



Global Decommissioning Liabilities

FINANCIAL RISKS AND STRATEGIC IMPLICATIONS

Executive Summary

Industrial sectors worldwide – oil & gas, nuclear, mining, power and heavy industry – **face rapidly rising Closure, Decommissioning and Remediation (CDR) liabilities.**

- **Global CDR liabilities are now c. \$8 trillion**, far exceeding the c. \$668bn officially recognised on balance sheets, and growing faster than corporate cash flows.
- **Most companies face a structural funding gap:** only a minority of large, well-capitalised firms can manage or prefund these obligations (Tier 1), whereas the majority (Tier 2) risk shortfalls.
- **Key macroeconomic forces – inflation, commodity cycles, and discount rates** – are inflating liabilities and straining affordability.
- **Strategic responses include:** early prefunding of decommissioning reserves, repurposing assets to offset closure costs, and investors repricing equity and credit risks as markets awaken to these liabilities.

We also discuss investment positioning – how institutional investors can engage with and capitalise on the evolving decommissioning landscape.

Structural Imbalance: Liabilities vs Earnings and Free Cash Flow

Over the last 10 years, CDR liabilities have been growing faster than earnings, continuously worsening the structural funding gap. According to BNPP AM's comprehensive top-down analysis, *the technical (undiscounted) cost of global decommissioning* (across renewables, nuclear, oil & gas, coal, mining, industry, shipping, and waste) is in the order of **\$8trn¹**.

However, our analysis of the financial reports of over 180 companies could only identify an estimated \$668bn in *accounting liabilities* recognised on their balance sheets as at end 2025.² This disclosed figure **has itself risen around 4% annually** since 2013, outpacing revenue growth in many sectors (+125% vs +117% increase in earnings over the same period). Reconciling the top-down survey and accounting data is not possible as the survey estimates are based on technical estimates and the annual filings use accounting data. The accounting data does not always include all of the companies' environmental liabilities and are often discounted with favourable discount rates and inflation assumptions.

The imbalance is illustrated by cases such as EDF: its nuclear decommissioning provision (€70,7bn) vastly exceeds its annual net income or Free Cash Flow ("FCF"), indicating current operations would "never cover" the future dismantling costs **without the support of a prefunded decommissioning reserve.**³

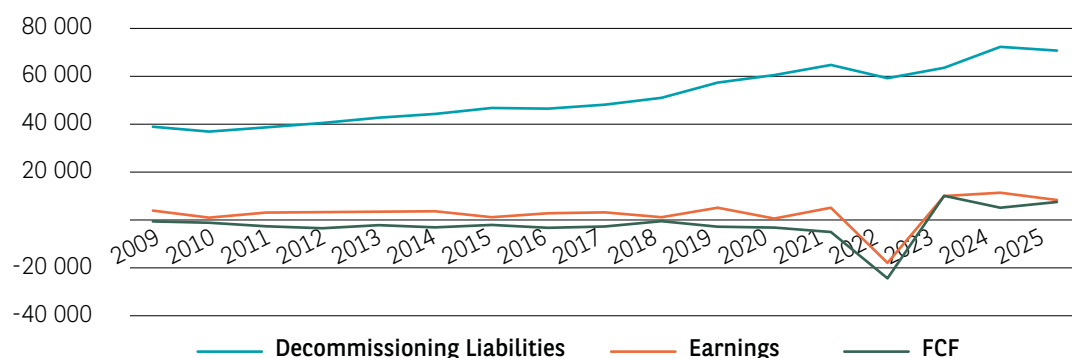
1 BNP Paribas Asset Management, Decommissioning Stranded Energy Assets, a USD 8trn Challenger, <https://docfinder.bnpparibas-am.com/api/files/774827C2-0FC0-40E4-B442-6945018B54DF>, September 2023.

2 Based on BNPPAM's granular assessment of the accounting statements of 180+ major firms ("the Database").

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Past performance or achievement is not indicative of current or future performance.

EDF - Decommissioning Liabilities vs Earnings & FCF



Very few companies **prefund** their obligations beyond regulatory minimums in many jurisdictions. Naturally, they tend to prioritise investment in their core business, expecting higher returns from the commodity or energy they produce. Consequently, most adopt a pay-as-you-go approach – covering clean-up costs from operating cash flows when they fall due. This approach has so far not been working effectively. In fact, to the exception of the Coast of California and the Gulf of Mexico, it seems to have led to a large number of abandoned and orphan sites – especially in oil & gas and mining.

