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# Financial Incentives for Improved Sustainability Performance: The Business Case and the Sustainability Dividend

Maryanne Grieg-Gran  
IIED  
United Kingdom

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# I Introduction

This report has been prepared to meet a need identified from the conference held in April 2001 in Washington entitled Mining, Finance and Sustainability. One of the research themes identified in this conference as worthy of further attention was the question of whether there is a business case for sustainability performance. Is it in a company's financial interest to strive for good environmental and social performance? If so what role can financial institutions play in encouraging this? This report therefore aims to provide an overview of the theory and practical evidence with regard to the links between environmentally and socially sustainable performance and company financial performance<sup>1</sup>.

More specifically the report aims to address the following sets of questions:

1. Can companies improve their profitability by paying attention to environmental and social performance? Conversely is poor profitability linked to poor environmental and social performance? Under what conditions is there most likely to be a business case?
2. To what extent do financial markets take account of environmental and social performance? What instruments do financial institutions have in place to reward and encourage sustainability performance and what is their rationale?
3. What are the barriers to financial markets taking account of environmental and social performance?
4. What measures are needed from companies, governments, financial institutions and other stakeholders to address the barriers to positive linkages between financial and sustainability performance in the mining sector and to promote the use of financial mechanisms and incentives for improved sustainability performance?

The business case for sustainability performance can be made both for companies and for the financial institutions that support or service them. If the business case means that companies improve their economic performance as a result of addressing sustainability then this should translate into higher returns and/or lower risks for the financial institutions that support them. This implies however that financial institutions are able to recognise good environmental and social performance and understand its financial implications. For this reason, it is important to examine the business case at two levels:

- At the company level, asking how profitability or the accounting returns of companies are linked with their environmental and social performance. (In practice many studies look both at accounting returns and returns to shareholders).
- At the level of the financial institution, the key issue being to what extent do financial markets take account of environmental and social aspects of company performance? The fact that reduced cost of capital is often cited as an argument for the business case for sustainability at company level suggests that financial institutions do take account of these differences. However, there is another school of thought that focuses on the

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<sup>1</sup> This report uses the terms sustainability performance and environmental and social performance interchangeably. Social performance encompasses socio-economic issues such as contribution to the local economy.

hidden sources of value or hidden costs that financial institutions are not adequately recognising.

The report looks first at the theoretical arguments for the business case at the company level and then examines the empirical evidence to support the theory. This is followed by a review of the theory and evidence from the financial institution standpoint and the extent to which financial markets recognise differences in sustainability performance and accurately reflect them in company assessments. In both cases the relevance of the research evidence identified to the mining sector is considered. The final section considers what is needed to improve the linkages between financial performance and sustainability. The report draws on published literature throughout and no new statistical analysis relating financial performance and sustainability performance is involved.

## **2 The Business Case for Sustainability Performance – The Theory**

The traditional economic approach to company investment in environmental and social performance focuses on the concept of externality. The costs involved in improving environmental and social performance are internal and hence represent an additional cost for the firm but the benefits of such measures are often external. If a company invests in pollution control treatment to reduce its emissions, it is society as a whole that benefits rather than the company. Companies will not invest in environmental protection unless forced to by regulation as they will increase costs and lose competitiveness unless all their competitors are forced to do so as well. As the benefits of this increased environmental protection do not accrue directly to the company it will have no incentive to incur these extra costs. Only if the benefits are internalised, for example if the company needs to use clean water as an input will there be an incentive.

Proponents of the business case criticise this approach as being too static as it ignores the potential of companies to innovate (eg: Porter and van der Linde 1995). There is also the view that many externalities owing to tightening regulation, the force of public opinion and consumer pressure are becoming increasingly internalised. A number of publications (e.g. WBCSD 1997; SustainAbility 2001) set out the business case emphasising the advantages from the cost side and from the market side of addressing sustainability or making a commitment to corporate social responsibility. There is also a growing literature on the reputation benefits of sustainability.

### **2.1 Cost-Related Advantages of Sustainability**

Typical arguments made for the cost reducing effects of improved sustainability performance include:

- Clean technologies are usually more efficient thus reducing emissions and increasing productivity. Reducing raw materials use and increasing recycling and recovery can reduce production costs. These are opportunities for cost savings that may not become apparent even though the benefits accrue directly to the company, until the company is

motivated either by regulation or concerns to improve sustainability performance to examine ways of addressing these problems and to invest in the necessary research.

- Good working conditions can lead to higher productivity and fewer union disputes and make it easier to attract and retain employees.
- Changes in legislation e.g. tightening regulations or changes in rules on liability for damage can imply significant costs, sometimes unanticipated for companies. Companies that can prepare for regulatory change will have a competitive advantage.
- Investments in maintaining environmental quality and in community social services will improve community relations and reduce risk of compensation and damage suits.
- As companies with good environmental and social performance will be perceived as less risky by financial markets, the cost of capital will be reduced. Similarly insurance premiums will be reduced.
- Transactions costs such as negotiating contracts and dealing with disputes will be reduced (Noronha 2001).

