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Calculating the Net Present Value of Sustainability Initiatives at Newmont's Ahafo Mine in Ghana (B)

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ESG INITIATIVE CASE STUDY SERIES

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Before, we got a [budget] number [for sustainability initiatives] and decided what to do with the budget without any analytical framework, based on instinct. Now we use the same [financial modeling] tools [that financial and mine operations functions use] when they decide what to mine.

Anonymous member of the Environment and Social Responsibility team, Newmont Ghana Gold Limited

In 2013, the newly promoted group executive for Environment and Social Responsibility (ESR) at Newmont Mining Corporation—his previous position was that of regional vice president — reflected on the lessons learned from the introduction of the Financial Valuation Tool for Sustainability Investments (FV Tool) at Ahafo, Ghana.[1] He counted the effort as a success, though the process was still ongoing. He and his team members had answered the challenge posed by Newmont Mining Corporation's (Newmont's), the parent entity for Newmont Ghana Gold Limited, upper management; they had used the tool to analyze four key sustainability initiatives—water and sanitation services, community health, the Technical and Vocational Education Training (TVET) program, and the Newmont Ahafo Development Foundation (NADeF)—and had shown that each delivered a positive expected net present value (NPV). Put differently, they showed that the benefits of sustainability programs, so often dismissed as soft or intangible by critics,could be quantified. Just as important,their work had set off important organizational changes at Newmont Ghana Gold Limited, including the integration of sustainability into the strategic planning and budgeting cycle. These were exactly the outcomes that Newmont's worldwide operations were seeking when they agreed to support the Newmont Ghana Gold Limited's FV Tool pilot project and the potential application of the tool in other operations. Onsite, the responsibility for the initiative had passed to the external relations manager, a native Ghanaian. The local leadership and ownership of the initiative proved critical to its evolution.

[1]Unless otherwise noted, information in this case was obtained from phone interviews conducted in 2011-2013 by authors of managers at Newmont Mining Corporation, Newmont Ghana Gold Limited and the International Finance Corporation. The International Finance Corporation, Deloitte Touche Tohmatsu, Rio Tinto, and the Multilateral Investment Guarantee Agency developed the Financial Valuation Tool for Sustainability Investments which calculates a probable range for the net present value back to a company from a portfolio of sustainability investments. For information on the Financial Valuation Tool for Sustainability Investments, see https://www.fvtool.com/index.php (accessed October 3, 2013).

Professor Witold J. Henisz, The Wharton School, and Tim Gray prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. Some of the values and numbers presented throughout the case are disguised or should be considered approximate and may not represent actual values or costs. Statements and opinions expressed in this case are those of the authors. They do not express the opinions of the Wharton School, University of Pennsylvania.

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Some of the NPV calculations at Ahafo had been straightforward:

- Investments in agricultural improvements, such as assistance to boost crop yields, had led to a perception that Newmont was a good neighbor. As a result, the company had been able to acquire land for its 2011 expansion for less than it had paid for land at the initial mine site, and it had paid US$230,000 less in compensation for land and crops due to improved community negotiation mechanisms, community relations, and reduced speculative building and cropping. Additionally, the land acquisition process took four fewer months,allowing faster development of the new site.

- Investments in water and sanitation services led to projected savings of US$239,400 per year from 2013 to 2020 in reduced water transportation costs due to the installation of bore holes in 2 neighboring communities. In comparison, the cost for installing and maintaining the boreholes was estimated at a one-time cost of US$21,000. There was a nominal user fee charged to offset maintenance costs and to ensure that the boreholes were sustainable in the long-term.

- The malaria[2] programs generated estimated savings of US$1.5 million from 2007 to 2010.2The baseline malaria incidence in 2006, before the programs, was approximately 8 cases per 100 employees each month. By the end of 2010, the overall monthly malaria incidence in the workforce had dropped to 1.7 cases per 100 employees. This translated into approximately 201,888 productive working hours (25,236 days)retained over a 4-year period after introducing the intervention in 2007. Additionally, the company saved approximately US$500,000 in medication costs. In total, the programs saved the company an estimated US$1.5 million for the 4 years of intervention. The total cost for the programs from 2007 to 2010 was US$850,000.

A partly anonymized version of the calculations for the four sustainability initiatives is summarized in Appendix 1.