Abandoned and orphan assets - Mining and oil & gas sectors in selected countries / regions

Region	Risk / urgencyw	Asset count	Average per site cost (USD)	Estimate aggregated cost (USD bn)	Confidence Level	Main / primary sources
Brazil	High	3,943 mine sites	1M-50M/site	5bn - 15bn; disasters 41.5bn+	Low	Instituto Escolhas; ANM; Reuters
South Africa	High	5,976-6,100 mines	440K-455K/site	3.3bn - 4.4bn	Medium	DMRE; PMG; HRW
Australia	Medium	50,000-80,000 mine sites	6K-650M/site	10bn - 20bn+	Low-medium	Monash; Australia Institute; ERA
United States	High	642K-2.6M mines + wells	20K-200K wells; mines higher	78bn - 341bn+	Medium	GAO; IOGCC; Carbon Tracker
Canada	High	33K-38K mines; 466K wells	15K-740K wells; mines higher	65bn - 96bn+	Medium	Auditor General; AER; PBO
North Sea	High	5,000-6,283 wells; 260-470 platforms	2.1M-30M/well	55bn - 85bn	Medium	NSTA; NPD; Nexstep
Niger Delta	High	8,211 drilled wells; abandoned count unclear	500K-5M/well	20bn - 150bn+	Low	SPE Nigeria; UNEP; NOSDRA

This approach also leaves firms exposed to inflation, commodity downturns, and tightening regulations. There is evidence that as environmental standards rise and assets age, cash flows are not keeping up with the required remediation spend:

- In the **mining sector**, if we “smooth” closure costs over 20 years (we thus conservatively assume that each company pays 5% of the existing provision every year for 20 years without new provisions, nor accruals), using a “loading factor” of +50% on the “smoothed” decommissioning liabilities⁴, many miners would face a **7% to 100% annual shortfall** between FCF and the required payments. The liability-weighted probability of a shortfall (the number of times the FCF wouldn’t been enough to meet the smoothed decommissioning cost) in any given year is c. 21%.² This means mining companies have on average a one-in-five chances that their annual FCF **won’t be enough to cover** about 5% of their decommissioning liabilities. The companies failing to meet their annual CDR obligations would need to dip into reserves or debt *even under average conditions*.²

4 To account for inflation and other possible cost increase over the period.

- The **oil & gas sector** shows a similar pattern: analysts found a c. **28%** average shortfall probability for leading operators.² Despite recent high oil prices, many operators might not meet future plugging and abandonment costs.
- **Net present value vs. market cap:** For many firms, the present value of decommissioning obligations is a significant proportion of their market capitalisation – or even exceeds it. Industry-wide, the ratio of total liabilities to total equity market value has improved slightly (from 15% in 2015 to 8% since 2023, thanks to booming stock prices in some sectors)². But this aggregate improvement is *misleading*, driven by a few large companies and can be reversed by market volatility. Many smaller and / or pure-play operators have decommissioning liabilities which dwarfs their market cap, raising solvency concerns if forced to settle obligations early.

In short, there is a **structural imbalance between CDR liabilities and the financial resources designated to service them**. Unless this gap is addressed through prefunding, financial innovation or external capital, an increasing number of firms will face difficult choices: divert cash from operations and growth to meet environmental obligations, delay clean-ups (in breach of regulation), or risk defaulting on obligations (passing the burden to taxpayers). The following sections discuss how macroeconomic forces are intensifying this imbalance and stratifying the market depending on the path chosen by companies.

Macro-Sensitivities: The Dominant Factors

Macro-economic conditions – especially inflation and commodity prices – **are the dominant factor** shaping decommissioning costs and affordability. Because obligations are long-dated and linked to labour and material inputs, changes in inflation, discount rates, or commodity-driven revenues can reshape both provisions and funding capacity.

