Bird & Bird

Renewables for Mining in Africa

2022


Extractives Hub


affectio mutandi


Introduction

Africa currently accounts for 15% of global mining expenditure, which remains low in relation to the continent's resources. Mining is therefore set to expand in the coming years.

Africa's power generation capacity is 80 GW, of which 40GW is in South Africa and 23 GW is allocated to mining projects, mainly in Sub-Saharan Africa. Thus, about 50% of the electricity production in Sub-Saharan Africa is generated by the mining sector.

In addition, the cost of electricity generation in a mining project is between 10 and 35% of the project cost.

Thus, the weight of the mining industry in the African energy landscape is very important and the needs are growing as mining exploitation increases.

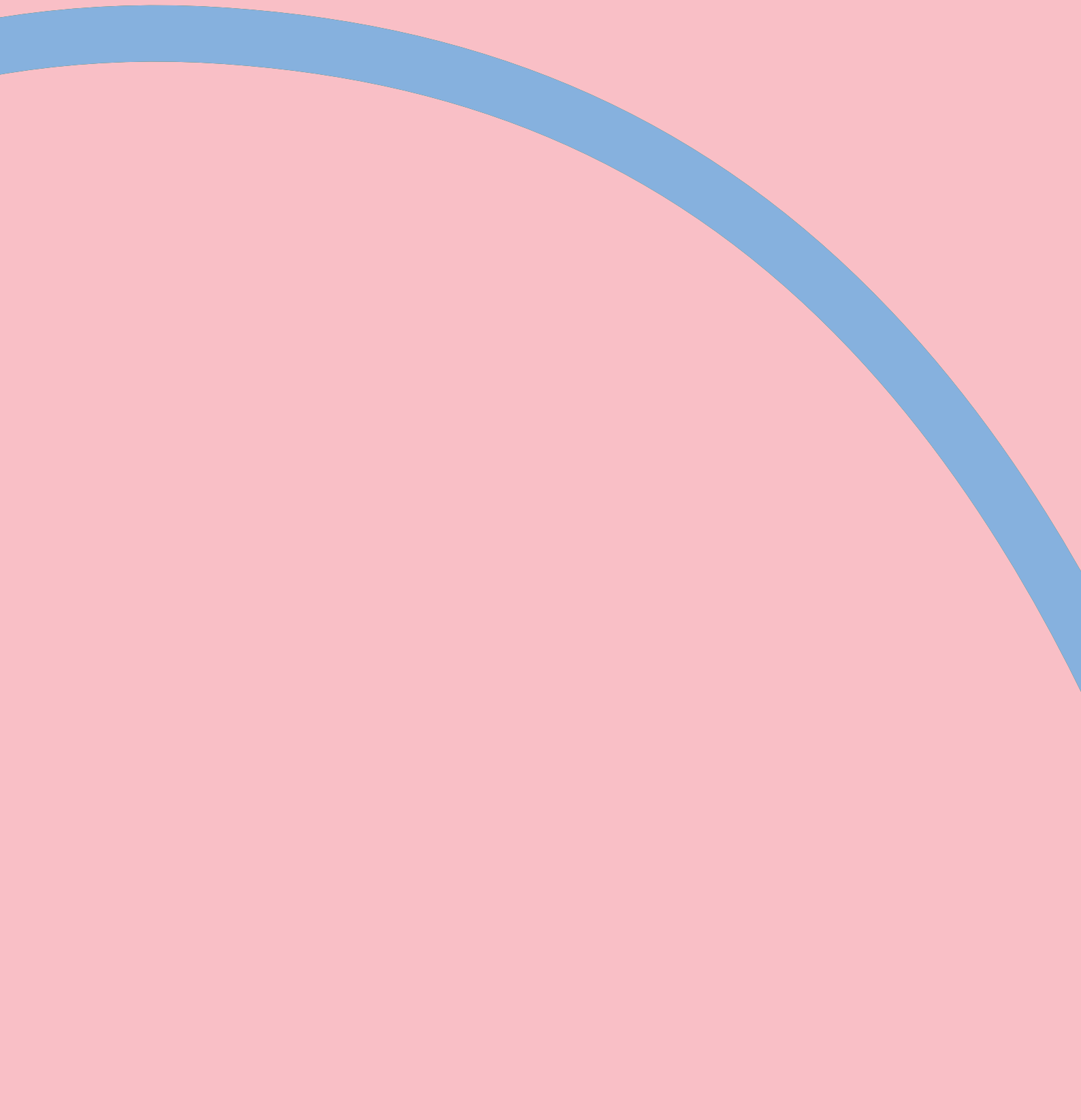
Moreover, in the mining sector, there is a permanent risk of energy blackouts. Indeed, mining industries have an increased dependency on energy. A temporary or more longer term loss of power would have strong financial implications.

