

# TH*Energy* study

The influence of renewable energy on the market value of  
mining companies

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November, 2014

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## 1 Introduction

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The recent past was rather difficult for mining companies as commodity prices fell considerably; in 2013 for instance, gold fell by 40%, iron ore by 8% and nickel by 27.6%.<sup>1</sup>

The falling commodity prices had a direct impact on the revenues and profits of mining companies. The market capitalization of the largest 40 global mining companies declined in 2013 with net profits falling 72% to \$20 billion, an extreme descent. The market capitalization of the top 40 mining companies fell by \$280 billion, which translates into 23%, to \$958 billion at the end of 2013.<sup>2</sup>

The situation was much better in developing countries (net profits of \$24 billion) in comparison to the aggregate losses of developed market companies (losses of \$4 billion). Approximately 50% of the top 40 mining companies changed their CEO in 2012 or 2013.<sup>3</sup>

Energy cost are becoming increasingly important in mining operations. First, the majority of easily accessible sites have already been exploited, which makes it necessary to dig deeper; therefore, more energy per unit of raw material is needed. Second, the energy prices have increased considerably during the last few years. This trend is expected to continue and accelerate in the following years.

A third development could actually be favorable for the mining companies. The prices for renewable energy have decreased considerably recently, including solar and wind energy projects. Particularly in remote locations, the price of solar energy has become very competitive. Many mines are powered by diesel generators, and solar or wind energy plants can be added to the existing generators. As solar and wind energy are not stable and are driven by external forces, i.e. wind and the sun, they cannot provide electricity by themselves. In hybrid wind-diesel or solar-diesel power plants the diesel generator provides the delta between the load from the mine and the generation of the renewable energy source. In theory, energy storage / batteries could actually increase the amount of electricity from renewable sources that can be used by the mining operations; solar technologies such as concentrated solar power (CSP) allow for some energy storage as well. Aside from electricity, solar thermal plants could also provide process heat for the mining operations.

The main obstacle for renewable energy at mines is that almost the entire investment has to be fulfilled beforehand, unlike diesel generators where the fuel is paid when it is actually used. The mining industry used to be very successful and provided high returns on investment, much higher than most other industries. The high return is also a benchmark for capital that is invested into renewable power plants.

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<sup>1</sup> PWC (2014), 2014 Global mining deals outlook and 2013 review.

<sup>2</sup> PWC (2014), Mine 2014 - Realigning expectations.

<sup>3</sup> PWC (2014), Mine 2014 - Realigning expectations.

Recent developments have shown that more and more external investors and Independent Power Producers (IPPs) are entering the energy market for mines. They finance the power plants and then either rent the plant to the mines or sell the power under a long-term power purchase agreement to the mine.

This study examines whether a renewable energy commitment for mines could have a direct impact on the stock value of mining companies. The study looks at direct factors such as energy prices and indirect factors such as environmental image and perceived management quality.

## 2 Methodology and design of the study

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The methodology employed in the study is expert interviews.<sup>4</sup> A total of 23 interviews were conducted with experts from the financial, mining and renewable energy sectors.



The interviews were conducted by phone or in personal meetings. Most of the experts are from Europe, and the majority have a global perspective on the topic.

## 3 Benefits of renewable energy applications for the mining industry

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The study distinguishes three different fields in which renewable energy applications could potentially create benefits for the mining industry. Firstly, energy related benefits mainly consist of better energy prices, especially in remote mining locations; this group also includes

<sup>4</sup> Bogner, A., Littig, B., & Menz, W. (eds.) (2009). Interviewing Experts. Methodology and Practice. Basingstoke England : Palgrave Macmillan.

advantages that mines have due to a better and more stable power supply when they are connected to an unstable grid. The second class is about making mining companies appear more environmentally friendly and more sustainable, and the last area is related to perceived management quality.

### 3.1 Power supply related reasons

The power supply related reasons in mining for using renewable energy power plants at their sites are the most traditional ones, and they are often the only advantages considered in many business cases.