- **Inflation & discount rates increases the burden:** Decommissioning costs rise with inflation related to their specific sectors. For instance, the recent inflation uptake in the nuclear sector has lifted estimates materially – e.g. the UK Nuclear Decommissioning Authority's undiscounted liability rose by about £8 bn in one year. In addition, small assumption shifts also matter: **a 0.5% lower discount rate** (or higher inflation) would add roughly **\$49bn** to global provisions (a 7.3% increase). Companies moving from 3% real discounting to 1% can see large step-ups in provisions, as some European utilities did in the late 2010s
- **Commodity prices and demand** drive decommissioning affordability: Commodity cycles fund (or constrain) decommissioning. In strong periods (e.g. oil at \$100+/bbl or a metal Supercycle), firms can accelerate the built up of a "treasure chest" to prefund their CDR: one North Sea operator did so when prices were high. In downturns (e.g. sustained low oil prices or weaker coal demand), budgets are cut, creating a transition risk: revenues fall before closure costs are funded. A sharp drop can quickly turn pay-as-you-go into a shortfall; sustained \$40 oil can render more North Sea assets uneconomic, triggering earlier decommissioning with less cash on hand. Energy-transition rule-tightening can coincide with commodity slumps, when firms are least able to pay.

Currency volatility and macro-economic conditions by region can quickly amplify decommissioning funding stress and dominate risk scoring: Liabilities are often incurred in local currency but reported in US\$ ("\$\$"), so FX moves change reported values. A 10% \$ depreciation (vs. reporting currencies) would raise the total 2025 reported liabilities in the Database by **c. \$37bn out of the 180 companies we reviewed, i.e. an increase of 5.5% from the reported amount of \$ 668m in 2025**. Regional differences matter too: higher inflation volatility in emerging markets raises CDR costs, while lower real discount rates in Japan and Europe inflate nuclear provisions versus higher-rate jurisdictions. Robust assumptions are critical.

Emerging Two-Tier Market

As these pressures mount, a **two-tier market** is emerging among asset-heavy companies:



TIER 1 – FINANCIALLY FLEXIBLE

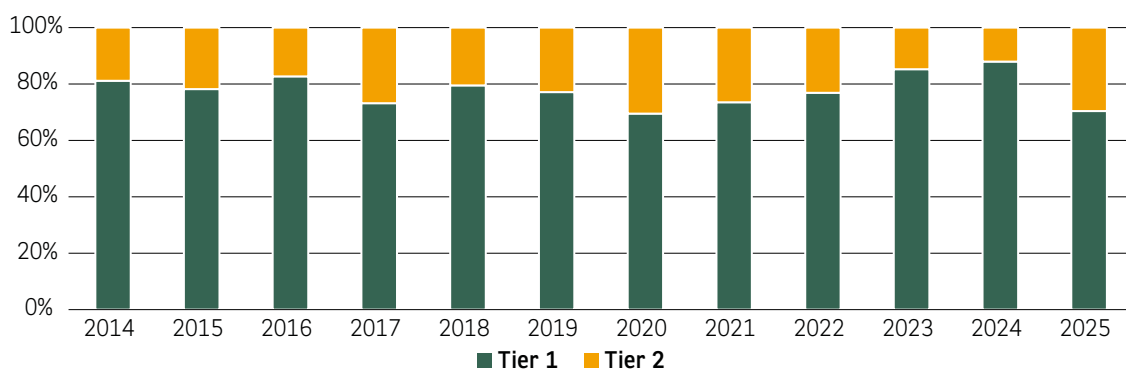
A small number of companies (typically large, diversified players or those in regulated markets) retain sufficient balance sheet strength and financing options to manage their decommissioning liabilities proactively. These firms can absorb liability increases without threatening solvency – for instance, by issuing transition bonds or using cash reserves. They can choose to prefund or insure their obligations, despite no legal requirement, to avoid future volatility. Others, like nuclear operators, for example, have a regulatory requirement to systematically prefund through dedicated external funds (such as EDF's €42.5bn fund). Oil majors and large miners are increasingly selling non-core late-life assets with dedicated escrow funds or liability transfers to ensure clean-up is covered. Tier 1 companies also tend to have better disclosure and governance, which earns them institutional investors trust (and often lower cost of capital) to tackle these issues. In short, Tier 1 can raise capital or reallocate resources to meet decommissioning needs without imperilling their core business.



TIER 2 – STRUCTURALLY CONSTRAINED

A majority of operators are financially or structurally ill-equipped to handle CDR obligations significantly outsizing their balance sheet. These tend to be smaller firms (on average a quarter of the market cap of Tier 1 companies) and / or pure-play operators (e.g. junior miners, independent E&Ps). Their balance sheets are often leveraged by decommissioning provisions (over 25% of market cap for 24.5% of the companies in our database). Tier 2 firms also have a constrained access to low-cost capital and many have low credit ratings that can preclude additional borrowing for clean-up.