Renewable energy infrastructures, such as mini-grids, are now being considered as an answer to all this.

What is a mini-grid?

An integrated energy systems consisting of a group interconnected Distribution Energy Ressources (like Production sources, PV, Genset, along with energy Storage to control some Controllable Loads) with clearly defined electrical Boundaries.

- To increase resiliency
- To manage Site energy Consumption and Demand
- To Integrate Renewable Cost effective energy sources.



Challenges & opportunities of using renewable energy in the African mining sector

Opportunities of renewable energies related to the cost and reliability of these projects

by Paul François CATTIER, Energy Access Ventures, Former VP Economic Developement Africa & Middle East at Schneider Electric

The interest in using renewable energies in the mining industry stems first of all from the observation of the increase in energy demand in the mining sector:

- The mining industry now accounts for 6.2% of the world's energy consumption;
- 32% of the energy consumed by mines is in the form of electricity;
- Mining reports an increased dependence on energy. A blackout can cost an industry as much as $100 million.

At the same time, these mining industries are paying more and more attention to the clean energy that underpins their operations. Indeed, the Social Licence to Operate, or in other words, public approval to operate in mines has become the primary concern of mining executives, leading to the electrification of mines with renewable energy. This is even more of an issue in Africa given the figures previously outlined (23 GW/40 of energy consumption attributed to the mining sector).

In addition, there is an interest related to the quality of the electricity received when mining sites are connected to the national grid. As already pointed out, mines are generally located far from urban areas and therefore far from the national grid. The quality of electricity received, which is often very poor, endangers equipment and can cause interruptions in the operation of the mines etc.

Decentralised energy will therefore make it possible to compensate for this by having autonomy of generation and distribution on these remote sites.

Moreover, the cost of renewable energy is constantly falling and is less important than that of fossil fuels (coal, oil, etc.), which also leads to an increased interest in renewable energy on the part of the mining sector.

Indeed, the cost of wind and solar electricity is expected to fall by 26-59% by 2025, and it is estimated that energy costs in new mines will be reduced by 25-50% through the hybrid energy management program.

It should be noted, however, that this energy is not flawless. One of the particularities of renewable energy is that it is an alternative energy source. Therefore, a mining industry cannot base its entire activity on such energy (risk of blackout etc.), hence the interest in using the hybridisation system (mixed power supply).

Similarly, this particularity can generate the need to store energy, which in turn generates a cost.

Generally speaking, the interests of these projects are as follows:

- The energy cost;
- The brand image: renewable energy projects improve the image of the mining industry, which is often categorized as highly polluting;
- Reliability: Multiple energy sources reduce the likelihood of mine shutdowns;
- Sustainability: reduced CO2 production;
- Social license to operate: benefits local populations (as will be discussed by Pierre-Samuel GUEDJ);
- Flexibility: possibility to manage more easily the global cost of ownership of the installations;
- The micro-grid is also the best tool to optimize the TCO of mining energy. Indeed, it allows to :
  - Optimize global investments, with a complete power distribution strategy, by minimizing lines, stations and power generators ;
  - Reallocate or retire certain assets as required ;
  - Develop energy agility across seasons or multi-year cost cycle ;
  - Measure performance and generate alternative scenarios that are easily achievable ;
  - Obtain a flexible energy network; and
  - Delaying certain investments which are necessary as part of a “Pay as Grow” approach.

At the same time, these mining industries are paying more and more attention to the clean energy that underpins their operations.

Projects related to the CSR policy of mining companies

By Pierre-Samuel GUEDJ, Chairman of Affectio Mutandi

Could the construction of mini-grids for the mining industry benefit local populations and thus enable mining projects to pursue a CSR policy & manage SDO issues?

The creation of mining mini-grids is inevitably an opportunity in terms of local content. Indeed, the mining sector often has laws on local content, as well as laws on infrastructure tenders, or in other words a legal arsenal aimed at guaranteeing the country’s interests, particularly in terms of skills transfer and job creation.

The operation of these mini-grids will therefore necessarily require the use of local and qualified manpower, which, in addition to creating jobs, will necessarily involve the creation of technical training centres.

In addition, the creation of mining mini-grids could make possible to channel a certain volume of electricity production to the local population. Indeed, most of the time, mining operations are located in rural areas, generally off the national electricity grid.

A solution often evoked to electrify these areas is the use of the mini-grid, but the question of the reliable legal framework and the financing of these projects is a brake on investments (too expensive, not profitable etc.).