## **2.2 Market Advantages**

Companies that can demonstrate compliance with stringent environmental and social standards can generate market benefits of different types:

- They can access certain environmentally sensitive markets
- They are more likely to retain their existing markets if buyers adopt stricter purchasing standards
- They may secure higher prices for their products.
- They may derive first mover advantages if they can capture environmentally or socially sensitive markets ahead of their competitors.

More recently the market advantages argument has extended to the business case for addressing the needs of the poor. Hart and Milstein 1999 stress the importance of capturing sustainable opportunities in three types of market, not just established consumer economies but also emerging and survival economies where meeting the basic needs of the poor is key. They argue that over the long term, investment in the survival economy will be good for company financial performance. This argument has now been taken up by others, e.g. WBCSD (2001), which identifies poverty as one of the single largest barriers to sustainability.

## **2.3 Reputation Advantages**

Responsible business practice has a positive impact on the reputation and public perception of the company. Loss of reputation can affect sales particularly where there are NGO campaigns urging consumer boycotts. More generally, it can affect the company's social licence to operate. Safeguarding reputation is important for maintaining good relationships with regulators and the local community. This has financial benefits in reducing time required for securing government approval of and community support for new developments or expansion. Moreover, the company's commitment to corporate social

responsibility and overall reputation may be an important motivating factor for its current and prospective employees. There is also an insurance value associated with reputation. In the event of a problem, a company with a good reputation can induce more supportive responses from stakeholders (Fombrun 2000). This is because once established, a company's reputation frames the way its key stakeholders detect and interpret events associated with it (Srivastava et al 1997).

A broader argument focuses on the role of reputation as a component of intangible assets defined as “factors of production or specialised resources that allow the firm to earn profits over and above the return on its tangible assets” e.g. patents, trademarks, proprietary raw material sources, brand names and firm goodwill i.e. intellectual capital and reputational capital (Konar and Cohen 2000).

According to Fombrun (2000) intangible assets of publicly traded companies in the US and the UK constitute 55% of their market valuation and this proportion has grown rapidly over the last 40 years. The recent ABI report on social responsibility (ABI 2001) argues that financial benefits from CSR activities are difficult to quantify because they represent investment in intangible assets. It further argues that the growing importance of intangible assets in relation to physical assets reflects a change to a new business model focused on services rather than products and where profits depend less on physical assets than on the skills, motivation and inventiveness of the people in the network and hence the relationships between them. This makes CSR and investing in stakeholder relationships crucial to business success.

## **2.4 The Business Case in the Mining Sector**

For the mining sector, all of the arguments for cost advantages listed above should be applicable. Market-related advantages of good sustainability performance are less likely to occur than in other sectors because of the complex nature of mineral supply chains and the lack of vertical integration in the sector. Most mining companies are not involved directly in producing consumer goods. As a result market pressure for improved sustainability performance is emerging only for certain high value niche products such as diamonds. The reputation advantages of sustainability are frequently cited in the context of the mining sector given the importance of good community relations. However, it is doubtful whether intangible assets in the mining sector have the same degree of importance as in other sectors. The physical assets of mining still remain the driver of the sector's activity.

# **3 The Business Case for Sustainability – The Evidence**

## **3.1 The Business Case for What Exactly?**

The basic problem in assessing the evidence on the business case is in defining sustainability performance. It is easy to agree with the Brundtland Commission definition of sustainable development that is often used but it is difficult to operationalise this and decide which activities should be included. For example, does sustainability performance include labour rights of free association and collective bargaining as in Principle 3 of the UN Global Compact? Much of the empirical research concentrates on a specific aspect only e.g.

environmental emissions, ignoring other dimensions of sustainability and so results can be misleading. The concept of corporate social responsibility (CSR), which is sometimes used interchangeably with sustainability performance, is equally problematic to operationalise. WBCSD (2001) defines the concept in broad terms as “the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve their quality of life.” However it notes that CSR is always being redefined to serve changing needs for example of different sectors, and changes in society’s expectations change.

Sustainability is particularly problematic in the context of the mining sector, which is based on the extraction of non-renewable resources and as such is inherently unsustainable in the strict sense. This report focuses on the business case for improved environmental and social performance i.e. a weak form of sustainability. It uses the term sustainability performance as shorthand for environmental and social performance.

### **3.2 Approaches to Examining the Evidence**

There are two approaches to examining the evidence on the business case:

- In-depth studies of individual companies before and after fundamental changes in approach to sustainability issues.
- Multivariate analysis of samples of companies to assess the strength of the relationship between profitability and economic performance indicators and sustainability indicators/variables.