Tier 1 vs Tier 2 at balance sheet level: Percentage of companies whose CDR liabilities are higher than 25% of the market cap



All in all, based on our proprietary database, BNP Paribas Asset Management estimates that **71.4%** of mining and **47.6%** of oil & gas companies sit in Tier 2 and have an annual probability of defaulting on their CDR obligations of at least 25% (i.e. once every four years)⁵. For example, CNRL's \$8.6bn ARO was flagged by Fitch as manageable at BBB+, but with caution around commodity price declines, implying AROs are now part of credit risk evaluation.

We observe that large non-nuclear Tier 1 companies have been shedding legacy liabilities via asset sales, spin-offs, or subsidiary bankruptcies, effectively stranding liabilities with smaller and more often private entities thus under less public scrutiny. Transfer of mature fields and decommissioning obligations from oil majors to thinner-capitalised operators with weaker balance sheets and margins raise the risk of decommissioning obligations not being met. Similarly in mining, some Tier 2 firms inherit legacy sites without adequate bonding. This "liability arbitrage" is creating an underfunded tail in weaker hands, with deferred spending compounding environmental and financial risks over time.⁶

The market is increasingly aware of this dichotomy: equity valuations and bond spreads are beginning to reflect it. Based on BNP Paribas Asset Management's proprietary data, we notice that the credit rating of Tier 1 companies, either with small decommissioning liabilities or with ring-fenced liabilities and trust funds tend to be less affected by the size of the decommissioning, while Tier 2 face more sceptical markets and in some cases worse credit ratings. There is indeed a negative correlation between the size of the decommissioning liabilities and the credit rating. In M&A, buyers now require price adjustments, escrows, or insurance for high-liability assets, penalising Tier 2 sellers.

- Tier 1 firms will increasingly **attract institutional capital** to co-invest in solutions (e.g. infrastructure to repurpose sites), further easing their burden.
- Tier 2 firms, by contrast, may find themselves **paying a premium for guarantees or being forced into government-led backstop programs** (as demonstrated by many mining and industrial sites in the UK). Identifying which companies fall into which tier is thus critical for investors – our next section incorporates these structural factors.

Early Warning Signals of Deterioration

Given the financial risks described above, investors and regulators are slowly gaining awareness of **early warning signals** that a company's decommissioning obligations are becoming unsustainable. The key red flags include:

- **Spiking liability ratios:** A sharp rise in the ratio of decommissioning payments to FCF or revenue, is a clear red flag. Several mining companies saw this ratio jump during commodity slumps, meaning even minimum environmental spend consumed a growing share of cash flow. If rolling 5-year FCF is now *below* expected 5-year remediation outflows, the firm is effectively getting underwater (as seen for some North Sea operators). A rising liability to market cap ratio is also telling: as it nears 50%, the companies are likely to move from Tier 1 to Tier 2 segment.
- **Credit downgrades or debt covenant concerns:** Some rating agencies now explicitly flag decommissioning exposure. A move to negative outlook citing environmental liabilities is a strong warning. Banks may also add covenants requiring minimum clean-up funding; breaching them signals deterioration. Fitch Ratings, for example, said one North American producer's c. \$8.6bn in asset retirement obligations was "manageable" at BBB+; if prices fell or liabilities rose, a downgrade may follow. Tracking credit language can surface stress early.
- **Delays of remediation:** Financially stressed companies try to push closures out - lobbying for extensions, slowing spend, or adopting overly long "deferred dismantlement" plans. A sudden schedule change

5 Following the same probabilistic approach as in section 2, we have estimated how many companies had an annual default probability above 25% if required to meet 5% of the CDR liabilities (+50% in loading factor).

6 In the Database, the ratio of CDR liabilities held by the 20 largest and best capitalised (i.e. Tier 1) companies has fallen from 70.6% of the total in 2014 to an estimated 57.9% in 2025 while the total CDR liabilities increased from \$416b to \$668bn. default probability above 25% if required to meet 5% of the CDR liabilities (+50% in loading factor).

(e.g. moving a project from 2030 to 2040 without a clear technical rationale) can indicate they can't afford action now. Regulators must approve changes but may accept them over insolvency. Frequent asset-life extensions are a danger signal.