"There is a wide regulatory gap between countries with high energy production and others, including Morocco and South Africa, acting as pioneering reformers in this area."

Pooling the needs of the mining sector and local populations would then be an advantage. On the one hand, it would allow the mini-grids to benefit from the legal protections granted to the mining sector. On the other hand, it would make it easier to obtain funds from international donors.

This approach could then become a territorial master plan, or in other words, a new way of managing the decentralisation of electrification, which to date is still very fragmented and whose political governance could be improved.

Challenges related to applicable legislation

The regulatory Environnent

By Stan Andreassen, Counsel at Bird & Bird

Is the regulatory environment in Africa conducive to the development of renewable energy projects in the mining sector?

The legal and regulatory framework applicable to renewable energy cannot be analysed as a uniform set across the African continent and often varies greatly from one country to another. In particular, there is a wide regulatory gap between countries with high energy production and others, including Morocco and South Africa, acting as pioneering reformers in this area.

For all the countries of the African continent, it should be recalled that where a specific regime exists for renewable energies, it is not an autonomous legal framework. It is always part of a broader legal framework applicable to the energy and electricity market. However, the energy market, in terms of both the production and distribution of electricity, has historically been a highly regulated market, often under a state monopoly or quasi-monopoly. The resulting legal regime is therefore historically very restrictive and constraining.

In this respect, Morocco and South Africa, cited as precursors in the reform of the national legal

frameworks applicable to energy and electricity production and distribution, are also the continent's leading countries in terms of electricity production based on renewable energies. In many other countries on the continent, regulations are either frozen in their historical monopolistic framework or reformed in timid or incomplete ways, creating legal uncertainty for private investors. In any case, the development of renewable energy therefore appears to require a reform of the applicable legal regimes to allow the development of private energy projects or at least those associated with the private sector.

However, in the face of the willingness shown by all public and private actors to make the electrification of the African continent go through the development of renewable projects, there is a real awareness among public authorities and a multiplication of projects to reform the energy regulations of African countries.

However, while there are certainly a large number of initiatives for the reform of the legal frameworks applicable to energy and renewable energy, there is simultaneously a certain feverishness on the part of the authorities when it comes to establishing clear, precise and detailed rules covering all potential scenarios around electricity production and distribution, and which apply effectively in the long term to market players. This is due in particular to the monopolistic history of this market, which liberalisation calls into question, to the detriment of national incumbent operators.

If it were necessary to make a quick overview of the problems frequently observed when analysing national regulations, the following topics appear most frequently:

