Gold has a way of making every step of the supply chain feel personal. At the mine, it is ore and risk. In the plant, it is chemistry and time. In the hands of traders, it is paperwork, assay uncertainty, and settlement terms. When the metal finally shows up as a bar in a vault or as refined feedstock for a manufacturer, the story behind that metal is already locked in through custody, contracts, and verification.

Selling gold is not one transaction. It is a sequence of decisions that start long before the first shipment and continue long after the last invoice. People often imagine gold sales as a simple matter of price times weight. In practice, the "price" component is only one line in a complicated ledger that includes recovery rates, assay methods, shrinkage allowances, transport risk, and who takes responsibility for what happens between one party's scales and another party's furnace.

What follows is how gold typically moves from mine to market, with the practical details that matter to the people who make it happen.

The mine stage: producing something the market can value

At the mine, gold rarely leaves the ground as "gold." It leaves as ore, sometimes with a measured grade and sometimes with a grade that is still being refined through ongoing sampling. The first key step toward selling gold is establishing credibility in the numbers: how the mine measures ore grade, how it records sampling locations, and how it manages variability across the deposit.

Two mines can both "produce 2 g/t" on paper and still deliver very different realized outcomes because grade distribution, moisture, and ore hardness affect recovery in the plant. Even before refining enters the picture, sales planning often depends on understanding the plant's performance under the specific ore characteristics being mined that month.

That matters because early sales can be structured in ways that shift risk. Some contracts are straightforward spot or short-term purchases based on assay at a receiving stage. Others involve offtake agreements that set pricing mechanisms, sometimes tied to reference prices and deducts for process losses. The mine's goal is usually to avoid surprises, meaning it pushes for terms where the measurement process is transparent and the uncertainty is handled explicitly.

In practical terms, the mine establishes an evidence trail: sampling protocols, assay certificates, chain of custody records, and production records tied to each lot. When later disputes arise, those documents become the real commodity.

From ore to concentrate to doré: turning uncertainty into metal

Most gold operations do not sell ore. They process it into something with tighter specs and more stable economics. Depending on the geology and plant design, that could mean:

- concentrate (if the operation produces flotation concentrate with gold reporting mostly to the solids)
- doré (a semi-refined alloy of gold and other metals produced by smelting and refining)
- refined bullion or intermediate metal from onsite refining (less common for smaller mines, but not rare globally)

At the plant, the central challenge is that gold is present at extremely low concentrations relative to the bulk material. Even a small measurement error can swing revenue meaningfully when shipments are large.

So the plant runs assays that represent a real operational compromise: you need speed for production control, but you also need defensibility for sales. Assay laboratories typically use standard methods to quantify gold content, and the process is designed to reduce bias through calibration, reference materials, replicate tests, and strict lab controls. If a mine can't demonstrate that control, the buyer will compensate by discounting the realized price or by imposing harsher settlement terms.

Recovery is another lever. A mine might deliver ore at a nominal grade and then earn different yields because of metallurgical behavior, carbonaceous material, sulfide content, or oxygen and pH conditions. Buyers account for this either indirectly, through payment terms that assume a standard recovery profile, or directly, through burn-down or yield-based adjustments.

The result is that "how gold gets sold" often means "how the parties agree to share process uncertainty."

Doré bars and the sale mechanism: why form matters

For many producers, doré is the commercial bridge between mining and final refining. Doré is not jewelry-grade metal. It is a mixture, commonly with silver and other elements depending on the chemistry of smelting and the refining route. That is exactly why it is traded as a semi-finished product: it allows the mine to monetize gold earlier than full refining, and it allows the refiner to treat the feedstock efficiently.

When doré is sold or delivered under an offtake, the buyer typically requires specifications *gold* that cover minimum gold content, acceptable ranges for impurities, and physical properties relevant to safe transport and refining. The mine and buyer usually agree on what will be measured, how it will be measured, and when the final settlement will occur.

This is one of the most "human" parts of the process because the trade terms are often negotiated line by line. People with long experience learn that the devil is rarely in the quoted price. It is in the conversion factors, the allowable moisture or contamination, and the assay cutoffs that determine whether a lot is accepted, reprocessed, or settled at a different basis.