- **Asset sales with retained liabilities or insufficient bonding:** If a company sells an asset but keeps the liability (or effectively finances clean-up), it suggests buyers wouldn't assume the risk - often because the true cost is higher than advertised. Likewise, **insufficient bonding** (e.g. \$100 m required but only \$50 m posted) signals elevated perceived risk. A pattern of accidents or fines for poor maintenance can foreshadow liability blowouts.
- **Management or Auditor notes:** Early warning can show up in financial reports. Auditors often add emphasis-of-matter paragraphs if provisions may be understated or if there is material going-concern uncertainty tied to environmental costs. Likewise, if management elevates decommissioning funding to a principal risk (when it wasn't before), it deserves attention. Many European utilities did this in recent years, often shortly before announcing new funding schemes or government support.

In summary, diligent monitoring of these signals give investors time to react before a decommissioning problem crystallises. For example, when one European operator ended up cutting its dividend citing the need to face immediate environmental liability payments, it was a clear sign of re-prioritisation.⁷ As decommissioning moves "from the back page to the front page" of financial reporting, stakeholders should use the above indicators to distinguish between proactive, well-managed situations and those sliding toward crisis.

Strategic implications for investors

Prefunding as a necessity: As affordability tightens, many companies will need to prefund well before clean-up bills fall due. As mentioned above, the pay-as-you-go model is breaking down (especially for Tier 2 firms). For many, a Decommissioning Reserve Fund (DRF) - a ring-fenced pool of assets dedicated to closure - has shifted from optional to essential. Contributing in good years helps buffer remediation budgets from operational volatility and reduces the risk of later capital calls or state intervention. Prefunding is also rewarded by markets; for example, Uranium Enrichment Co. URENCO's decommissioning fund has been cited by rating agencies as a factor underpinning its solid A- credit rating. Prefunding can take several forms:

- Set up **trust funds or escrow accounts**;
 - Issue **transition bonds** with proceeds locked for future clean-up; and / or
 - Use **third-party prefunding vehicles** to invest cash today in managed portfolios that fund closure later.
- Regulators are increasingly supportive. The UK's recent industrial strategy calls for long-term funding mechanisms and urges companies to "*establish segregated funds...and consider prefunding to reduce long-term shortfall risk*"⁸, even though this remains uncommon in oil & gas. For investors, this implies two clear actions:
- Differentiate valuations by funding quality (reward decommissioning trusts; discount fully pay-as-you-go exposures); and
 - Consider supplying prefunding capital that can offer stable, long-duration - often inflation-linked - returns in exchange for taking decommissioning risk. We discuss this further in *Investment Positioning*.

Asset repurposing vs. closure: Often the value-maximising strategy is not pure closure but redevelopment or repurposing. Turning end-of-life assets into new, revenue-generating projects can offset (some) decommissioning costs. One fast-growing route is brownfield renewables: retired coal sites can host solar or battery storage, reusing land and grid connections to lower costs and generate cash to fund remaining remediation.

⁷ This example is however a double-edged sword: cutting dividends to cover an urgent environmental expense is a red flag, whereas choosing to retain earnings during boom years to build decommissioning reserves can be prudent.

⁸ https://www-pub.iaea.org/MTCD/Publications/PDF/te_1476_web.pdf



Oil & Gas – offshore platform repurposing: Rather than fully scrapping platforms, operators are exploring conversion to offshore wind substations, carbon capture hubs, or aquaculture sites, lowering removal costs and attracting external capital. In the UK, North Sea Transition deals encourage linking decommissioning with redevelopment – e.g. using depleted reservoirs for carbon storage and leveraging platforms for CO₂ injection. By pairing “old” and “new” in one project, some companies have secured public co-investment and achieved 40%+ cost savings on net closure spend.



Mining – from mine closure to land redevelopment: Rehabilitation can also create value via real estate or conservation credits. Quarries can be converted into commercial parks and nature reserves, lease / sale income financing a meaningful share of remediation. Another example is Amentum at Oak Ridge (USA), which completed clean-up \$0.5 bn under budget and 4 years early by integrating an economic development plan (the site became an advanced reactor development campus, attracting \$8 bn in investment).