Benefits notwithstanding, the implementation of the FV Tool had been arduous. Estimates of the money and staff time required to collect the data and do the analyses had been too optimistic. Some key staffers, citing "initiative fatigue," claimed that they lacked the time or capacity to help. No one data management system had all of the information necessary to do the calculations. Records from Environment, Health and Safety, Communities, Governmental Affairs, Learning and Development, Security, and Operations all had to be consulted. In some cases, discussion groups drew upon anecdotes of individual experiences at Ahafo and other Newmont mines to estimate the impact of improved relations with stakeholders. Some of the anecdotes proved difficult to quantify, and long debates ensued to arrive at best guesses. Other key documents, including stakeholder perception surveys and the Complaints and Grievances Registry, were consulted to provide proxy information to substantiate claims of improved community relations. Still, participants reported satisfaction with the rigor of the approach.

Even so, the ESR staff concluded that future work with the FV Tool would require a team that drew on the various skill sets of staffs from multiple departments, not just ESR. Accounting and Finance, for example, had to be included too, as they could provide key inputs such as cash flows, weighted average cost of capital,

[2]Malaria is a serious and sometimes fatal disease caused by a parasite that commonly affects a certain type of mosquito which feeds on humans. People contracting malaria are typically very sick with high fevers, shaking chills, and flu-like illness. Centers for Disease Control and Prevention, "About Malaria," August 9, 2012, http://www.cdc.gov/malaria (accessed October 4, 2013).

and inflation rate to measure the impact of sustainability initiatives on the business's bottom line.

In 2011, the process had started internally within the ESR team and initially met with a lot of skepticism from Finance and Risk Management due to the fact that benefits, either in the form of cash savings, productivity gains, or risks averted, from sustainability programs could not be reported on the company's balance sheet. Only after those teams were brought in and the initiative was seen as a holistic effort did momentum really build. Achieving this momentum had, however, required a pause in the initiative in order to build capacity for communications between the Finance and ESR teams. This effort, in hindsight, proved critical. A recommendation that emerged from this process was to bring Finance, Accounting, and Risk Management in from the onset and allow them to influence the design of the tool so as to integrate with the internal financial and risk management processes of the company. In addition, they advised that a creative structure be in place for staff to take on additional responsibilities outside the scope of their day-to day activities.

ESR team members, some of whom had early on questioned the morality of calculating the NPV of their work, now championed the FV Tool. Leading and participating in the process had brought unexpected benefits for their group. Their status within the company was elevated as they were perceived to be more professional and essential to the company. Team members also saw the benefit of their efforts to learn the language of finance and to communicate using quantitative terminology. They shifted from being peripheral players to having a more central, strategic role. Colleagues from other departments saw how sustainability contributed to financial and operational performance and better understood its contribution to overall corporate goals. One ESR team member stated:

"When we first heard of it, those of us on the social side were happy to get something that would help Finance understand us. We are more confident in costing the programs that we do. This puts us in a much better position with Finance. In previous meetings, other departments had figures and we had to talk to explain. Now we are putting figures to our words just like other departments."

Another member commented:

> *The change within the ESR team is marked. What are these risks that we are trying to mitigate? Are their costs justified in terms of risk mitigation?Previously, program owners were not connecting the dots to risk mitigation or value creation. Now we challenge the numbers. Previously,we had no framework to evaluate. People are now trying to highlight the value of their initiatives for the business, not just for stakeholders.*

An interviewee from Finance concurred:

> *My biggest surprise was that it is possible for the ESR team to have a conversation on financial terms. Every conversation I had with them before… [t]hey could never articulate their assumptions and acknowledge costs and benefits. Now they can and do. They have their act together and can explain a business case… Previously, they were not able to see their business case… Finance and [ESR] are now working together much better than before. Just those changes alone justify the effort put into the pilot.*

Another colleague from Finance reinforced this sense of progress: "In the last business planning meeting, I saw a huge improvement in [E]SR's presentation of [the] budget which was supported by data of the business benefits of [E]SR programs. The meeting went very smoothly compared to previous meetings."

ESR staffers saw their work acknowledged outside of Ghana, too, since their bosses had begun using it to justify Newmont's commitment to sustainability during external presentations to skeptical shareholders and financial analysts. They cited the acceleration of the land acquisition, productivity gains in their workforce due to the malaria programs, and savings from investing in water and sanitation infrastructure. All of the teams that met with them to share data and discuss the NPV calculations left with an appreciation for the many ways that the company impacted external stakeholders. The process heightened transparency and coordination surrounding sustainability.

Still, the long-term implementation of the FV Tool was far from complete. Thus, the ESR team developed guidelines for future efforts (see Appendix 2). Besides these recommendations, the ESR staffers considered whether and how the results from their work could be integrated into Risk Management, Audit and Compliance, Human Resources, and New Business Development. They needed to address many questions. Could output from the analysis validate and update the risk register, which had been a crucial input into the measurement of value protection? Did the discussions regarding indirect value protection surface additional sustainability risks that were omitted from the risk registry? Could estimates of the changes in the probability of certain risks be compared with the actual data before and after the expansion of sustainability initiatives? Should the identification of new sustainability risks trigger investigations or monitoring? Should Human Resources expand awareness of the strategic importance of sustainability, much as it had previously done for Health and Safety? Should compensation and bonuses be adapted to incorporate sustainability related criteria? Could the same process be implemented at other operations and at the corporate level in the evaluation of new business opportunities? Could corporate-level decisions regarding the allocation of resources across operating units and the appropriate portfolio of operating and development projects similarly incorporate the aggregated insights of this process?