A simplified way to think about the economics is this: the reference price provides the market anchor. The contract determines how the buyer calculates payable metal from the measured content. Then a separate set of terms determines deductions and charges, such as refining charges, transport costs, penalties for deleterious impurities, and sometimes insurance and handling.

The mine wants deductions to reflect real costs and agreed uncertainties. The buyer wants to protect itself from risk of mismeasurement, unusual chemistry, or delays that cost money.

Assay, re-assay, and settlement: the measurement you cannot argue with

If you ask a person in a gold trading desk what slows deals down, they will often mention assay, not price. Not because everyone disputes results all the time, but because gold sales are designed to withstand disputes. A well-run contract has a mechanism for measurement that the parties can trust even when the metal does not behave perfectly.

A typical workflow includes a primary assay process and, in many agreements, a dispute or confirmation method. Samples are taken from the lot in a way that ensures representativeness. Witness procedures matter. The buyer may conduct its own assay in parallel. Both parties may reference accredited lab procedures and specified equipment and methods.

The critical idea is that gold sales usually settle on a defined basis, and that basis is tied to an agreed testing regime. If the contract says payable content will be determined by “referee assay” using a specific protocol, then the settlement logic follows from that. If not, then each disagreement turns into an open-ended negotiation, which costs time and damages relationships.

There are edge cases even with strong contracts. For example, a doré bar that looks homogeneous may still have segregation or surface contamination depending on casting conditions. Or a shipping accident might expose the bars to moisture or physical damage. These do not always change the gold content, but they can affect sampling and acceptance. In those moments, you see why custody and condition reporting are treated like serious business rather than administrative overhead.

Custody chain: how bars move without losing accountability

Selling gold is also selling trust. Buyers want proof that the metal shipped is the same metal that is measured and paid for. Mines want proof that the metal received and processed is what the buyer claims to have received.

That is why the custody chain is built around controlled transfer points. Even when the physical metal never leaves secure facilities between parties, the paperwork and monitoring are detailed, because later reconciliation depends on it.

Here is what the custody chain typically focuses on at the operational level:

- identification of each lot or bar, including serial numbering and stamping practices
- witness sampling or sealing procedures when seals are broken
- secure storage and access control records during warehousing
- documented transfers, including time, location, and responsible parties

Those steps can sound procedural, but in gold sales they are the backbone of defensible settlement.

In one production season I observed, the core technical problem was not the metallurgy. It was schedule pressure during a port window. Two shipments went out on different days than expected, and one batch arrived later than usual. Because the contract allowed delayed acceptance with defined assay and penalty terms, the financial outcome did not spiral into a dispute. The difference was not courage. It was clarity in the contract and disciplined custody reporting.

Logistics and risk: transport is a business decision, not just movement

Gold moves through a world that does not forgive ambiguity. Transport is expensive for obvious reasons, but it is also expensive because of what the buyer and seller need to be comfortable with.

Key practical concerns include:

- physical security requirements, including armored transport or courier with appropriate controls
- insurance coverage that matches the agreed responsibility boundaries
- temperature, humidity, and contamination controls, especially for intermediate materials like concentrate
- documentation quality so that customs and compliance processes do not become a bottleneck

For doré bars and refined bullion, shipping is more standardized than it is for ore or concentrate. Concentrate can be messy and variable, which increases the measurement challenge and the sampling complexity. That is one reason many mines focus on producing a more stable intermediate product for commercial transactions.

If you have worked with trading teams, you know they watch shipping milestones closely because each delay can create financial exposure. A delayed shipment might mean a price basis shifts, or it might mean storage fees accumulate, or it might mean the buyer's refining slots get reallocated. Those are not theoretical issues. They are weekly concerns during busy market periods.

The best operators plan for logistics risk the way they plan for operational risk: by building clear procedures, using reliable partners, and agreeing on how exceptions are handled.

Compliance and provenance: why paperwork can be as heavy as the bars

No matter how "simple" the price looks on a quote screen, modern gold sales are filtered through compliance requirements and provenance expectations. Buyers, refiners, and sometimes traders have obligations related to due diligence, origin, and anti-corruption controls. These requirements are not uniform across countries, and they can evolve quickly based on regulation.