Power utilities – coal to renewables: Utilities increasingly see closure as a chance to *repower* the same site. Replacing a coal unit with renewables or battery storage reuses the grid connection (often worth tens of millions) and can qualify for government support. For example, a large US Midwest utility closed several coal units and is building solar on those sites, saving on land costs and workforce redeployment while securing federal clean energy credits that subsidise demolition.

For investors, asset repurposing is attractive in two ways:

- Firstly, it **mitigates risk** – a site that finds new life is far less likely to become a stranded environmental liability.
- Secondly, it opens **direct investment avenues**: investors can participate in the redevelopment venture, thereby indirectly funding the clean-up. It turns a pure cost centre into a potential profit centre.

The **key strategic implication** is that investors should encourage management to *explore repurposing options before decommissioning assets*. If a management team is simply planning to spend \$X on closure with zero return, that is suboptimal – engaging with them to consider sale or redevelopment could unlock value. In some cases, the optimal move is an earlier closure with repurposing, rather than extended operation.

Repricing of equity and credit risks: One striking implication of this decommissioning challenge is that an enterprise risk may be mispriced for many companies, and a re-rating (i.e. downgrade) is likely as markets catch up. Until recently, investors tended to underestimate the closure liabilities in valuations. Decommissioning costs were treated as distant, reliably discounted, and often not even broken out in analyst models. That is changing. Markets are realising that the equity of some companies may be at risk⁹ as these liabilities materially reduce the fair value of equity today:

9 The IEEFA March 2025 report urged rating agencies to account for AROs and the **Investors for Paris Compliance November 2025 report** on the Accounting for the Canadian Oil & Gas Liabilities Gap who urged auditors to expand their assessment.

- **Asset retirement obligations:** Analysts increasingly treat decommissioning provisions as debt-like in valuation. If Company A has \$5bn net debt and \$5bn AROs, those AROs should be added to enterprise value because they require future cash. If the market ignores them, equity and credit rating are overstated. After major incidents (e.g. a mine disaster or oil spill), investors often reprice this “hidden debt” rapidly, driving market-cap drops and credit downgrades. We expect adjustments for unfunded liabilities and higher costs of capital for exposed firms.
- **Underpriced stranded asset risk:** Some smaller North Sea producers traded at high cash-flow multiples while ignoring that a material share of cash would ultimately fund plugging. As regulators enforce shorter asset lives and higher bonding, valuations could fall to reflect true post-clean-up value. Put differently, part of the “equity value” and credit risk are effectively pre-allocated to the state or to service providers performing remediation.
- **M&A and restructuring as catalysts:** Transactions can force repricing because buyers now underwrite liabilities more rigorously, making the implied “price” of closure risk explicit. For example, if a coal plant with \$200 m in closure costs sells for “negative” \$50 m (buyer paid to take it), public comps with similar assets may be marked down quickly. Spin-offs designed to isolate liabilities can also reveal true market views: the legacy “bad bank” often trades poorly, implying the original equity was overvalued by underweighting environmental costs.
- **Increased investor scrutiny and engagement:** Large institutional investors are increasingly scrutinising how portfolio companies manage decommissioning under ESG and fiduciary duty, with unfunded liabilities treated as financially material. Firms that can’t answer investor questions may face divestment or a higher risk premium. That pressure can weigh on share prices or at least cap re-rating versus better-prepared peers.

In summary, we expect a repricing of enterprise risk in this space: companies that proactively address and transparently manage decommissioning will be differentiated (rewarded with lower risk premiums and higher credit scores), whereas those who delay will see their cost of capital rise. This repricing has not yet been fully realised – which presents both a risk and an opportunity for investors. The risk is being caught holding equities and bonds that decline as the market wakes up to liabilities. The opportunity is to rotate into (or engage with) names that are ahead of the curve (prefunded, repurposing-friendly, etc.), and potentially to short or underweight those that remain in denial. Markets are starting to send signals: witness how companies with clear decommissioning roadmaps trade at higher valuation multiples and credit ratings.

Conclusion

In conclusion, the decommissioning wave – spanning oil wells, mines, power plants, and more – is both a **financial risk to manage** and a **new arena for investment**. Investors who recognise the structural imbalance and macro sensitivities, differentiate between the Tier 1 and Tier 2 players, heed early warnings, and push for strategic responses (prefunding, repurposing) will be best placed to protect value and capitalise on the transition.