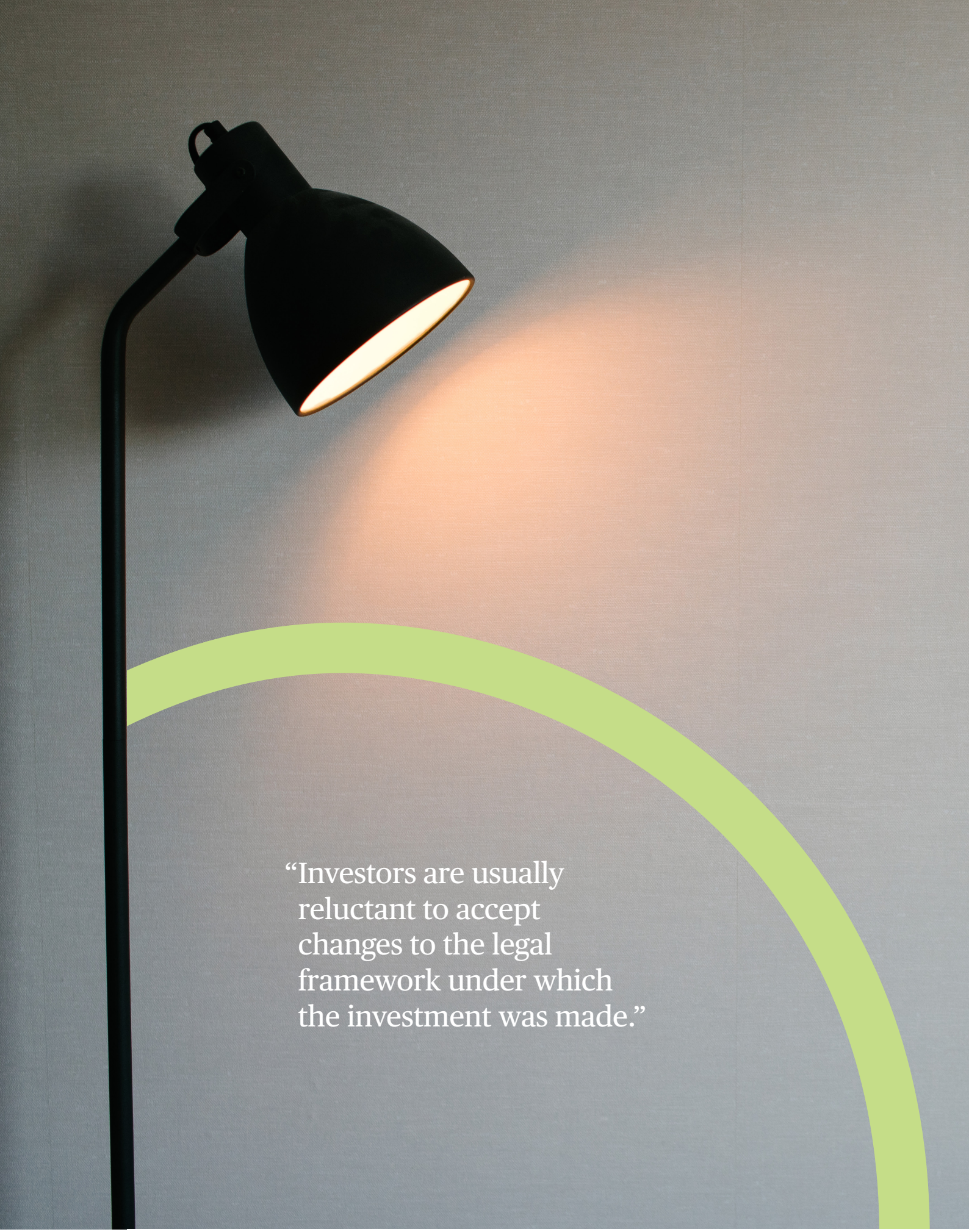
- Legal frameworks are generally common to the general electricity sector but rarely include specific provisions or provisions promoting renewable energies ;
- The possibility of off-grid electricity generation is not considered;
- The share to be self-consumed or resold on the grid in the case of self-generation restricts the potential of conceivable projects ;
- The types of contracts used (concession, management, PPP, leasing), the procurement procedures (public procurement, PSD, PPP) and the exceptions to competitive tendering in the context of state projects are not clearly specified or detailed;
- The capacity thresholds for installations below which public authorisation regimes are simplified are often too low to be useful in practice ;
- Lack of clear and sustainable rules to protect investors, particularly in the event of termination or withdrawal of permits.
- Lack of clarity regarding administrative procedures and the competent authorities according to the type of production/project envisaged (ministers, regulatory authorities, mayors), sometimes with a cumulation of intervention by these authorities.

Faced with these problems, numerous initiatives have been taken at national and international level, in public, "para-public" or private initiatives.

Indeed, it can be seen that states are carrying out sometimes ambitious reforms and that at the same time many projects are under way within international organisations such as WAEMU, ECOWAS, CEMAC, ECCAS or the African Union. Indeed, it must be noted that all the regional and international organisations mentioned have authority in relation to the establishment of a common energy policy that can compete with or be added to national projects.

At the same time, there are also international initiatives that do not fall under the remit of international community organisations such as Open Solar Contracts, OHADA, the International Solar Agency, etc.

The development of these projects reflects existing needs and shows the expectations of private and public operators. However, the multiplication of parallel projects is such that it sometimes contradicts the desired effect. Indeed, given the real risk of competing



or even contradictory reform projects, especially between national and international projects, this adds to the existing legal vagueness, also if not creating increased uncertainty for investors regarding the legal stability essential to the development of long-term projects. Although no common general framework, even a little restrictive, exists to date for electricity production or distribution and renewable energies, we can cite in particular the UEMOA draft directive on renewable energies and the Master Plan drawn up by the CEREEC within ECOWAS.

It is therefore difficult to see today from which reform project(s) willemerge the responses to investors' expectations. These expectations go hand in hand with the needs of the countries and peoples concerned, which are essentially

- a transparent energy strategy based on clear planning at the national and even regional levels,
- simplification and standardization of procurement procedures and contractual documents,
- adaptability of the mechanisms for awarding contracts to projects sometimes envisaged spontaneously and
- clarity and transparency of procedures and regulatory frameworks.

Legal protection of investments from an international point of view

by Dr. Ernesto BONAFE, Extractives Hub Project manage, former « Head of Expansion » at the International Energy Charter in Brussels

In many African countries, the mining sector is the major consumer of electricity, which is taking place in a new context of energy market liberalisation and the promotion of renewable energy sources, in line with SDGs 7 and 13, and the Paris Agreement. Recently, the EU has gone through a similar restructuring of the energy sector, with relevant lessons to draw for African countries, including mistakes to be avoided.

