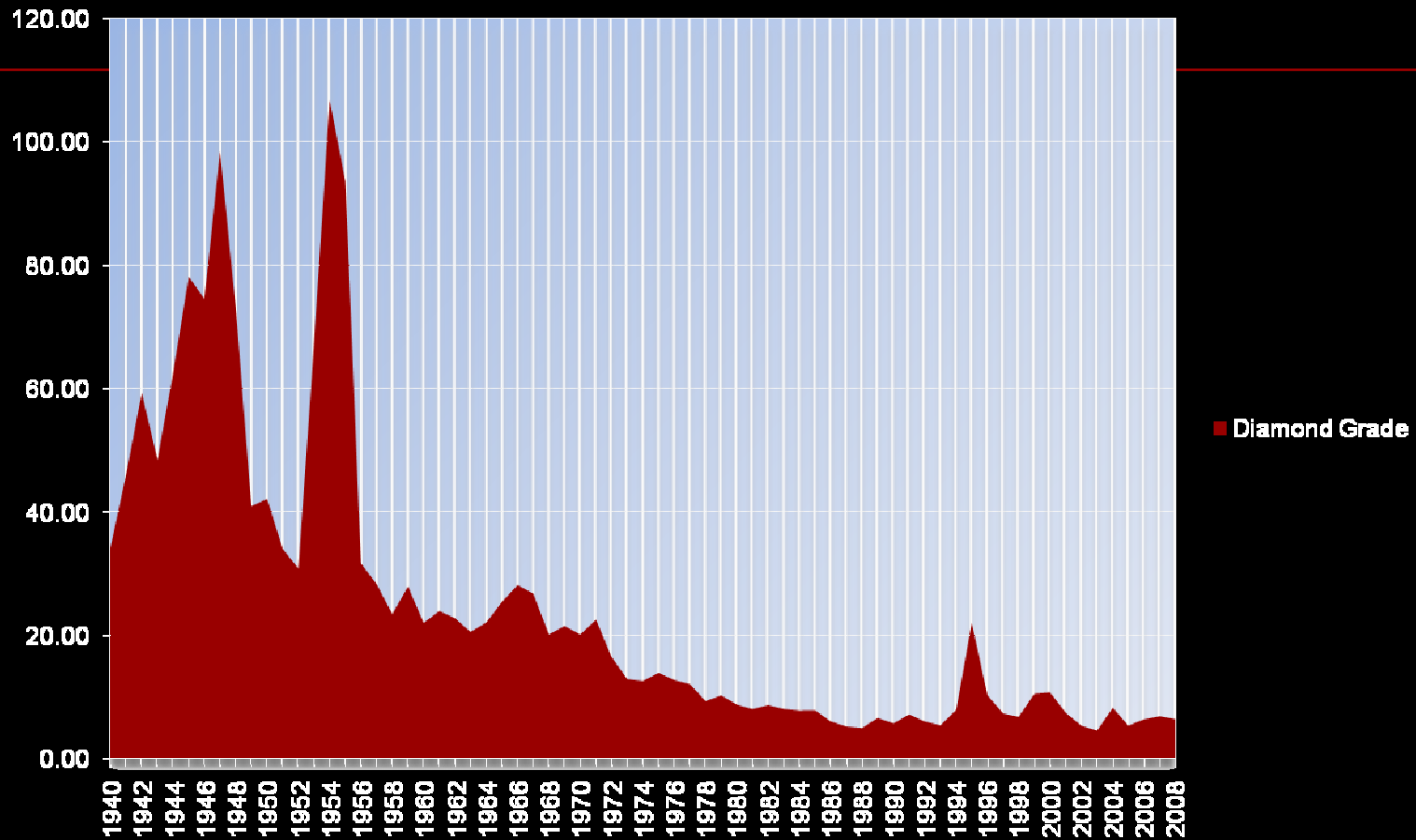
Treated tons (139,677,100) – Mwadui, Tanzania