The typical load curve of mines depends upon whether the mines operate 24 hours a day or are stopped during the night. Many mines have permission to operate during nights, which means that they also need electricity at night. This is a challenge for solar, above all PV, power plants. In general, the integration of solar energy into existing diesel generator sets has to take the variability of solar energy into account. Electricity can be stored in different kinds of storage systems; as the technology matures, the impact of storage on our energy systems in general increases and sometimes this will even mean that existing grids could be used less. Currently, energy storage systems require high investment costs and they are not normally used in mining applications. This might change in the near future.

The variability of wind is also high, but obviously follows different rules than the variability of solar. If there is too much wind, brakes are applied to stop the rotors and no electricity is generated. The objective for renewable energy power plants that are built at mines is that they do not create risks for secure power supply.

Energy (not electricity) costs are estimated to be 10-20% of the total costs in mining. This figure is on the lower end for mining operations in North America and on the upper end for remote mining sites in Africa or Asia. Estimates are that, without energy storage, 25% of the total energy consumption can be replaced by solar in regions with high irradiation and 30% by wind energy. If a mining company has many remote locations with high diesel prices, an average of 40% in fuel savings is achievable for solar installations. Indicating numbers for wind here is much more difficult as the wind profile is much more site-specific; at many mining locations it will not make sense to build wind turbines, and in windy areas the savings can actually be higher than for solar.

For a rough estimation of the total cost saving potential of renewable energy plants the figures for solar are used:<sup>5</sup>

percentage energy cost of total costs \* percentage of substitution \* percentage of cost savings  
= total savings potential

$$20\% * 25\% * 40\% = 2\%$$

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<sup>5</sup> The calculation is only a first approximation in order to give a rough indication regarding the importance of energy cost savings. There will be big deviations for different companies.

The 2% is the saving potential of the total cost in a positive case and in many cases this will be the upper limit. The 2% refers to electricity prices of today, and general expectations are that the electricity prices will raise further in the future, i.e. the integration of renewable energy plant can be considered in addition to the savings potential of approximately 2% as a price hedge against increasing energy prices in the future.

2% actually does not seem to be very high, but it comes from the total company perspective. The figure is used here because the study wants to show the impact of renewable energy commitment on the market value of mining companies. The 2% shows that even purely for improving energy costs a company-wide renewable energy strategy will make sense for mining companies that have many remote locations are rather high current electricity prices.

### 3.2 Environmental perception related reasons

Many mining companies are not perceived as environmental friendly. This is especially true for coal mining.

Environmental groups are being organized more efficiently through the internet and can create serious problems for mining companies:

- (1) Issues in the permitting process for new mines
- (2) Divestment movements that pull equity away from the mining industry
- (3) Movements that stigmatize banks that finance the mining industry.

The highest impact on the market value of mining companies according to the expert interviews will be (2) and (3).

As of September 19, 2014, 181 institutions and local governments and 656 individuals representing over \$50 billion in assets have pledged to divest from fossil fuels; lately, big names such as the Rockefeller Brothers Fund have joined the divestment movement, which is expected to result in even stronger support in the future. In addition, active protesting against companies such as UCL and BHP Billiton can be observed.<sup>6</sup>

The direct impacts of fossil fuel divestment on equity or debt are likely to be limited. The study of Ansar, A., Caldecott, B., and Tilbury, J. (2013) identifies other fields with a larger expected impact, including:<sup>7</sup>

- Restrictive legislation

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<sup>6</sup> Damian Carrington (2014), Fossil fuel divestment campaign targets UCL and BHP Billiton (The Guardian).

<sup>7</sup> Ansar, A., Caldecott, B., Tilbury, J. (2013), Stranded assets and the fossil fuel divestment campaign: what does divestment mean for the valuation of fossil fuel assets?

- Multiples' compression

In the tobacco industry, we have seen that a divestment campaign can result in very restrictive legislation. Stigmatization can lead to a permanent degradation of financial multiples (e.g., the share price-to-earnings, or PE ratio) of a target company. The majority of the financial experts interviewed expressed the view that mining companies are sometimes traded at large discounts because their industry is perceived as being environmentally unfriendly and their business model contains the risk of further stigmatization.

In the mining industry, the danger of stigmatization is greatest for companies that are involved in coal mining. Some of the largest mining companies have allegedly already considered surrendering their coal mines to avoid further stigmatization.

Renewable energy represents a possible solution for avoiding stigmatization and requires a comprehensive renewable energy strategy for the entire company. If only some isolated actions are implemented, the expected impact on reducing stigmatization is likely to be very low.

