THE MINERAL RESOURCES OF KATANGA
A DEVELOPMENT POLICY
Mining Policy Objectives and Strategy

- To exploit **all** the mineral resources of Katanga, large and small, to the benefit of the people of the Congo

- To achieve this by:
  - giving easy access to full mineral rights in the Congo by the discoverer of a resource
  - Creating a vigorous market-place in mineral rights in the Congo so that
    - discoverers can readily profit from their finds
    - venture capitalists can readily acquire mineral resources
Zambia and Katanga - a Common Structure – the Lufilian Arc. Or is it…?

The border – a flat watershed
IF A COMMON STRUCTURE, WHY SUCH A DIFFERENT ECONOMIC GEOLOGY?

<table>
<thead>
<tr>
<th></th>
<th>Rough Number of Deposits</th>
<th>Principal Ore Type</th>
<th>Order-of Average Resource Size, tonnes</th>
<th>Average Copper Grade %</th>
<th>Average Cobalt Grade %</th>
<th>Annual Average Copper Production, Thousands of Tonnes, 1946 – 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>KATANGAN COPPERBELT</td>
<td>Perhaps 300</td>
<td>Oxide*</td>
<td>500,000</td>
<td>3.5</td>
<td>0.4</td>
<td>260</td>
</tr>
<tr>
<td>ZAMBIAN COPPERBELT</td>
<td>About 20</td>
<td>Sulphide</td>
<td>50,000,000</td>
<td>2.2</td>
<td>&gt;0.1</td>
<td>470</td>
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</table>

*The unquantified sulphide resources of Katanga are its future

AND WHY THE DIFFERENCE IN PRODUCTION?
Two answers to the different geology. First, coincidental structural change at the border.

In Zambia massive basins perhaps of hydrothermal origin.

In Katanga a plethora of smaller faulted deposits probably of sedimentary origin.
And the second answer – the weather…?

The Intertropical Convergence Zone, 3rd March 2002, along the Zambia-Congo border

To the north of the watershed – heavy rain, deep weathering (100 – 200m), much supergene enrichment

To the south of the watershed – less rain, shallow weathering (20 – 50m), little supergene enrichment
KATANGA - AN OVERSIMPLIFIED ECONOMIC GEOLOGY

THE KATANGA SEDIMENTARY SERIES

- Upper Sediments
- SD (Sliceous dolomite)
- Upper mineralised zone (sulphides)
- RSC (Roche siliceuse cellulaire)
- Lower mineralised zone (sulphides)
- RAT (Roches Argilo-Talqueuses)
- Basement

THE PRACTICAL CONSEQUENCES

1. Earth movements fracture and tilt the sediments
2. The carbonates in the RSC dissolve from rainfall to leave behind a hard siliceous core which forms the centre of a hill
3. The sulphides are oxidised by water and air to form metal carbonates, oxides and hydroxides (malachite, azurite, heterogenite)

Raising and lowering of the water table causes enrichment of the oxides
Typical Appearance of Mineralised Features - hills at Tenke-Fungurume
But now the second question – why the difference in production?

POST-WAR COPPER PRODUCTION, 1946 - 1967
(UMHK IN KATANGA, ANGLO AMERICAN AND ROAN SELECTION TRUST IN ZAMBIA)

ZAMIBIA

Zambia Independence

KATANGA

Congo Independence

Thousands of Tonnes

1946 1956 1966

Year
A difference that continued after nationalisation in both countries.

COPPER PRODUCTION 1968 - 2004
(GECAMINES IN KATANGA, ZCCM IN ZAMBIA)

- The 80-day war - The Shaba incident
- Gecamines' cash reserves expropriated
- The Kaombo mine collapse
- ZCCM privatised
- Gecamines joint ventures commence

A difference that continued after nationalisation in both countries.
UMHK was:
‘in a class of its own because it was the only institution which operated in the Congo without having to worry whether political development could affect its decision…the management saw themselves as a State within a State’.

Jacques Depelchin, *From the Congo Free State to Zaire 1885-1974*, University of Lubumbashi
The result was a few very big mines like this -
...and, in post-Independence Congo, many, many mines like this -
...and almost no medium-sized mines like this -
Yet the DRC has the potential for many formal mines of all sizes but -

- The mining law separates artisanal and large scale mining - an artificial separation: mining sizes are a continuum
- The law locks artisanal miners into poverty*
- It presupposes that the Congolese cannot run formal mines
- Yet apart from the local entrepreneurs there are perhaps over 5 million Congolese in the diaspora
- They are not all poor: one estimate is that over US$4 billion a year is being remitted to the DRC
- Wanted – more Kaala Mpinga’s!

* ‘Article 110: If the factors which have justified the creation of an artisanal mining area have ceased to exist …on the advice of the Geology Directorate, the Minister proceeds to close the artisanal mining area.’
# MINING LAW – THE STRATEGIC CHOICE FOR THE DRC

<table>
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<tr>
<th>The Concession System</th>
<th>The Claims System</th>
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<tbody>
<tr>
<td>• Separate Exploration and Exploitation licences</td>
<td>• A claim is valid for both exploration and exploitation</td>
</tr>
<tr>
<td>• Large areas usually granted (400 sq km in the DRC)</td>
<td>• A claim is a small area, typically about 1 sq km</td>
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<tr>
<td>• Ownership valid for fixed time (5 years for Exploration, 30 years for Exploitation</td>
<td>• Continuous ownership, conditional only on annual</td>
</tr>
<tr>
<td>in the DRC)</td>
<td>amount spent or revenue received per claim</td>
</tr>
<tr>
<td>• Separation of small-scale from large-scale mines (in the DRC small-scale = no</td>
<td>• No differentiation between the sizes of mines</td>
</tr>
<tr>
<td>deeper than 30m)</td>
<td></td>
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A strong market place in claims gives full development and a natural distribution.
So could this be the pattern for Katanga’s copper output in 2025?
Or will it still look like this?
THANK YOU