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Starting Where Others Stopped

The case for decommissioned mines and tailings as the fastest path to formal mining jobs

SUMMARY

- Many mines close for reasons that have little to do with geology: war, political upheaval, price collapses, ownership disputes and policy shifts. The ore and the processing waste they leave behind often still hold value.
- Restarting a known site skips most of the 16 years it typically takes to bring a new mine from discovery to production. The geology is documented, the access exists and the community already knows the work.
- Old processing plants recovered far less metal than modern equipment can. Their waste piles, called tailings, can be reprocessed, and reprocessing pays for cleaning up ground that would otherwise stay contaminated.
- Brownfield sites carry real risks, starting with incomplete records and historic estimates that do not meet modern reporting codes. Our approach puts data first and lets the evidence pick the mineral.

A closed mine is often an unfinished one

When people hear that a mine has closed, they usually assume the ore ran out. Sometimes it did. Often it did not. Mines close when the price of their metal falls below the cost of producing it, when a government changes the rules, when a civil conflict makes the site unsafe, or when owners fight over the license for years. In each case, the mineral stays in the ground and the work stops.

Uganda shows the pattern clearly. Through the middle of the twentieth century, the country ran working mines for tin, tungsten, copper, cobalt and other minerals. In the 1970s, political upheaval and economic collapse brought much of that activity to a halt. Some sites were never formally reopened. Others passed between owners, closed again over licensing disputes, or were left to artisanal miners working by hand without contracts, safety equipment or steady pay.

These sites are where we start. We call them decommissioned mines: mines that were built, worked and closed, many before their minerals ran out, with minerals still at or near the surface. Alongside them sit their tailings, the finely ground waste that earlier processing plants left behind.

Restarting a known site is far faster than starting from nothing

A new, or greenfield, mine begins with exploration: years of mapping, sampling and drilling to find out whether an ore body exists and whether it can be mined profitably. Then come environmental studies, licensing, financing and construction. The International Energy Agency found that mining projects have taken more than 16 years on average to move from discovery to first production.[1] For a country whose young people need work now, that timeline is too long.

A decommissioned mine starts years ahead. Earlier operators already established where the mineralized ground is and how it was worked. Roads, cleared land and sometimes power lines remain. Historic production records, where they survive, show how much ore was mined and at what grade. Nearby communities have worked in mining for generations, and in many cases artisanal miners are already digging at the site. Formalizing their work, with a contract, training, safety equipment and a living wage, creates jobs in months rather than years.

16+ years

Average time from discovery to first production for new mines[1]

80%

Share of Uganda covered by modern airborne geophysical surveys from a 2004–2012 national program[2]

5.2 Mt

Cobalt-bearing tailings recorded at a single Ugandan copper mine closed in the early 1980s[3]

Old plants left value in their waste

Processing is the step that separates a valuable mineral from the rock around it. The plants that served mines in the mid-twentieth century were built with the equipment and chemistry of their time. For many minerals, they captured only part of the metal in the ore, and the rest went to the tailings pile with the waste rock. Modern equipment can recover a much larger share from the same material, and engineers we work with estimate that older plants often recovered half or less of what a modern circuit can.[4]

That gap creates an opportunity that greenfield projects do not have. Tailings are already mined, already crushed and already on the surface. Reprocessing them avoids the cost of drilling, blasting and hauling new ore. Grades in a tailings pile also vary with depth, because the earliest and least efficient processing usually sits at the bottom, so the material has to be tested properly before anyone can say what it holds.

Uganda has documented examples. The U.S. Geological Survey recorded that the tailings dams at the Kilembe copper mine, which stopped production in the early 1980s, held about 5.2 million tonnes of material grading about 0.12 percent cobalt, alongside a stockpile of about 515,000 tonnes grading about 1.38 percent cobalt.[3] Cobalt is on the critical minerals lists of the United States, the European Union and NATO.

Reprocessing turns a liability into a cleanup plan

Old tailings are frequently an environmental problem. Many were stored without liners or engineered dams. When sulfide minerals in tailings are exposed to air and water, they can generate acid that carries metals into streams and groundwater. Leaving an old impoundment in place does not make that risk go away.

