



Sustainable Energy Solutions for Gold Mines in West Africa

Industrial-Scale BESS/PV Systems: Achieve Cost Savings, ESG Excellence, and Reliability

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Executive Summary

As a West African gold mine operator, you face high diesel costs, unreliable power, and increasing ESG pressures. GoSí Energy, as a project developer, partners with top-tier EPC contractors to deliver utility-scale BESS/PV systems tailored to your needs, with a median example of 5 MW PV and 2 MWh BESS per project.

\$2.28M	1.15
Annual Savings	Year Payback
Cost savings through reduced diesel consumption	Rapid earn back period on investment
3,192	
tCO2e/year	
Significant CO2 emissions reduction	



By partnering with us, you can achieve enhanced grid reliability through BESS, diesel savings of up to 2.5 million liters/year, and strengthened ESG positioning. Our goal is to deploy 10 projects totaling 50 MW by 2027, leveraging our strong government relations and interest from mining companies like yours. Contact us to start with a feasibility study and transform your operations.

The Challenge in West African Gold Mining

High Energy Costs

Diesel generators at \$0.25–\$0.35/kWh consume a significant portion of your budget.

Unreliable Power

Grid instability disrupts production, leading to costly downtime.

ESG Pressures

Stakeholders demand carbon reductions and sustainable practices to maintain investor confidence and regulatory compliance.



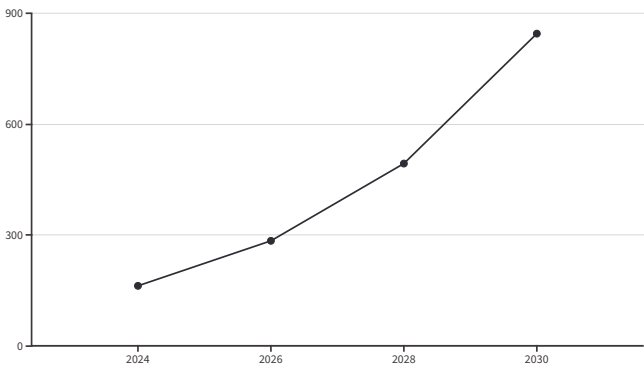
These issues impact your profitability and competitiveness in a region producing over 300 metric tons of gold annually.

Market Opportunity for Renewable Energy in Mining

The global gold mining sector heavily relies on diesel fuel for power generation, particularly in remote operations where grid access is limited. Diesel accounts for up to 40% of a mine site's emissions and a significant portion of operational costs, with the mining industry consuming 38% of global industrial energy and 15% of electricity.

The vast majority of emissions in the gold supply chain stem from diesel-dependent mining activities, highlighting an urgent need for renewable alternatives like solar PV to displace diesel and reduce greenhouse gas (GHG) emissions, which the sector contributes 4%–7% of globally.

In West Africa, the market for solar PV systems offsetting diesel in mining is rapidly expanding, driven by high solar irradiation and the region's growing mining sector. Solar PV could supply 81–85% of West Africa's future power demand by 2050, with significant applications in mining to offset diesel consumption—examples include projects reducing diesel use by 20–22 million liters annually per site.



West Africa solar PV panel market growth (CAGR 31.9%)

Our Solution: Developer Model with Top-Tier EPC Partners

As a project developer, GoSÍ Energy designs, finances, and oversees the deployment of BESS/PV systems, partnering with leading EPC firms to ensure high-quality construction. We initiate projects with a feasibility study (site assessments, techno-economic analyses, permitting plans), followed by development services, handing over turnkey systems to you for operation.



Feasibility Study

Site assessment, techno-economic analysis, and permitting plans



Development

System design, financing, and oversight



Construction

Implementation by top-tier EPC partners



Turnkey Delivery

Complete system handover for your operation

This model allows you to own the assets while we handle development, enabling cost savings through 60% diesel reduction, reliability with BESS-integrated power for stable operations, sustainability with significant CO2 cuts and ESG alignment, and scalability with modular systems to fit your site's needs.

Technical Specifications

For a median project example:

- Solar PV: 5 MW capacity, generating 9,500 MWh/year (1,900 kWh/kWp/year in West Africa's high solar irradiation)
- BESS: 2 MWh storage, delivering 7,600 MWh/year usable output
- Efficiency: >90% system efficiency
- Lifespan: 20 years, with hybrid integration for diesel generators

Projects vary in size to reach a 50 MW total capacity across 10 sites by 2027.



Benefits for Your Mine

Cost Savings

By implementing our BESS/PV system, you can achieve annual energy cost savings of \$2.28 million through a 60% reduction in diesel consumption, plus additional revenue from excess power sales (\$0.076 million/year) and carbon credits (\$0.241 million/year at €70/tCO₂e).

Earn Back Period

Your investment in the system, with a net CAPEX of \$3 million after \$1 million subsidies, can be earned back in approximately 1.15 years based on combined savings and revenues of \$2.597 million/year.

Grid Reliability with BESS

The BESS provides energy storage for 24/7 reliability, stabilizing power supply and minimizing downtime from grid instability, ensuring consistent operations even in remote West African locations.