All of this was challenging enough if the group executive for ESR had confidence that the analysis was comprehensive. But he worried that the data inputs remained too circumscribed. The process made good use of internal financial data on direct value creation. By contrast, the extensive data that emerged from consultations with external stakeholders had not been explicitly incorporated into the financial valuation analysis on indirect value protection. If a powerful stakeholder had strong preferences between one sustainability initiative and another, those preferences should factor into the ranking of initiatives. And if stakeholders were more directly impacted by certain risks over others, the impact of one initiative should vary in its impact on that risk, as compared with another, even if they were otherwise ranked equally.

Instead,the detailed stakeholder surveys and broader assessments of engagement had only indirectly and qualitatively been included in the NPV calculations. This led to a subjective system in which some program managers strategically argued for the highest quality rating for their initiatives, leading to outcomes that were generally all positive because there was no systemic process for evaluation. In January 2013, Deloitte Touche Tohmatsu (Deloitte) and the International Finance Corporation (IFC) developed a tool to address this concern. It examined the key issues raised by various stakeholders and adjusted the risk mitigation potential of each investment according to the combined influence of the stakeholders that prioritized that issue.

Another challenge was how to describe the use of the FV Tool to people outside of the company

in a way that would help them understand Newmont's efforts to balance competing demands. Full transparency risked dehumanizing stakeholder engagement, seemingly reducing personal relationships to a formula and a spreadsheet. They also needed to ensure that quantitative rigor not be allowed to squeeze-out corporate values and commitments to sustainability. One Ahafo employee explained: "You cannot outsource relationships, [nor should you base their content on quantitative analysis alone.]"

The tool also lacked a means to quantify what was perceived as the largest financial benefit to sustainability initiatives—their impact on Newmont's reputation and, as a result, the terms on which it would be offered future assets by governments and other external stakeholders. This reputational benefit was extremely difficult to calculate given the long-term time horizon and limited sample size. Its omission made the current estimates of NPV necessarily conservative.

Despite these challenges, the group executive for ESR was proud of what his team had accomplished. Sustainability was no longer seen as a waste of money. Senior management now recognized that there was a strategic reason to fund these programs. Furthermore, this change in attitude was happening, not only at Ahafo, but also at other FV Tool early adopters, including several other major mining companies. He was being asked to give presentations at industry conferences worldwide. Other consultancies, such as Deloitte, were promoting the tool in multiple industries, including oil and gas, forestry, agribusiness, and heavy manufacturing. The experiences at Ahafo were also being included in the required curriculum of leading business schools and sophisticated industry trainings. While practitioners had long sensed the business justification for corporate citizenship and community goodwill, the process unleashed by quantifying its value was an important step in aligning core business objectives and sustainability initiatives. The group executive for ESR acknowledged that "quantifying the net present value of sustainability initiatives at Newmont's Ahafo mine in Ghana had finally allowed the company to get beyond NPV.

ABOUT THE: *ENVIRONMENTAL, SOCIAL AND GOVERNANCE (ESG) INITIATIVE*

The Environmental, Social and Governance Initiative conducts academically rigorous and practically relevant research with industry partners and across all Wharton departments that investigates when, where, and how ESG factors impact business value. Informed by research, we offer 30+ courses that MBA and undergraduate students can assemble into a major or concentration, over a dozen co-curricular experiences, and three Executive certificate programs. Led by Vice Dean Witold Henisz, the ESG Initiative advances Wharton's best-in-class education of current and future leaders, enabling them to serve a world undergoing tremendous change.

APPENDIX 1:

Summary of the Financial Valuation Tool for Sustainability Investments (FV Tool)Calculations

Disclaimer: Some of the values and numbers presented throughout the report are disguised or should be considered approximate and may not represent actual values and/or costs.

With regard to the four sustainability initiatives under review, the team began by defining six project risks:

01. Roadblocks that disrupted production, which were expected to occur once every other year, last 1 week, and cost a fixed US$3 million plus 1 week of lost revenue.

02. Serious complaints, which are expected to occur 12 times per year with an expected average cost of US$50,000.

03. Exploration protests, which were expected to occur every other year, last2 weeks, and cost US$5 million plus 2 weeks of lost revenue.