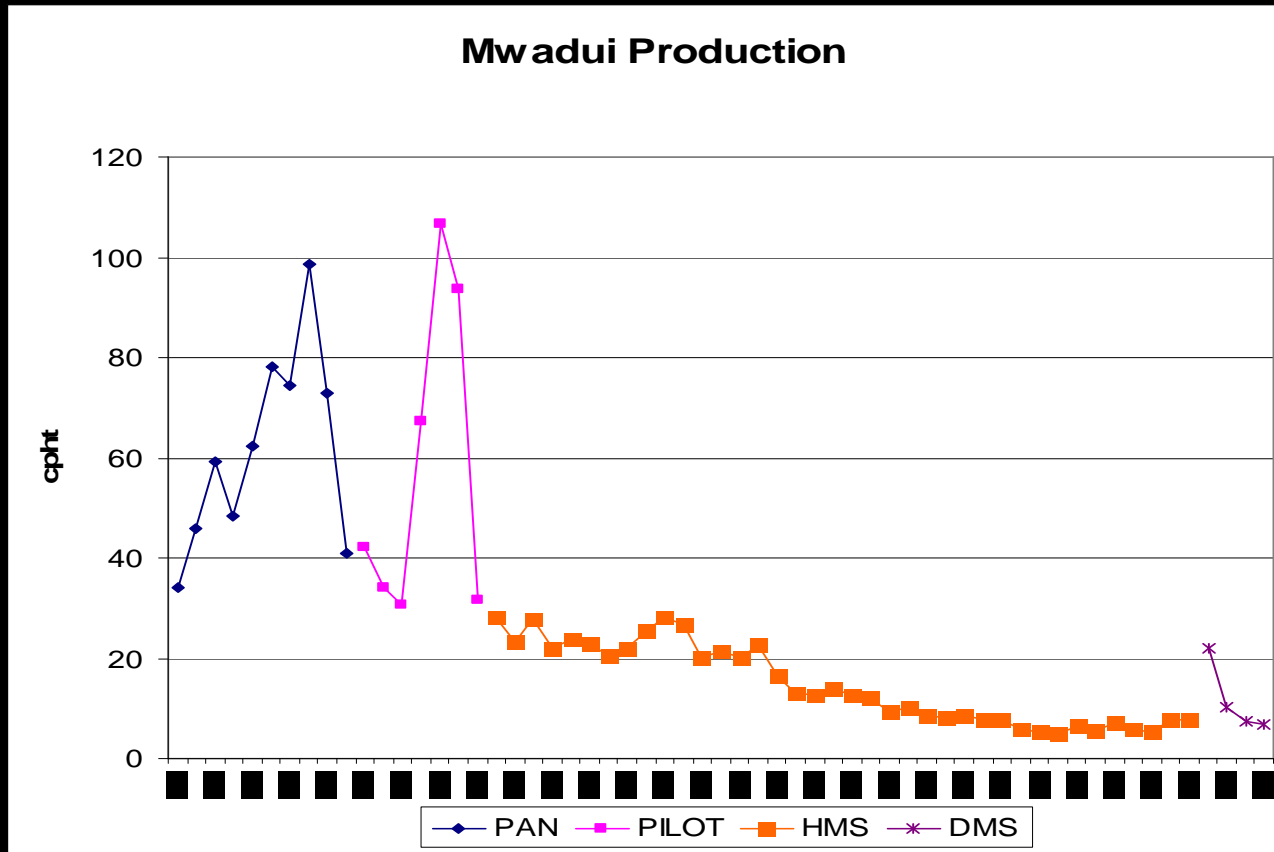
Carats produced (20,360,400) – Mwadui, Tanzania