From a mine's perspective, this means they must prepare information packages that can satisfy a buyer's compliance team. From a buyer's perspective, it means they must be comfortable that the metal can be processed and sold without forcing a halt later.

This part is tedious until it is urgent. When compliance holds up a shipment, it delays the refining cycle and can cause storage cost and lost marketing timing. In practice, mines with strong compliance maturity treat it like an ongoing operational function rather than a one-time document dump.

The trade-off is effort upfront to reduce the risk of last-minute delays. Many producers have learned that the cost of being organized is cheaper than the cost of explaining yourself after the metal is already on the move.

Pricing: reference rates meet contract-specific reality

Pricing gold is usually anchored to a benchmark. But what matters is how the benchmark is applied. Contracts can use spot price at a specific date, an average price over a period, or a price linked to a specific market reference. Then the contract calculates the payable amount using measured metal content and specified conversion and deduction formulas.

Deductions and charges can be the difference between a "good quarter" and a strained negotiation. Refining charges might be per ounce or per kilogram, and they can change based on impurities. Penalties can apply for certain deleterious elements or for impurity profiles. There can also be basis differentials for settlement timing.

A practical way to understand it: the mine sells gold, but the contract decides what portion of the gold-bearing value is actually paid for at each stage.

In some offtake structures, the buyer pays a price less a refining charge, and then the final settlement adjusts based on confirmed assay results. In other structures, the buyer pays a provisional amount and then reconciles after the metal is refined and sampled again.

Those differences are crucial for cash flow. For a mining company, cash flow timing can determine whether the next drilling program is funded internally or requires external financing. So "how gold gets sold" includes finance mechanics, not only metallurgy.

Acceptance criteria and documentation: the small things that prevent big arguments

When metal arrives for sale or refining, acceptance is not automatic. It is checked. Even when everyone expects the same outcome, procedures are designed to catch mismatch early.

The most effective teams do this with clear, repeatable documentation, and they keep records that can be audited later.

Here are the most common documents and checks that matter in practice:

- assay certificates tied to identified lots and samples, including method notes
- bar or lot identification details, such as serial numbers, weights, and packaging condition
- shipping and custody records, including seal numbers and transfer signatures
- terms confirmation for the transaction, including the pricing basis and settlement schedule

If any of these elements are sloppy, disputes become more likely even when the gold content is correct. I have seen deals stall for days over a mismatch between the declared lot identifier and the receiving warehouse record, not because of wrongdoing, but because resolving the mismatch required escalation and reconciliation.

Gold is expensive, so everyone pays attention. But expensive doesn't mean people get everything right. That is why process beats memory.

The refiner's role: from semi-finished metal to market-grade bullion

Once doré or concentrate feedstock reaches a refiner, the process shifts from extraction to purification and segregation of impurities. The refiner's objective is consistent, market-grade metal that meets purity specifications and can be safely handled, transported, and sold downstream.

Refining also creates its own commercial relationships. A refiner might purchase doré outright, or it might process it on a tolling basis where the producer retains ownership of gold value and pays refining charges. The financial terms differ, but in both cases the refiner's operational discipline determines yield.

Yield matters because refining losses and returns, even if small in percentage, can be large in absolute ounces when volumes are significant. That is why refiners are meticulous about input sampling, chemical balances, and recovery assumptions.

Another trade-off shows up here: the producer wants higher recovery and faster processing. The refiner wants predictable input and stable impurities. These goals can align, but sometimes the producer's ore variability makes it harder to optimize refining runs, and the contract then governs how that variability is handled financially.

By the time the metal becomes a form that downstream buyers want, such as standardized bullion, it is ready for the next step in the chain: sale to distributors, wholesalers, central bank channels, industrial consumers, or jewelry https://www.iflscience.com/all-the-gold-discovered-in-the-world-would-fit-in-a-23-x-23-meter-cube-68345 markets depending on the buyer.