### 3.3 Perceived management quality

A progressive commitment to renewable energy can result in a better evaluation of the management and corporate governance of a mining company by the financial markets.

Protagonists of the financial markets are investors, analysts and financial journalists. In the end, stock prices are the result of demand and supply of stocks. Nevertheless, the demand and supply of stocks is heavily influenced by changes about the expectation of future income and expenses. A very critical element in this evaluation process is management. How is management able to influence the development of future income and expenses in a positive way?

Financial protagonists want to see that the management of mining companies is receptive to new solutions. They are attracted if alleged contradictions, such as powering mines with renewable energy, are reconciled. The underlying decision-making process demonstrates that the management of the mining company is receptive to solutions that are beyond the ordinary.

The effect will be even larger when the financial markets understand how positive the business case for renewable energy at mining sites actual is.

The majority of the experts from the financial market side propose the following recommendations:

- Comprehensive strategy on a group level
- Quick actions in order to obtain a first mover bonus
- Active communication with the financial markets

In order to obtain a premium from the financial market for renewable energy usage, it has to be an initiative at the group level, not an isolated action from a mine. The commitment should

become obvious in a strategy that is formally led by corporate executives. The strategy should define milestones, which are communicated at a regular interval to the financial markets. Another recommendation is to define renewable energy-related non-financial performance indicators in corporate reporting.

Quick actions are important because the premium for the management quality will mainly be significant for a group of first movers. Even if initially not everyone in the financial community is considering the deployment of renewable energy as a sign of management quality, it is expected that during the process in which this knowledge is spread, the first movers will maintain their advantage. In other words, if investors, analysts or financial journalists who draw their attention in the future to the renewable energy topic will consider at that point the management of the first movers as being more mature than the management of the followers.

The companies that actively use renewable energy should promote its use in their communication to all stakeholders, although often it seems more obvious to communicate to customers or regulatory bodies. Nevertheless, they should ensure that the financial community, as well, learns about their achievements in order to receive the premium for management excellence. The financial and communication departments should also be involved in the process.

## 4 Summary and outlook

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The study shows that mining companies can create in different dimensions a positive impact on their stock prices by using renewable energy. First of all, an approximation of a best-case scenario for the cost-reduction potential of total costs is derived. Even without energy storage solutions or changing energy consumption behavior, mining companies with many remote locations can reduce their total costs by up to 2% by implementing renewable energy integration.

Mining companies, especially for coal mining activities, face a constant risk of stigmatization. It is probable that many mining companies are traded at a discount because they are not considered as environmentally friendly, with the resulting risk of stigmatization. Renewable energy is therefore an excellent solution to countering that perception and risk.

Financial markets reward companies that are actively pursuing uncommon solutions. In the case of renewable energy for mining operations, it emphasizes that management is open for new solutions and is not stuck in the past, especially if the benefits are large on the financial side and improve the image of the corporation.

Finally, the study shows that mining companies make a renewable energy strategy on the corporate level. Isolated actions on individual mining solutions will have a very limited impact. Furthermore, it is recommended to actively communicate a renewable energy commitment to the stakeholders, not forgetting the financial markets.

The sum of the different drivers will create a strong positive benefit on stock prices of mining companies that are genuinely committed to renewable energy.

The opinions of the interviewed experts were rather homogeneous within each group (financial, mining, renewable energy). Nevertheless, a total of 23 expert interviews can only show tendencies and result in approximate indications. Although the design of the study does not allow a quantification of the extent of the impact on stock prices, the hypothesis that there is a considerable financial impact could serve as an interesting starting point for further research.



## About Dr. Thomas Hillig Energy Consulting (THEnergy)

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THEnergy assists companies in dealing with energy related challenges. Renewable energy companies are offered strategy, marketing and sales consulting services. For industrial companies THEnergy develops energy concepts and shows how they can become more sustainable. THEnergy combines experience from conventional and renewable energy with industry knowledge in consulting. In addition to business consulting, THEnergy is active in marketing intelligence and as an information provider in select fields such as renewables and mining through the platform [www.th-energy.net/mining](http://www.th-energy.net/mining)

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## Legal Disclaimer

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