### **3.3 Case Studies**

A number of publications have provided case study examples of how companies have benefited or could benefit from addressing environmental and social issues. Earlier reports (e.g. WBCSD 1997) had a primary focus on environmental issues or eco-efficiency. Recent reports have been more comprehensive in terms of issues addressed. Ethical Performance (2001) has recently published case studies of corporate social responsibility and Waddock and Smith 2000 give examples of how companies, following recommendations of responsibility or social audits have benefited financially from taking measures to improve relationships with stakeholders. One company would increase its profit by 7% if it could recover just half of the turnover costs of employee overtime, temporary help and outsourcing. In order to achieve this the audit recommended increasing professional development and career opportunities. Another company cited saved US\$200,000 annually through 50% reduced disposal costs and water costs.

The advantage of a case study approach is that it is easier to establish causation. Improvement in company profitability can be traced more directly to actions taken by the company. This is unlike multi-company analysis where considerable speculation is involved as to why certain results and linkages emerge. The disadvantages relate more to the nature of the studies that are publicly available and the motivations for publicising them.

### *Estimates rather than Actuals*

Very few of these studies involve a sufficiently long time frame to enable before and after assessments of company economic performance to be made. The majority involve estimates of future costs and benefits from the actions taken rather than actual changes. For example in the WBCSD 1997 report, the case of Dow Chemicals was highlighted. In 1996 it set goals to improve environment health and safety over 10 years. This would require an investment of US\$1 billion but was expected to generate a return of 30-40% by 2005. However, the company also claimed that it had achieved average returns of 55% from voluntary investments over the previous 10 years e.g. Waste Reduction Always Pays programme. Many of the other case studies in this volume also involved estimates rather than actuals.

### *Incomplete Costs and Benefits*

Another disadvantage is that many of the case studies pick out particular issues rather than comprehensively address all aspects of environmental and social performance. This means that some thornier issues may not be addressed and hence costs and benefits are not complete. In particular, it is not clear that the costs of the auditing, measurement etc included. For example the Danish Steel Works case study in the WBCSD 1997 report highlights the improvements in resource productivity that were achieved but does not mention what was involved to achieve these reductions and the associated costs

### *Cherry-Picking*

The case studies that are readily available show how companies have gained or could gain. Rather less attention seems to be given to companies that have lost by addressing environmental/social issues, although examples no doubt exist, for example the UK retailer Iceland's move into organic food.

### *Qualitative not Quantitative*

Some case studies e.g. Chiquita in Ethical Performance 2001 give only a qualitative discussion of the benefits rather than a detailed assessment of costs and benefits.

### *Unrepresentative?*

The companies that feature in the case studies are often large established companies that are not starting from zero in terms of information and management systems. Smaller companies or developing country enterprises may not be in as good a position to take advantage of cost savings.

### *Changing Perceptions*

The case of Monsanto which appears as a positive example in earlier US reports on this topic and as a negative example in recent reports from Europe, shows how fluid and geographically determined the concepts of corporate social responsibility and sustainability are. The report by the Aspen Institute (1998) highlights how Monsanto had gained from developing genetically engineered insect-resistant cotton and how insecticide use had been



reduced as a result resulting in cost savings and yield improvements for the growers in the US. The recent report from the Association of British Insurers (2001) highlights Monsanto's experience in marketing genetically modified soya in Europe as an example of the risks in the social, ethical and environmental area and the negative outcome for the company of not fully understanding the wider social and environmental concerns about its product.

For these reasons, the various case studies available while useful as an illustration of the potential benefits of addressing sustainability performance, cannot be considered to provide clearcut evidence of the business case.

#### *Relevance to the Mining Sector*

No case studies on mining companies showing a positive link between actions designed to improve sustainability performance and financial benefits have been identified so far. However, there are a number of examples where mining companies and/or the financial institutions associated with them have incurred losses because of inadequate attention to environmental or social issues. These include Aurul in Baia Mare, Romania where there was a cyanide spill and Bougainville, in Papua New Guinea where civil unrest resulted in the closure of the mine.

### **3.4 Econometric Studies of Company samples**

Studies examining a sample of companies have the potential to be more rigorous but much depends on the choice of variables and specification of the model. Normally these studies involve multiple regressions linking financial/economic performance and environmental or social performance.

Some of these studies address both the accounting returns aspect (i.e. the profitability of the company) and the stock market returns aspect (returns to investors) of company financial performance. This section examines the accounting returns aspect only, focusing on the impact on profitability and economic performance of the company. The impact on stock market returns is addressed in a later section on the role of financial institutions. This is because impact on stock market returns involves two issues – not only the issue of whether profitability is affected by environmental and social performance but also the question of whether financial markets incorporate such non-financial information into their assessments.

There is a vast literature on the links between financial performance and environmental or social performance, going back to the 1970s but most of the studies have been conducted in the US. Moreover, the studies mostly address the US operations of the companies studied even though many of these have overseas operations. This is because of the better data availability in the US.