Reprocessing changes the economics of cleanup. The revenue from recovered metal can pay to move the remaining material into a modern, engineered storage facility built to the Global Industry Standard on Tailings Management, which the mining industry, the United Nations Environment Programme and the Principles for Responsible Investment published together in 2020.[5] The site ends up cleaner than it started, and a community that has lived next to an old waste pile gains jobs from removing it.

The risks are real, and we plan around them

Decommissioned mines are faster and cheaper to restart, and they carry risks of their own. We take four of them seriously from the first day.

Records are incomplete. Many historic reports exist only on paper, in government archives, and some have been lost. Uganda's geological record was built over a century by the colonial Geological Survey, a German geological mission in the early 1970s, French and United Nations programs in the 1990s and the World Bank-funded Sustainable Management of Mineral Resources Project from 2004 to 2012.[2] Companies that give up an exploration license are generally required to surrender their reports. Recovering those records, site by site, is the first piece of work.

Historic estimates are not modern resources. A figure from a 1950s survey or a government press release is not a mineral resource under the codes investors rely on, such as JORC or NI 43-101. Historic numbers help decide where to look. They do not decide what a site is worth. Only modern drilling, sampling and independent review can do that.

Tailings need proper testing. A handful of samples scooped from the surface says little about a pile that may be tens of meters deep. Specialized drilling through the full depth of the deposit, followed by laboratory tests of how the material responds to processing, comes before any investment decision.

Power and water often matter more than ore. Processing plants need reliable electricity and large volumes of water. At many sites these are the binding constraints. We assess them alongside the geology, and they shape which sites move first.

We let the data choose the mineral

It is tempting to begin with a favorite mineral and look for sites that fit. We work in the opposite direction. The sequence below is how we take a country's historic record to a funded operation.

1. **Gather the record.** Production reports for closed mines, tailings locations and volumes, drilling data, surrendered exploration reports, and license and ownership status for each property.
2. **Rank the properties.** An independent technical adviser screens and ranks the sites before anyone visits, using criteria set once the depth of the data is known.
3. **Test the shortlist in the field.** Sampling with the government's mining authority present, so results are trusted on all sides.
4. **Choose the mineral and the processing route.** The commodity is selected here, on real assays, and not before.
5. **Secure access and licenses.** Tailings and previously licensed ground often move faster than new hard-rock licenses.
6. **Prove the resource.** Drilling, assays and metallurgical tests to the standard investors require.
7. **Name the operator and raise the capital.** A proven operator, a credible plan and government support go to investors together.

Each step is a gate. A site that fails one does not move forward, and the work it has already produced helps rank the next one.

Where this leads

Decommissioned mines and tailings are the fastest credible way to put people into formal mining jobs in a country that already has a mining history. They cost less to restart, they reach employment sooner and they can leave the land cleaner than they found it. They are also the first building block in a larger system: when enough restarted mines are producing, their output can feed processing plants inside the country, which is where most of the value is created. Our other papers describe that system and why the timing for it is unusually good.

About Horizon 35

Horizon 35 is a systems integrator for mining and mineral processing in developing countries. We bring strategy, government relations, technology, partners and capital together around proven operators to create formal, well-paid local jobs and to help ore-rich countries keep more of the value of what they mine. Our goal in Uganda is one million jobs in five to ten years. horizon35.com · mitch@horizon35.com

Sources

1. International Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions*, May 2021. Average lead time from discovery to first production for projects coming online 2010–2019.
2. Government of Uganda and World Bank, Sustainable Management of Mineral Resources Project (2004–2012), airborne geophysical survey coverage; history of Uganda's geological data from the Directorate of Geological Survey and Mines and the Geological Survey of Finland (GTK).
3. U.S. Geological Survey, *Minerals Yearbook: Uganda*, 2005. Kilembe tailings and cobalt stockpile.
4. Horizon 35 discussions with independent processing engineers, 2026. Recovery rates vary widely by mineral, ore type and plant design; site-specific testing is required.
5. International Council on Mining and Metals, UN Environment Programme and Principles for Responsible Investment, *Global Industry Standard on Tailings Management*, August 2020.