Diamond grade (14.58) – Mwadui, Tanzania



Different Processing technologies – Mwadui, Tanzania



Avg. Cph/t

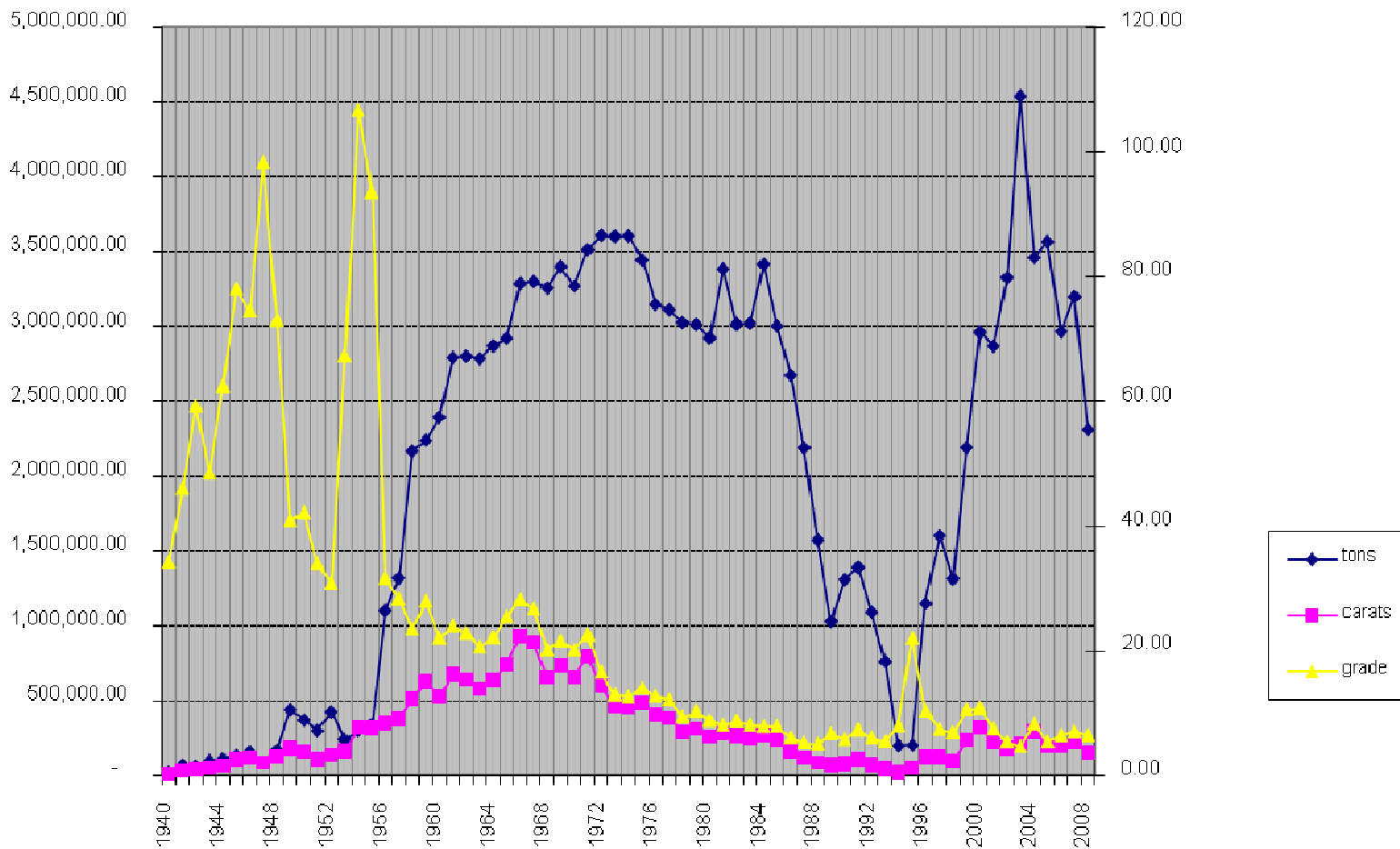
Pan: 62

Pilot: 58

HMS: 14.7

DMS: 6.9

Carats, Grade and Tons – Mwadui, Tanzania



Diamond Exploration Methods

- Conduction of aeromagnetic & electromagnetic surveys,
- Geological interpretation of aerial photography and satellite imagery
- Stream sediments sampling to detect heavy indicator minerals,
- Pitting, trenching and bulk soil sampling,
- Ground magnetic survey follow-up
- Washing / sieving of sampled material to recover diamond.
- Regolith & geological mapping,
- Drilling (RAB, RC and DD) to understand lithology, structures
- Underground tunnels and shafts

The Cost of Extraction & Processing

■ Mining

- Capital costs for mining depends on the available mineral resources, budget, mine design & planning.
- Investment cost for an open pit diamond mine with a capacity to produce 1.0 million tones of ore per year would be about US\$ 36 million.
- Mining operations requires the machineries below depending on the nature and ore type i.e. kimberlitic or alluvial deposit
 - Dump trucks, excavator / shovel, water bozer for dust suppression, wheel loaders, drill rig & blasting explosives for kimberlite ore, bull dozer / grader, etc.

Mining machines



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The Cost of Extraction & Processing

■ Processing

Operating and processing costs would be expected to be about US\$ 56 per tone of ore mined, including an allowance for depreciation. Equipments include;

- Processing plant depending on ore type e.g. Pan plant, DMS plant, HMS plant, HMC plant, Jig plant etc,
- Water dam
- Slimes / tailing dams for waste disposals,
- Plant chemicals or utilities e.g. greasy for pan, razing for jig, ferrosilicon for DMS.

Factors Impacting Local and Foreign Supply of Rough Diamonds in Tanzania

■ **Local supply**

- Inadequate knowledge of geology, evolution models, mining & processing techniques amongst artisans,
- Lack of competitive price of their products,
- Poor financial capability e.g. buying equipments.
- Local broker's buys most products from artisan,
- Weather,
- Illegal dealers (buyers)

Factors Impacting Local and Foreign Supply Of Rough Diamonds In Tanzania

■ **Foreign supply**

- Low grade diamond
- Fluctuation of diamond price on the world market,
- Licensing bureaucracy and Tax regime issues

Required Procurement Strategies in Sustenance of The Economy of The Proposed Plant.

- Educate artisan miners of the project objective and advantages
- Ensure right plant units are located at right site,
- Make Joint Venture arrangements with small & medium holders of diamond tenement to acquire equities,
- RTA should create a competent technical team for prioritization of diamond prospects, OR affiliate with a technical consultant company that can undertake all required geo-technical and gemological issues,
- Country wise review of diamond prospects and all known kimberlite deposits by RTA's technical experts.

Required Procurement Strategies in Sustenance of The Economy of The Proposed Plant.

- Negotiate with medium producers of diamonds across the country to see if RTA can buy all raw diamond for cutting and polishing,
- Training of all technical crew especially on cutting and polishing section. The cutting and polishing of rough diamonds is a specialized skill that is concentrated in a limited number of locations worldwide.
- Traditional diamond cutting centers are in Antwerp, Amsterdam Johannesburg, New York, Tel Aviv, China, India, Thailand, Namibia and Botswana.

Regards



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Dar es Salaam - Tanzania