The liberalisation of the energy sector allowed foreign private investment in a sector that was traditionally reserved to a public monopoly and closely linked to the idea of national sovereignty. Furthermore, governments decided to actively attract investors in renewables by providing a wide range of benefits, from priority access and priority dispatching to subsidies to production (e.g. feed-in tariffs) to compensate the (initial) higher technological costs. Moreover, in some countries IPPs where supplemented with long-term PPAs.

While subsidies to renewables and PPA allow to pursue public policies (e.g. development of national industry and job creation) and the introduction of market competition, these measures also entail important risks. Indeed long-term contracts (or subsidies) are subject to the imposition of unilateral changes overtime. Certainly, the changes may respond to an economic rationale, such as cost reductions in the technology or the need to increase market competition.

But investors are usually reluctant to accept changes to the legal framework under which the investment was made. They can opt for the national judicial system, or rather to sue the government before an arbitration tribunal on the basis of an international investment treaty. The Energy Charter Treaty (ECT) is a unique multilateral legal agreement for energy trade, transit and investment.

West African countries in particular have an interest in learning from the experience of the ECT since the ECOWAS 2003 Energy Protocol is largely based on the ECT. More generally, most of African countries have signed bilateral investment treaties containing similar provisions on investment protection. Therefore, the new regional and international trends in energy investment arbitration are relevant for Africa at the time that transformational factors, such renewables for mining, are taking root across the continent.

Mining Corporate Power Purchase Agreements (PPAs)

The stakes of corporate mining PPAs

The impact of regulations

Scenario 1

In some countries regulations prohibit private companies from: i) supplying electricity to a third party; and ii) owning any generation assets (other than for self-consumption).

The intention behind such regulations is generally to protect the State owned power utility from competition that would undermine its economic policies and/or circumstances. However, it is sometime possible to structure transactions in a way that is compliant with the law whilst achieving an outcome that enables independent power producers (IPPs) to develop power generating installation for consumers of electricity.

Deferred consideration model:

- The developer finances the development and construction of an installation.
- They transfer title in the installation to the end-user upon commissioning.
- The developer maintains and operates the facility and receives a regular benefit e.g. monthly payment to cover operating costs, maintenance, repayment of debt principal (which represents a significant portion of development and construction costs), financing costs (including interest and fees), and a return for the shareholders of the developer.

Scenario 2

Where regulations permit a private company to own generation assets but prohibit the supply of electricity to third parties there are more options available to developers and end-users as they are also able to utilise an equipment lease/services structure.

Scenario 3

Countries in which private companies are permitted to own generation assets and supply electricity to third parties provide the fewest regulatory challenges to the traditional IPP model and this is where project finance is commonly used.

Although it is possible to fund the construction of projects under each of the three scenarios above with loans from banks the first scenario is the most challenging and is most likely to require recourse to credit support to compensate for a weak securit y package. The third scenario is well suited to allow non-recourse project finance to be used.

Alternative grid connection models

1. *The first example is a "private wire" arrangement between the generator and the end user.*

Under this arrangement the power is generated on a site ideally relatively close to the end user. A cable between the site where generation takes place and the end user carries the power from where is it generated to where it is used.

2. *The second example is a grid connected project.*

Under this model the generating plant is connected to the electricity grid and from there may be sold (often via intermediaries) to the end user. Power may also be sold to the grid operator. This model requires transparent regulations often including pro forma connection agreements and processes.

A grid connected project can also "wheel" power through the grid from the site of generation to the end user. There are fees associated with using the grid but these are off-set against the savings from not needing to construct a private wire connection. Wheeling arrangements have been used in Tunisia, Pakistan and Jordan.

It also possible to have a "net metering" arrangement for grid connected projects under which the surplus power generated by the project and not used by the primary off-taker can be sold to other users. Under a net metering arrangement any surplus power is generally set off against any imports to give a net positive or negative balance. Such exports can commonly be stored for up to 12 months. Examples of net where metering has been used include Tunisia, Dubai, Jordan and Pakistan.

The most desirable combination of circumstances for an IPP is a country that permits the following:

- Private companies to own generation facilities and supply electricity to third parties;
- Wheeling and net metering; and
- The ability to sell surpluses to the grid company.

> "In Africa, the mining sector is one of the main consumers of electricity. "

Off-taker credit rating

The credit rating of a project's end user is critical for determining the bankability of a project.

The criteria lenders apply to off-takers include the following:

- An investment grade credit rating (often with a credit support downgrade trigger);
- Credit support from a parent company; and
- Guarantees or letters of credit from a financial institution.