Numerous reviews of studies have been conducted. Some of the early studies carried out in the 1970s were reviewed by Aupperle et al (1985) and mostly found to be deficient and lacking in rigour. The main shortcomings identified were: small sample size, no

adjustment for risk, no significance testing and subjective assessment of corporate social responsibility.

Later studies have addressed most of these shortcomings and many are more statistically rigorous, but the thorny issue remains of finding appropriate indicators for sustainability performance or corporate social responsibility. Some of the early studies used company rankings from surveys by the Business and Society magazine on how businessmen and students rated companies on corporate social responsibility. Another popular approach was to use the Fortune corporate reputation index as an indicator of corporate social performance. Some researchers have tried to use more objective measures of environmental and social performance involving quantifiable indicators, but as a result have excluded some dimensions of sustainability performance.

### *3.4.1 Studies using Environmental performance indicators*

Many studies have concentrated on the environmental aspect of sustainability given that objective quantitative information is often available on pollution emissions. The toxic release inventory in the US is a source of information that is often used. However, the objectivity may be more apparent than real since as people have pointed out (e.g. King and Baerwald) the toxic release inventory does not distinguish between chemicals according to level of toxicity or between emissions that are transfers to treatment facilities and those that are directly discharged to the environment.

Studies conducted in the US (see Box 1) have found some positive relationship between financial performance and environmental performance (Hart and Ahuja 1996), no evidence of a green investing penalty (Cohen, Fenn and Konar 1997) and a negative relationship (Jaggi and Freedman 1992). But the authors themselves acknowledge the weaknesses of this research. Hart and Ahuja (1996) point to the problem of determining causality: does good environmental performance lead to good financial performance? - or is it that firms that have a good financial situation can afford to improve their environmental performance?

## Box 1 Studies of US Companies linking financial performance with environmental performance

Hart and Ahuja 1996 Positive Linkage

The sample consisted of 127 US firms drawn from the S&P 500 and engaged in manufacturing, mining or production of some kind. The change in the emissions efficiency index (emissions per unit of output) from 1988 to 1989 for selected pollutants was regressed against ROS, ROA and ROE. A positive significant lagged relationship was found between environmental improvement and the financial performance indicators. This is more marked for the high polluting firms. The authors acknowledge certain weaknesses: the research is based on 1988-9 data when there was lots of “low-hanging fruit” and the direction of causality is unclear.

Jaggi and Freedman 1992 Negative Linkage

The study focuses on 13 firms in the US pulp and paper sector and uses data for 1978. The environmental performance indicator used is an emissions intensity index pollutant/ton of production calculated separately for BOD, TSS, and pH. The firm with the highest emission/output is assigned an index of 100 and all other firms' indices are adjusted accordingly. The three indices are then combined, with equal weights given to each of the three pollutants. The financial indicators used are net Income, ROA, the cash flow/equity ratio and the cash flow/assets ratio. The 1978 pollution data is correlated with three sets of financial data 1978, 1975-1977 and 1978-1980. Some weak negative association was found between environmental performance and financial performance

Cohen, Fenn and Konar 1997 No positive linkage but no penalty

The focus is on companies in the S&P 500. Eight environmental variables averaged over 3 years 1987-1989 and adjusted for firm size are used: number of environmental litigation proceedings, superfund sites, number and dollar value of non-compliance penalties, volume of toxic chemicals releases, number and volume of oil spills, number of chemical spills above a specified volume (10,000 pounds). Two sets of portfolios are formed: one with companies from different sectors with low values of the variables relative to their industry and one with companies with high values. Accounting returns ROA and ROE and investor returns (risk-adjusted market returns) of the two sets of portfolios are compared over three time periods 1987-1989, 1990 and 1991, giving 54 comparisons in all. It is found that for 44 (80%) of the comparisons the financial performance of the low pollution portfolio is higher but the difference is statistically significant only in 20% of these comparisons. The authors conclude that while there is not strong evidence for a green investing premium there is strong evidence that there is no green investing penalty. But they also acknowledge the problem of determining causation.

One of the few studies of this nature conducted outside of the US (Box 2) finds no relationship, positive or negative, between environmental performance and financial performance. These results may reflect the limited time span over which the analysis was

conducted and the wide range of sectors addressed. However, the author highlights the deficiencies in company environmental reporting as a significant problem for the research.

### **Box 2 A European Study of the Link between Environmental Performance and Financial Performance**

Louche 1998 No Significant Linkage

In a study of 40 European companies from various sectors and various countries financial performance (ROA, ROE and earnings per share) was regressed against four environmental variables: CO2 emissions, energy consumption, water consumption, and waste disposal. Data was drawn from company environmental reports and the availability of such data in the reports was the main driver of the selection of companies. The other main criterion was size as the largest companies were targeted. Data was indexed to give the rate of change between two consecutive years. Analysis was also conducted over a three year period but due to data restrictions the number of companies involved dropped to 25.