CO₂ Emissions Reduction

You can reduce CO₂ emissions by 3,192 tCO₂e/year per project, contributing to your mine's sustainability goals and enabling monetization through EU carbon credits.

Diesel Saved per Liter

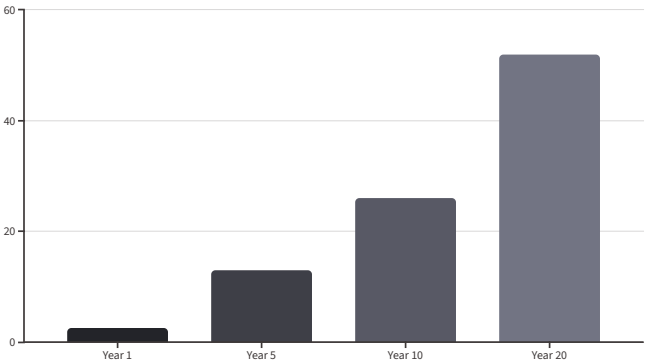
The system displaces up to 2.5 million liters of diesel annually per project, based on displacing 7,600 MWh at typical diesel generator efficiency (0.25–0.33 liters/kWh), lowering your fuel logistics and costs.

ESG Focus

Adopting BESS/PV positions your mine as an ESG leader, reducing emissions, enhancing community relations through local power provision, and attracting investors focused on sustainable practices.

Financial Overview for Your Project

Your CAPEX	\$4 million (paid to GoSÍ Energy for development)
Subsidy	\$1 million
Net CAPEX	\$3 million
Annual Energy Savings	\$2.28 million
Power Sales Revenue	\$0.076 million/year
Carbon Credits Revenue	\$0.241 million/year
Total Annual Benefit	\$2.597 million
Payback Period	~1.15 years



Long-Term Value: Over 20 years, cumulative savings could exceed \$50 million per project.

Environmental and ESG Benefits in Detail



Carbon Reduction

Avoid 3,192 tCO₂e/year/project, with credits sold to EU markets at €70/tCO₂e (~\$75.6/tCO₂e).

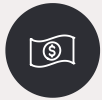
ESG Alignment

Boost your sustainability ratings, meet regulatory requirements, and improve investor appeal.

Community Impact

Excess power can electrify local areas, supporting social ESG pillars.

Subsidies and Financing



Subsidies

You receive \$1 million/project from World Bank, ECOWAS, or AfDB; we assist for a \$0.1 million fee.



Carbon Credits

Monetize in EU markets at €70/tCO₂e, with potential growth to €100/tCO₂e by 2027.



Financing

Low-interest loans available to you via development banks.

i GoSÍ Energy provides comprehensive support in securing subsidies and financing options, maximizing your project's financial benefits while minimizing upfront costs.



Case Studies

Agnew Gold Mine, Western Australia

The Agnew Gold Mine (Gold Fields) implemented a 4 MW PV system with a 13 MW/4 MWh BESS in 2020, integrated with wind and gas/diesel generators.

- Cost Savings:
~\$1.5M/year from 20-25% diesel reduction
- Earn Back Period: 3-4 years (with grants)
- Grid Reliability: BESS ensures zero downtime in remote operations
- CO2 Emissions Reduction: 46,400 tCO2e/year, monetizable at €70/tCO2e
- Diesel Saved: ~2-3M liters/year, cutting logistics costs
- ESG Focus: Enhanced sustainability, supporting investor and community goals

Fekola Gold Mine, Mali

B2Gold's Fekola mine in Mali deployed a 30 MW PV plant (scaled to 8 MW for this example) with a 4 MW/3.75 MWh BESS in 2021, reducing diesel reliance.

- Cost Savings:
~\$1.33M/year (plus \$0.241M carbon credits)
- Earn Back Period: ~2.5 years (\$3.2M net CAPEX)
- Grid Reliability: BESS stabilizes off-grid power in Mali
- CO2 Emissions Reduction: ~3,200 tCO2e/year, sold to EU markets
- Diesel Saved: ~2.5M liters/year, lowering fuel costs
- ESG Focus: Strengthened B2Gold's ESG profile, aligning with EU standards

Granny Smith Gold Mine, Western Australia

Gold Fields' Granny Smith mine installed an 8 MW PV system with a 2 MW/1 MWh BESS in 2020, integrated with gas generation.

- Cost Savings:
~\$1.2M/year from 10-13% diesel reduction
- Earn Back Period: ~3 years (\$3.5M net CAPEX)
- Grid Reliability: BESS ensures stable power in remote site
- CO2 Emissions Reduction: ~3,000 tCO2e/year, with \$0.227M/year credits
- Diesel Saved: ~1.8M liters/year, reducing logistics
- ESG Focus: Boosted decarbonization and investor appeal

Key Considerations and Next Steps

Key Considerations

- **Upside**
Higher diesel costs or carbon prices boost your savings.
- **Risks**
Delays mitigated by our partnerships.
- **Mitigation**
Feasibility de-risks your project.

Next Steps



Partner with GoSÍ Energy for a feasibility study to customize a BESS/PV system for your mine.

Contact us at info@gosi.me to schedule a discussion and advance toward ESG leadership and cost savings.