It is important to consider the contingencies for a project company if their power purchase agreement (PPA) with an off-taker terminates. Some common mitigating factors against that risk include:

- A grid connection;
- The availability of alternative off-takers;
- The presence of credit support from the off-taker; and
- Ownership of land through freehold or leasehold as this will provide security over assets.

The key commercial terms to be agreed under a PPA to ensure bankability include:

- Take or pay;
- Change in law protection for developer;
- Compensation upon termination to keep the developer whole for off-taker default; and
- Grid risk sitting with the off-taker.

Focus on PPA risk in the mining sector

by Quentin GOGA, Associate Director at KPMG SA

The CPPAs, initially developed in the context of conventional electricity production, are now enjoying renewed interest, thanks in particular to the attractiveness of renewable energies. A growing number of industrial companies are placing the decarbonation of their activities at the centre of their development strategy. Also, as the price of renewable energies becomes increasingly competitive, large energy consumers see this type of contract as an opportunity to meet a twofold objective:

- The reduction of their carbon footprint in response to the demands of their customers, suppliers and shareholders in particular;
- The control of their energy supply. Access to energy and securing prices over the long term are major issues for heavyweight industrial players.

In Africa, the mining sector is one of the main consumers of electricity. In addition to the objectives mentioned above, the CPPAs constitute a real alternative to African Utilities whose credit quality may lead some developers to seek a sovereign to guarantee that governments do not always wish to issue (the latter being taken into account through records of their indebtedness according to IMF criteria).

While more and more players are interested in GPPCs based on green production units, they face a number of key challenges and risks, some of which are technical, regulatory, legal, accountancy related (deconsolidating contractual structure) and financial.

Working together to define the best technical solution and the most appropriate legal and financial structuring will be decisive for the bankability of a project. However, the mobilisation of a non-recourse debt is generally a determining factor in the choice of entering into a CPPA based on renewable infrastructures. To enable the developer to raise project funding, the structuring will have to address the following aspects of the project in particular:

- The financial strength of the project partners: The credit quality of the offtaker and the producer will be analysed. The macro-economic parameters of the project: indexation, reference interest rate, exchange rate, access to local currencies over the duration of the financing. Investors / lenders will analyze the possible consequences of political changes or instability in Madagascar and the impacts on their investment or exposure.
- Regulatory parameters - it is important that the regulatory framework is robust to support the lenders and various project stakeholders.
- The technical parameters of the production infrastructure: construction costs, operation-maintenance-renewal costs, deadlines, the possibility of connecting to the transmission or distribution

infrastructure... The risk of unpredictable increases in construction prices, risk of delay in the construction / coming on-line of the infrastructure leading to a significant delay in the basic project schedule;
- Requirments linked to technical factors: Mine operating life and its compatibility with a PPP term allowing for amortization of the production infrastructure, Seasonality analysis, Peak consumption...
- The economic parameters of the project: the price of the Mwh and its competitiveness in the face of alternative solutions and those over time.
- Financial parameters: Financing risks, exchange rates, interest rates, availability of financing, bank margins, gearing...

Finally, the lenders will carry out a critical review of the Offtake contracts and in particular of the following clauses: Change of shareholding, Financial equilibrium of the contract, Definition of the MWh price (fixed, variable, indexed...), Clauses for modification of the contract environment: new facts, unforeseen events and force majeure, termination clauses, guarantees...

In order to select the financing structure that best meets the constraints of the stakeholders of the CPPA, several financial structures can be envisaged to optimise the project's determinants. These financing structures could be based on a combination of the following instruments:

- Capital contributions, subordinated shareholder loans or shareholder advances (hereinafter jointly referred to as "Shareholder Contributions");
- Junior Financing (subordinated financing excluding Shareholders' Contributions) ;
- Senior Financing (other financing with limited recourse to shareholders); and
- Grants

Focus on mining offtakers – The case of Akuo Energy

by Alkeydi TOURE, Africa Strategy Director -AKUO Energy

Akuo Energy is a French company specialized in the production and sale of renewable energies. This presentation focuses on the concrete issues that Akuo has faced in the West African field in recent years and that remain current.

Mining offtakers are the new "sources" for Akuo's energy transition. The offer targeting Utility Companies has been extended to private offtakers, in particular mining operators. The West African market is considerable but remains underdeveloped despite projects in Burkina Faso alongside some in the pipeline elsewhere;

The opportunity for mining companies to reduce their energy bill is better perceived (USD 35 to 50 million per year for a mine of significant size for fuel alone) and the risks inherent in fuel logistics remain a major attractor for investment, as well as the opportunity to take advantage of the "green label" which is constantly being promoted;

The constraint of existing thermal investments induces a reluctance to take the "capex" risk, especially as new energies must continue to prove the reliability of their underlying technology;

The question of financing is less important because of Akuo's ability to finance its power plants without recourse in project financing and the ability of leaders in the mining sector to raise the necessary funds;

Akuo's customized offer:

- PPIs as a response to the investment issue ;
- SolarGEM (a containerized solution adapted to medium-sized mines);
- the range of hybridisation and fuel save as a transition to all-green.