Where "market" really begins: distribution, not just one buyer

Even after refining, the sale does not stop at the first purchase order. Gold changes hands multiple times depending on the end market.

In wholesale bullion channels, buyers and sellers may care about purity, cast form, bar dimensions, and assay tolerances. In industrial markets, buyers may be more sensitive to impurity profiles. In jewelry markets, purity and certification can matter differently than in wholesale financing markets.

From the mine's perspective, choosing the sale route can affect marketing costs, acceptance requirements, and settlement speed. Some routes are faster but have tighter tolerances. Others offer more favorable terms but require more documentation and longer cycles.

This is where experience shows. Producers that rely on the same buyer or refiner often gain negotiating leverage and fewer operational surprises. People sometimes assume diversification is always better. Diversification can be useful, but gold sales are not only about risk to price, they are also about risk to process. Process risk often grows when relationships are new.

Practical trade-offs mines live with

Gold is unforgiving in the sense that it reveals weaknesses in systems quickly. A plant can recover more gold than expected, but if sampling and contracts do not support the realized payout, the extra value may not reach the mine's bottom line. A shipment can contain gold within spec, but paperwork ambiguity can delay acceptance and cash payment.

Across many operations, recurring trade-offs show up:

- speed versus certainty, where faster assay might increase the chance of settlement corrections later
- tolling versus outright purchase, where each shifts refining risk and yield exposure differently
- tighter specs versus broader acceptance, where broad specs reduce rejections but might reduce price
- centralized selling versus dispersed selling, where relationships and logistics predictability differ

These choices are not moral decisions. They are commercial decisions, and they depend on the mine's maturity, cash needs, and risk appetite.

A realistic "end-to-end" example

Consider a mid-sized producer that mines ore, processes it into doré, and sells doré to a refining partner. In each month's production, the plant produces batches that vary slightly in composition due to changing ore sources.

Before shipment, the mine compiles assay data tied to each doré lot and confirms identification and bar weights. It also ensures compliance information is complete for the buyer's due diligence process. The logistics team schedules transport, confirms insurance coverage, and ensures packaging and sealing practices meet the buyer's acceptance requirements.

When the shipment arrives, the receiving facility records seal numbers, bar counts, and condition. The buyer confirms identification and runs its own acceptance checks, often including sampling for gold content verification. If the contract provides for referee assay, that method is staged to resolve differences quickly.

During settlement, the buyer calculates payable metal based on the agreed measurement basis, then applies refining charges and any deductions for impurities or handling. The mine receives an initial payment if the contract includes provisional settlement, then waits for final assay and refining reconciliation for the last portion.

Downstream, the refiner purifies the metal to market-grade specs and sells it into the bullion market. The mine's revenue is already determined by contract, but the refiner's yield and operational efficiency influence the overall relationship and future negotiating position.

Nothing about that story is glamorous, but it is where the value actually gets made.

The human side: who protects the deal

For all the technical procedures, gold sales often hinge on a few individuals who can translate between departments.

The mine geologist understands sampling nuance. The metallurgist understands recovery sensitivity. The operations lead understands custody procedures under time pressure. The trader or commercial manager understands contract language and settlement mechanics. The compliance officer understands what documentation is required and what is missing.

When these roles are aligned, gold moves smoothly from mine to market. When they are not, the metal can stall even though it is sitting physically in a secure facility.

In my experience, the strongest teams are the ones that treat gold like a chain of measurable events. They do not assume the market will interpret ambiguity in their favor. They build their processes so that interpretation is unnecessary.

What to watch if you are buying or selling gold

If you are a buyer, you focus on assay defensibility, acceptance criteria, and settlement protection. If you are a seller, you focus on prompt acceptance, fair measurement procedures, and clear pricing application.

Either way, the same themes keep returning: measurement discipline, custody integrity, and contract clarity.

Gold can be a simple commodity only when the process behind it is also simple. In real operations, it rarely is. The difference between a smooth sale and a messy one is usually not technology. It is whether the parties anticipated uncertainty, agreed on how it would be handled, and kept enough records to prove what happened.

That is the practical reality of moving gold from mine to market: the metal matters, but the system around it is what makes the deal real.