No significant relationship positive or negative was found between the financial variables and any of the environmental variables.

#### **3.4.2 Studies linking Financial Performance with Stakeholder relationships**

Two studies have been identified which specifically address the quality of stakeholder relationships (Box 3). Both of them use the rankings of Kinder Lydenberg and Domini (KLD), a social research service for institutional investors, as their indicator of stakeholder relations, the environment being considered as one type of stakeholder. These studies conclude that there is a strong positive link between the quality of stakeholder relations and financial performance. This is despite the fact that in both studies a significant positive relationship was found for only some of the stakeholder types. In particular, neither study found a statistically significant positive link between financial performance and environment. It is notable that it was for aspects for which the benefits are more easily internalised by a company such as employee relations and customer relations where the clearest links were found. An alternative interpretation of the results of these studies is therefore that activities with external benefits such as environmental protection are not likely to have a positive effect on financial performance or quality of management.

### Box 3 Financial Performance and Stakeholder Relationships

Berman et al 1999

This study makes a distinction between a strategic stakeholder management model where good relations with stakeholders are pursued in order to improve financial performance, and the intrinsic stakeholder commitment model where firms are considered to have a moral commitment to treating stakeholders well. The sample consists of 81 firms from the top 100 firms in the Fortune 500 list for 1996. KLD data over 6 years 1991-1996 is used, addressing five major stakeholder areas: employees, the natural environment, workplace diversity, customers and product safety, and community relations. The financial performance indicator used was ROA. The study finds no support for the intrinsic stakeholder model. Two stakeholder relationship variables employees and product quality are found to be positively and significantly related to firm financial performance. The other three variables: community, diversity and the natural environment do not have statistically significant impacts on firm performance. The authors suggest that the reason in the case of the natural environment is that the sample contained firms from many industries. It is likely that environmental regulations do not have a uniform impact across industries.

Waddock and Graves 1997

The authors relate management quality, as given by rankings from the Fortune reputation ratings, to stakeholder relations, using KLD rankings. Their aim is to examine whether good treatment of owners through good financial performance is consistent with good treatment of other stakeholders, or whether there is a tradeoff between them. The sample consisted of 281 companies drawn from the Fortune America's Most Admired Corporations database. The financial performance indicators used were ROA, ROE and 10 year compounded total return to shareholders. The study finds a strong positive relationship between quality of management and treatment of owners (as measured by financial performance) and employee relations and product i.e. customer relations in all four of the regression models used. But a significant positive relationship for community relations is found in only two of the models and there is no significant relationship between treatment of the ecological environment and quality of the management in any of the four models. From these findings the authors draw the conclusion that managers may need to take a broader view of their responsibilities if they are to enhance shareholder wealth. They suggest that the lack of any significant relationship between management quality and environmental issues reflects

*a general lack of awareness of the relevance of environmental issues to the corporate world*

### 3.4.3 Studies focussing on company statements about CSR

A number of studies focus on what companies say they do in relation to corporate social responsibility or sustainability performance (Box 4). Methods range from content analysis of company reports to selection of companies according to whether they have a code of conduct or statement of ethical principles to more complex questionnaire-based methods that force CEOs to reveal their orientation towards CSR by choosing between different statements. The studies shown below give conflicting results. The main problem with this approach is that as many people have pointed out e.g. Cochran and Wood 1984 and the authors themselves, there is a difference between what companies say they are doing and what they are actually doing. Given the concerns about greenwash, studies that rely on companies' own statements do not seem very convincing. The forced choice methodology of Aupperle *et al* may remove some of this bias.

#### **Box 4 Financial Performance and CSR as indicated by company statements**

##### Verschoor 1988 Positive Linkage

The study focuses on the largest 500 publicly held US corporations listed in the 1996 Business Week 1000. Companies in this list with a stated commitment to ethics in a code of conduct are identified. The Business Week financial performance rankings of companies in the list with and without a code of ethics are compared. A statistically significant difference is found between the average ranks of the two groups of companies. The group of companies with a code of ethics was found to have a higher average financial performance rank. But the author himself points out that the existence of a code of conduct will not ensure ethical behaviour. As many more companies in the Fortune 500 now have codes of ethics, this methodology would no longer be appropriate and a more sophisticated way of distinguishing between companies would be needed.

##### Aupperle, Carroll and Hatfield 1985 No Linkage

This study correlates CEO statements about the relative importance of economic and non-economic issues (legal, ethical and discretionary (philanthropic) with profitability as measured by ROA adjusted for risk both short-term (one year) and long-term (5 years). CEOs were asked to allocate up to 10 points to each of 20 sets of statements measuring corporate responsibility. 241 usable responses were generated. The social orientation of an organisation can be assessed through the importance placed on the three non-economic components compared to the economic. No statistically significant relationships were found between a strong orientation towards social responsibility and financial performance.