The reality on the ground shows that the challenges are:

- mining companies are out of their comfort zone, especially with regard to controlling energy supply;
- the propensity to want to operate in the mode of one who is capable of extracting two grams of gold from a ton of ore must be able to operate a photovoltaic plant with storage; and
- tenuous relations with the historical suppliers of fuel oil and generators.

Bird & Bird advises Centamin on contracts for the 36MW solar farm and 7.5 MW battery-energy storage system at Sukari Gold Mine, Egypt

International law firm Bird & Bird has advised FTSE-250-mining group Centamin plc, on the engineering, procurement and construction contracts for the 36MW solar farm and 7.5 MW battery-energy storage system at its Sukari Gold Mine in Egypt.

The Sukari solar plant will be the largest hybrid solar project at an off-grid mining operation globally and is expected to reduce diesel fuel consumption at Sukari by an estimated 22 million litres per annum and lower carbon emissions by an estimated 60,000 tonnes CO2-e per annum. The project is scheduled to be commissioned late in H1 2022.

The Bird & Bird team advised on all the project contracts and included Energy & Utilities partner Elizabeth Reid as well as legal director Geraldine Laing and associate Hannah Roberts. Bird & Bird were well placed to advise on the project, combining its recognised international mining practice with its market leading expertise in renewables.

Francois Du Plessis, Legal Counsel at Centamin says: *"It was a real pleasure to work with the Bird & Bird team on this ground-breaking project. We really appreciated the depth of their renewables expertise, understanding of Centamin's commitment to responsible mining and the team's focus on getting the deal done.""*

Elizabeth Reid, partner in the Energy & Utilities group at Bird & Bird adds: *"We were delighted to support Centamin on this exciting project to design, construct and operate the 36MW solar farm and 7.5 MW battery-energy storage system at the Sukari Gold Mine. It is a fantastic example of how co-located renewables projects can help mining companies reduce fuel consumption, greenhouse gas emissions and operating costs. I look forward to working with the team at Centamin in the future."*

Technical Considerations and Examples

Vergnet's experience (Focus on Mali)

by André GOMEZ Business Development manager - Vergnet Energy

Power on any mine site is too crucial to be played with. The best business cases for hybridization are in off grid mines, running 24/7 on fuel engines, regular diesel or Heavy Fuel (LFO or HFO). High levelized cost of energy (LCOE), plenty of land available combined with suitable solar or wind resources make the attractivity of hybrid obvious. The Life Of Mine (LOM) is the parameter that lowers the Total Cost of Ownership (TCO) for a hybrid system when comparing it to a traditional fuel power plant, the low hanging fruits being the sites with longer LOM.

In these off-grid mines, just like in any mine, load-shedding and blackouts imply huge losses in production. Renewable energy sources, be it solar or wind, are still perceived as unreliable and thus not suitable to feed a mine. Renewables make sense on paper, but mining companies are not early-adopters and technical expertise in hybrid systems is required.

Vergnet has an extensive experience in hybrid power plants for offgrid sites, with instant (power) renewables penetration rates of up to 70%, in wind + storage, solar + storage or even wind + solar + storage. For such high levels of penetration, diesel gensets are run as back-up only. Having collected data for 30 years, Vergnet's expertise in high performance hybrid power plants makes the Hybrid Wizard -Vergnet's power and energy management system- the key to successfully maximizing the fuel savings while maintaining power reliability.

Blackouts have by far the biggest impact on operations efficiency in a remote mine site. Second to this, spinning reserve optimization is a key factor for cost control and optimizing operations. Depending on sizing and penetration rates, integrating renewables might require more spinning reserve, when gensets run with a lower load factor. At lower load rates, gensets specific consumption -the fuel needed to produce 1 kWh- increases. The business case of a hybridization is based on fuel savings calculations. A marginal part of these savings is used to cover the increase in specific consumption in some instances. Not using assets at their full capacity is also considered a loss.

A game-changer for both power reliability and spinning reserve management is storage. When correctly sized, storage guarantees on-site reliable power supply and an optimal load factor of the diesel gensets. Storage is a "virtual spinning reserve", or "static reserve", covering the peak demand (peak shaving), preventing blackouts and lowering the spinning reserve requirements.