04. Fines and legal judgments, which were expected to occur every third year with an average cost of US$3 million.

05. Water services protests, which were expected to occur every other year with an average cost of US$200,000.

06. The risk of expropriation was estimated as 1-in-1,000 probability in any given year.

The team then calculated the costs and benefits of the four proposed initiatives:

01. For water and sanitation services, these included:

- An increase in operational expenditures to construct additional boreholes from US$421,000 to US$686,000 per year.
- An increase in additional expenditures for the Environment department of US$130,000 per year.

02. For community health, these included:

- The expansion of the community health budget from US$105,000 per year to US$235,000 after the initial 2-year expenditure of US$425,000 per year.

APPENDIX 1: (Continued)

Summary of the Financial Valuation Tool for Sustainability Investments (FV Tool)Calculations

03. For the Technical and Vocational Education Training(TVET)program, these included:

- An expansion in the apprenticeship program from 69 to 91 students at a cost of US$25,000 per student.
- A further increase in the local sourcing budget, which was estimated to cost US$2.1 million in the first 5 years and US$700,000 in years 5 through10 and estimated to save US$700,000 per year in years 10 through 20. Each of these cost estimates were drawn from a Trigen distribution with the fifth percentile at 10 percent of the mean estimate and the ninety-fifth percentile at 200 percent of the mean.[3]
- A one-time International Finance Corporation (IFC) contribution of US$1.5 million in 2010.
- A US$180,000 per year savings via reduced accidents.
- A US$38,000 per year savings in hiring costs.

04. For the Newmont Ahafo Development Foundation(NADeF),these included:

- A 25 percent expansion of the 2012 through 2030 contributions from US$717,000 to US$896,000.

These calculations revealed that all four programs were positive in their total value-added, but that the community health and water and sanitation services programs had wider variance. Nevertheless, the potential benefits of the TVET and NADeF programs were perceived as so important that they justified the risks associated with relatively moderate expansions in these existing programs.

[3]A Trigen distribution is used in cases when limited data is available. Analysts interpret the data and specify a more narrowed range of values than the extremely optimistic and pessimistic values typically used. David Hulett, Practical Schedule Risk Analysis (U.K.: Gower Publishing Ltd., 2009).

APPENDIX 2:

Recommended Guidelines for the Implementation of the Financial Valuation Tool for Sustainability Investments (FV Tool) Analysis

01. Identify the right internal team members. Upper-level management (a key function) should participate early and act as a Steering Committee. In particular, the following departments should participate: Community Relations, Land Acquisition, Finance, Risk Management, Procurement, Operations, and Human Resources.

02. Ensure proper scoping of the project selected for net present value (NPV) modeling.

a.) The Steering Committee should define the timeline and boundaries of the project (e.g., within one operation site or geographic area).

b.) A formal risk and opportunity analysis, per risk register and stakeholder perception data, should be carried out before selecting the final portfolio of sustainability initiatives.

c.) The sustainability initiatives portfolio selected for evaluation should include broader categories of programs (e.g., local economic development, supplier development, livelihood restoration, and biodiversity) for which direct cost/ benefit information was available.

03. Identify the right sources of information and gather the required data—direct costs and benefits including assumptions—before using the model. For example:

a.) Finance: project cash flow, community investment, and operations budget.

b.) Risk Management: risk register and risk evaluation tools.

c.) Procurement: total procurement cost and local spending.

d.) Health and Safety: lost time due to injury, insurance claims, HIV/malaria programs costs, and costs of prevention programs.

e.) Human Resources: costs of local versus foreign employees, training, and turnover.

f.) Sustainability and Corporate Social Responsibility (CSR): environmental, social, health impact assessment, other baseline studies, key performance indicators, strategic plans, and community perception surveys.

APPENDIX 2: (Continued)

Recommended Guidelines for the Implementation of the Financial Valuation Tool for Sustainability Investments (FV Tool) Analysis

04. Develop a risk consequence table that includes data on type, frequency, and cost for the following categories:

a.) Delays in planning.

b.) Delays in construction.

c.) Delays in operations.

d.) Project cancellations.

e.) Unforeseen costs.

f.) Lawsuits.

05. Enter the FV Tool project basics, project phases (in years and months), cash flows (minus CSR spend), weighted average cost of capital, and the country's inflation rate.

06. Conduct a cost-benefit analysis of spending and savings or productivity gains from each sustainability investment.

07. Determine the importance and quality rating for each investment using separate quality benchmarks and self-assessment tools.

08. Run the model and analyze the preliminary output.

09. Validate and refine the assumptions and inputs with management.

10. Rerun the model and consider the implications for investment.

11. Train company staff to use the model and interpret the output.