### 3.4.4 Studies based on Reputation Ratings

Some studies use the Fortune Corporate reputation ratings (America's Most Admired Companies) as an indicator of corporate social performance. Unlike the KLD rankings, which draw on information from a number of sources, the Fortune reputation rankings are

derived by asking executives, directors and investment analysts to rank companies in their own industry. The following eight criteria are used:

- Quality of management
- Quality of products and services
- Innovativeness
- Long-term investment value
- Financial soundness
- Ability to attract, develop and retain talent
- Social responsibility (previously known as community and environmental responsibility)
- Use of corporate assets

The evaluation is restricted to the ten largest companies in each industry sector. As the evaluation is limited in the type of stakeholders it includes e.g. NGOs are not invited to participate in the rankings, it could be expected that the ratings would be different from that of other more inclusive systems. But Griffin and Mahon 1997 in a study of six major chemical firms find that there is very little difference between the Fortune reputation ranking and the KLD rankings. This is a small sample because of the nature of the Fortune industry rankings.

Preston and O'Bannon 1997 use selected criteria from the Fortune reputation rankings to examine the relationship between financial and social performance (Box 5). While they find no evidence of a negative relationship, their results highlight the difficulties of establishing causation. They find that the strongest evidence is for a relationship in which financial performance drives social performance i.e. companies invest in social performance when they can afford to. This does not provide much support for the business case. Their results may also say more about the Fortune reputation ratings than the financial performance CSR linkages. The main criticism made of the Fortune reputation rankings in this context is that there is a financial halo effect from prior financial performance which affects both the financial and non-financial criteria. If this were the case then it would be expected that some correlation would be found between social performance and financial performance.

#### **Box 5 Studies Based on Corporate Reputation Indices**

##### **Preston and O'Bannon 1997 Positive Linkage but Causation Ambiguous**

The study examines the relationship between financial performance and social performance using three criteria from the Fortune rankings: Community and environmental responsibility, ability to select and retain good people and quality of products and services which reflect the interests of different stakeholders – community, employees and customers. Three indicators of financial performance are used: ROA, ROE and ROI. The sample consists of the 67 companies that were rated in every Fortune survey over the period 1982-1992. Correlation coefficients between the financial performance data and the reputation data are estimated in both contemporaneous

(Financial indicator year 2 versus social indicator year 2) and lead-lag combinations (financial indicator year 1 versus social indicator year 2 and vice versa). This gives 270 correlation coefficients in total. All of these are found to be positive suggesting that there is a positive association between financial and social performance and that there are no tradeoffs involved. However, the strongest association is found where the lead lag relationship is from financial performance to social performance (i.e. financial indicator Year 1 versus social indicator year 2 combination). This provides some support for an “available funds” hypothesis whereby profitability in one time period may increase a firm’s ability to invest in its social performance.

### 3.4.5 *Main Conclusions to be drawn from the Multi-Company Studies*

The overall picture that emerges from the studies reviewed above is not very conclusive. Multi-company studies have mostly been carried out in the US only; they concentrate on a limited set of issues; and have produced conflicting results. Only one study of this nature outside the US was identified (Louche 1998) and it did not find any statistically significant relationship. Even authors of studies that find a positive relationship between environmental performance and financial performance e.g. Hart and Ahuja (1996) point out various weaknesses of the analysis such as determining the direction of causality.

Other authors have suggested that asset age may be a crucial factor. Cochran and Wood (1984) found that asset age was the financial variable most strongly correlated with CSR.

There is also the tricky question of what is sustainability performance and how to measure it in a way that can be rigorously correlated with financial performance. Some studies e.g. Hart and Ahuja (1996) use a limited subset of environmental issues based on numerical data. This is objective but partial.

In particular there is lot of dependence on the TRI as a source of information but this shows emissions rather than impact or toxicity and is thus a very blunt indicator of environmental performance. The data involved is often from several years back and the situation may well be different now.

The way sustainability is addressed or the specific aspect of it that is addressed has a bearing on the results. This is illustrated by considering the treatment of labour Issues and in particular unionisation. It is usually argued that better treatment of workers pays off for companies and two of the studies provide empirical support for this. But it is not clear the extent to which this applies to unionisation. This is a key aspect of CSR as ILO Conventions allow for free association and the Global Compact, under Principle 3, requires businesses to uphold the right of freedom of association and the effective recognition of the right to collective bargaining. But a review by Hirsch (1997) of unionisation and economic performance concludes that unions are associated with lower profitability, decreased investment in physical capital and research and development and lower rates of employment and sales growth. While unions increase pay for their members, productivity does not increase sufficiently to offset the implied cost increases. This is based primarily on the US experience and may explain why union membership has declined so much there but Hirsch cites studies with similar results from Britain, Canada and Japan.