Mali currently produces 0 MWp of solar, neither from solar fields connected to the national grid nor captive fields feeding remote mines. In the next few months, Mali will go from 0 to over 100MWp of solar with the projects in Kita, Loulo, Fekola, etc being commissioned. Still, in West Africa and more specifically in Mali, the legal framework for renewable energy PPAs, leasing, BOOT, etc is partial or in some cases completely non-existent. Mining customers need a fully developed regulation for such investments or commitments. "Over the fence" transactions, with a power producer selling power to a consumer, might imply taxation. A "take or pay" clause is standard in PPAs and such a commitment increases the fiscal and legal risk of this new type of contracts in a country with little visibility.

The legal uncertainty surrounding renewable energy projects slows the process of hybridizing existing power plants. Mining companies understand that renewable energies make economic sense, and that they will free them, partially, from the fluctuation of fuel prices. Social and environmental considerations also help their adoption. Data and expertise have been gathered and the technical reluctance is overcome, with the price decrease in storage making full hybrid systems possible and perfectly reliable.

Wärtsilä's experience of offgrid in Africa

by Tarik SFENDLA, Business Developpement Manager Wartsila

Wärtsilä is a Finnish company founded in 1834, a world leader in sustainable solutions for the marine and energy markets. In the energy sector, Wartsila is positioned as a leader in energy systems integration and its vision is to lead the way to a future with 100% renewable energy.

Wartsila has installed 7.4GW of renewable energy in Africa. Of these 7.4 GW, more than 400 MW are for mining, which positions them as the market leader in renewable solutions for mining with 27% market share in Africa.

Hybrid solutions are on the way to a 100% renewable future for the mining sector in Africa.

Case of Burkina Faso - 15MWp solar PV

In 2018, Wärtsilä delivered a 15 MWp solar photovoltaic (PV) plant to the independent power producer (IPP) Essakane Solar SAS in Burkina Faso. The PV solar power plant was built next to a 55 MW HFO power plant in Wärtsilä. The thermal power plant provides back-up, while the solar farm produces energy during the day. The PV solar power plant and the motor power plant are controlled and operated in a synchronised fashion, making it the largest PV solar-motor hybrid power plant in Africa.

Wärtsilä's motor-solar hybrids save fuel, resulting in cost savings and environmental benefits. The entire scope of services covers the engineering, procurement and construction (EPC) of the solar photovoltaic power plant, including inverters and switchgear, in addition to almost 130,000 photovoltaic panels. Last but not least, the control system - a crucial component of the hybrid power plant - is also included.

Case of Mali - 17MW/15MWh energy storage

Wärtsilä is optimizing the energy system at the Fekola mine, located in a remote area of southwest Mali. This optimisation is necessary to improve the mine's operation, reduce fuel consumption and lower carbon emissions.

Wärtsilä was commissioned to design and implement a state-of-the-art 17MW/15MWh energy storage system based on the company's GEMS energy management solution. The order was placed by B2Gold, a Canadian public gold mining company.

Wärtsilä's advanced GEMS technology will not only control the new energy storage system, but also a new 30MW solar power plant currently under construction. In addition, GEMS will continuously optimize energy production for the entire mine. This will ensure the lowest cost of electricity (LCOE) for the mine, while ensuring grid stability and maximizing uptime.

Watch the video here.

Contact

Boris Martor

Partner
T +33 1 42 68 6320
E boris.martor@twobirds.com

Stan Andreassan

Counsel
T +33 1 42 68 6354
E stan.andreassan@twobirds.com

Clive Hopewell

Partner
T +44 207 905 6370
E clive.hopewell@twobirds.com

'Excellent attention to detail, project management and relationship management, in addition to great depth of experience and expertise'

Legal 500 UK 2022

'Expert guidance with strong industry experience'

Legal 500 UK 2022

'The highly experienced team is able to anticipate changes in key segments of this fast-moving industry (renewable energy, energy management, grids, digitization, storage, nuclear, oil and gas, mining and minerals).'

Legal 500 EMEA 2022

"A group of interdisciplinary professionals who are capable of responding effectively to any question in a very short time.'

Legal 500 EMEA 2022

Bird & Bird is a well-regarded international firm with a highly active energy and natural resources practice, the firm houses multiple corporate, finance and litigation experts capable of assisting clients with all related financing, corporate and regulatory energy issues, as well as complicated litigation and arbitration proceedings.

Chambers Global 2022

Bird & Bird

One firm.
Your firm.

Our sectors

Automotive
Aviation & Aerospace
Defence & Security
Energy & Utilities
Financial Services
Life Sciences & Healthcare
Media, Entertainment & Sport
Retail & Consumer
Technology & Communications

twobirds.com