This context of evolving decommissioning landscape calls for a nuanced approach. Investors should position themselves to mitigate the risks of this structural imbalance and to seize opportunities in financing solutions and transition assets:



Incorporate decommissioning risk into valuations and asset allocation: Investors should explicitly factor decommissioning liabilities into valuation - treating provisions and expected environmental cash outs as debt-like adjustments to enterprise value and running scenario analysis for shortfalls. Portfolio sizing should reflect this (an E&P may not look cheap on P/E once asset retirement obligations are netted). Credit investors should demand covenants or spread premia for large unfunded liabilities. Some managers are already using an “environmental liability coverage ratio” (akin to interest coverage) to spot risk early and structure relative-value trades (long prepared firms, short laggards).



Engage and advocate for prefunding and insurance solutions: (Institutional) investors can push companies towards prefunding and even supply capital. As creditors or shareholders, they can require that a share of FCF goes into a trust or that surety bonds / insurance are put in place for closure. Insurers increasingly offer *insurance-wrapped decommissioning solutions*, taking tail risk for a fee. Proactive engagement (e.g. “Have you set up a reserve fund or bought insurance?”) can also create new mandates to manage these vehicles.



Invest in transition assets and repurposing projects: Decommissioning spend is itself an investable theme. Transition infrastructure (waste processing, recycling, CCS, and renewables on legacy sites) grows as heavy industry winds down. Investors can allocate via funds or direct projects; for example, specialist infrastructure managers target “brown-to-green” deals where they take over a post-operations site, develop wind/solar, and manage clean-up, monetising power sales and incentives. Many structures offer inflation-linked cash flows matching pension / insurance liabilities and supporting a Just Transition. Nature-based solutions (rewilding to generate carbon / biodiversity credits) can also offset closure costs, creating impact-fund opportunities.



Monitor policy and engage in dialogue: Investors should track policy shifts that can rapidly change liability timing and size - mandated prefunding, accelerated coal phase-outs, tighter methane rules (driving early well closures), and stricter mine-rehab laws. Active owners may engage policymakers for clear, stable regulations and incentives that reward proactive behaviour (e.g. tax credits for prefunding, fast-tracked permits for repurposing). Participation in initiatives such as Climate Action 100+ or the Investor Leadership Network can help shape best practice and reinforce expectations on disclosure and funding plans.

Appendix: Definitions & Accounting Mechanics

To frame the analysis, we clarify key terms and how these liabilities flow through financial statements:

Term	Meaning & Treatment
Provision	A liability on the balance sheet for a legal/constructive obligation to expend resources in the future (e.g. for decommissioning). Under accounting standards (IFRS/IAS 37 or ASC 410), a provision is recognised once an obligation is present and the cost can be reliably estimated. It is measured at management's best estimate of the expenditure required, discounted to present value where the cash outlay is long-term. Changes in regulations or scope can trigger revisions.
Accrual	The periodic expense recognition of decommissioning cost over an asset's life. This often includes interest (unwinding of discount) on the provision and depreciation of any capitalised decommissioning asset. Accruals ensure costs are matched to the period of benefit. For example, nuclear operators accrue interest expense as their discounted liabilities unwind each year.
Change in Estimate	Adjustment of the provision when underlying assumptions change. Under IFRS, updated cost estimates or discount rates lead to remeasurement of the liability. If an asset is still in use, IFRIC 1 directs adjusting the asset's carrying value; otherwise, changes go through profit or loss. For instance, a revised cost study or new regulatory requirement can increase a provision, hitting earnings if no asset remains to absorb it.
Actuarial / Remeasurement	A catch-all for changes in liability due to financial assumptions (discount rate, inflation) or experience not equal to prior assumptions. Small discount rate moves can have multi-billion impacts on long-dated liabilities. Unlike pension actuarial gains / losses (often in OCI), remeasurements of decommissioning provisions typically affect P&L or asset value. Companies disclose sensitivity: e.g. a 0.5% decrease in the discount rate can increase total provisions by \$49bn . Higher inflation or lower rates dramatically enlarge the reported liability, an effect seen in recent years' nuclear provisions. A 10% depreciation of the USD against major global currencies would lead to an increase in total CDR liabilities by \$37bn .

All analysis is grounded in corporate data from BNPP AM's proprietary database (covering 180+ companies) and uses macro indicators (inflation and exchange rate) from the provided dataset, ensuring factual accuracy and relevance.

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As at June 2026