Another issue is that the studies linking social responsibility issues with financial performance do not appear to give much importance to the distinction between easily internalised aspects e.g. product recalls and external aspects e.g. environment, human rights etc. Yet two studies that examine these aspects separately do not find any statistically significant link between financial performance i.e. profitability and external aspects e.g. community and the natural environment. One study (Preston and O'Bannon 1997) that does find a significant positive relationship between financial performance and the community and environmental responsibility only serves to highlight the limitations of econometric research for supporting the business case. The study suggests that causation may be from financial performance to social performance rather than the other way round.

A number of the studies focus on reputation concerns as a factor that is increasingly bringing about the internalisation of environmental costs and other types of external cost. But it is possible that reputation may only be a concern for the most visible companies i.e. large companies or those producing consumer goods. Available evidence on this is from the US only and is mixed. Arora and Cason (1996) analysed participation in EPA's voluntary 33/50 programme to reduce releases of 17 toxic chemicals. They found that it is the larger firms with substantial toxic releases that are most likely to participate. They also found that participation rates are higher in industries with greater consumer contact as indicated by advertising expenditures normalised by industry sales. They suggest that this is because consumers are willing to pay more and so this provides a route for participating companies to benefit.

A more recent study, (Konar and Cohen 2000) reaches a somewhat different conclusion. The authors examined why firms in the US make emission reductions beyond those which are legally required. They found that large firms (in revenue terms) reduced emissions most following release of new information on toxic emissions and were more likely to improve their position relative to their industry peers. However, they were unable to find any linkage between "closeness to consumer" as indicated by level of advertising expenditure and type of good (consumer or intermediate) and firm-level emission reductions. They also found little evidence that firm-specific negative media attention had any impact on firm behaviour after controlling for firm size. They concluded that if there is external pressure on companies to go beyond mere compliance it is more likely to come from environmental or community groups or shareholders rather than consumers.

#### **3.4.6 Relevance to Mining**

None of the studies address mining specifically or exclusively. But most studies are multi-sectoral and thus usually include some mining and metals companies. This is in fact one of the shortcomings of the studies in that they mix sectors with different characteristics and different extent of consumer contact. But studies concentrating on a single sector suffer from small sample problems.

The studies all concentrate on large publicly traded companies and in this respect are highly relevant to the mining sector, which is characterised by large listed companies. But the fact that most of the studies of this nature have been conducted in the US, means that some of

the largest mining companies i.e. British or Canadian) have not been included in the analysis. The studies are also of less relevance to the juniors in the mining sector.

Even though many of the companies concerned have overseas operations, the analysis is often limited to US operations because that is where data is more readily available. Therefore many studies do not address the issues that are of most concern to mining companies that of operations overseas in countries where regulation is not strict or not enforced. The KLD rankings do address company performance in non-US operations but as KLD acknowledges “data for these issues are less complete, less reliable, and more difficult to interpret than the data underlying ratings for U.S operations”. (Domini Social Screening Criteria). Similarly, for the Fortune reputation rankings it is unclear to what extent those contributing to the survey consider the non-US operations of the companies concerned.

Thus not only is the evidence on financial and sustainability linkages at the company level inconclusive, it is also not very representative of the main sustainability issues facing the mining sector.

## **4 To What Extent do Financial Markets Recognise and Reward Sustainability Performance?**

### **4.1 *The Business Case for Financial Institutions to Recognise Sustainability Performance***

If there are financial benefits at the company level from improved sustainability performance, these should translate into higher returns or lower risks for investors or financial institutions that support the company. Conversely, risks facing the company from inadequate management of environmental and social aspects of its operation can turn into risks facing the supporting financial institutions. Thus it may be in the interests of private investors and financial institutions to pay close attention to the environmental and social performance of the companies they support. They may gain from providing incentives for improvement whether by withholding support to companies deemed to be performing badly or by providing finance on preferential terms to those demonstrating best practice. This depends not only on whether there are benefits at the company level from improved sustainability performance but also whether financial institutions are able to distinguish between companies with good and bad performance and understand the financial implications.

There are number of different financial institutions associated with mining companies, commercial banks, asset managers, insurance companies as well as official financing agencies such as development banks and export credit/investment insurance agencies. All of these are interested in risk factors affecting the liability exposure of the financial institution, the ability of the company to repay loans, or generate a return on investment or in the case of insurance companies the likelihood of certain types of events.

Environmental and social risk for financial institutions can be classified as:

- Direct - where the financial institution finds itself liable for clean up costs or third party claims for pollution damages. This may occur where a bank forecloses on a loan and takes possession of land offered as collateral
- Indirect – where for example tightening environmental regulation implies increased pollution control expenditures or local opposition causes disruption of operations. Both of these can affect a company’s cash flow and ability to repay loans or generate a return on investment
- Reputation risk – where failure on the financial institution’s part to give careful consideration to environmental and social impacts of a project can result in bad publicity both for the institution and the company concerned.<sup>2</sup>

Financial institutions it is claimed therefore need to examine how the company deals with such risks. More positively, the way a company deals with sustainability issues may provide a good indication of its management capability, which is one of the most important factors in any financial decision. A company’s effectiveness in dealing with complex environmental challenges implies an ability to handle other management areas as well (Trevet 2000).

Equity investors should also be interested in the upside possibilities as well – the ability of companies to use environmental or sustainability strategies differentiate themselves in the market place, build new markets, reduce costs and increase competitive advantage (Aspen Institute 1998).

## **4.2 Ways of Assessing Whether Financial Markets Address Sustainability Performance**

The cost of capital argument for the business case cited in Section 2 suggests that financial institutions are rewarding good sustainability performance. The alternative view is that there are sources of hidden value or hidden costs that financial markets are not capturing.

There are different ways of assessing which of these two views is most valid.

One approach is to examine what financial institutions actually do or say they do, and the extent to which they give importance to environmental and social issues. An alternative approach is to examine the links between companies’ environmental and social performance and financial market-derived indicators. Studies that have attempted to do the latter have mainly focused on equity markets and are of four types:

- Studies examining the relation between environmental and social performance and the cost of capital (one of the arguments for the business case at company level).
- Event studies that assess the impact of particular events associated with the environmental and social performance of a company on its share price.
- Longer-term studies which link environmental and social performance with stock market returns.

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<sup>2</sup> Based on UNEP Financial Institutions Initiative Fact Sheet No. 3 The Environment and Credit Risk

- Studies which start from the premise that financial markets do not take sufficient account of environmental and social issues and aim to identify sources of hidden value and hidden costs for investors.

### **4.3 Surveys of Financial Institutions**

A report by the Aspen Institute (1998) observed that

The vast majority of mainstream investment firms and professionals have a fairly good grasp of environmental liabilities, but the connections between “beyond compliance” environmental performance and shareholder value creation are not well understood.

This is consistent with the findings of surveys of the attitudes and practices of financial institutions in relation to environmental and social issues that have been carried out over the last ten years (Box 6). The differences in the survey findings reflect the type of financial institution involved and the type of transaction. Commercial lending institutions appear to be more conscious of environmental risks than analysts in investment management institutions.

This reflects a change in attitude on the part of the banking sector in recent years. For example in 1994 the position of the British Bankers Association was that banks are not and should not be in a position to police the environmental performance of borrowers. Though it recognised that environmental management was an important aspect in assessing the management quality of a potential borrower, it did not consider bankers to be environmental specialists (Vaughan 1994). The BBA is now involved in the FORGE group, which recently produced guidelines on environmental management and reporting for the financial services sector.

#### **4.3.1 Attitudes of Financial Institutions towards Sustainability Performance in the Mining Sector**

The World Bank/UNEP/MMSD conference on Finance Mining and Sustainability held in April 2001 highlighted examples of how financial institutions are addressing sustainability issues in mining. According to Gerard Holden of Barclays Capital, banks make significant efforts to analyse risks. Barclays expects adherence to World Bank and IFC guidelines at a minimum and wants to know that the company has a proactive approach to managing risk. Moreover, there are examples of mining companies obtaining finance in difficult situations or on preferential terms because of their good environmental and social track record. Billiton secured finance for the expansion of the Cerro Mateo project in Colombia despite high political risk because of the company’s good track record of relations with the local community (Holden 2001).

Insurance companies are also paying close attention to the risks facing mining companies and the implications of their social and environmental performance. Where there may be less interest is on the part of asset managers as suggested by the surveys mentioned above. For example, Merrill Lynch’s report on its World Mining Trust makes no mention of environmental or social issues in its discussion of the mining sector outlook and the mining companies in its portfolio. Where there is interest is in those institutions that operate best of sector SRI or sustainable investment funds e.g. Westpac in Australia which has holdings

in BHP Billiton, Normandy Mining Alcan and Placer Dome amongst others and YMG in Canada which has invested in Noranda and Falconbridge. SRI funds such as NPI Global Care that operate negative screens usually avoid mining altogether regardless of any progress made on environmental or social issues by companies within the sector.

#### **Box 6 Surveys of Finance and Investment Institutions Gentry and Fernandez 1997**

The survey was carried out in 1996 and focused on financial analysts of the most highly rated, traditional US investment firms as well as the CFOs of Fortune 500 companies. SRI analysts were deliberately excluded. Eight industrial sectors were selected: chemicals, oil refining, paper products, steel, pharmaceutical, household products and semi-conductors. The survey was sent to 387 analysts and 109 CFOs but the response rate was only 8% for analysts and 7% for CFOs. In addition 6 analysts participated in detailed interviews in a follow-up phase. The survey found that environmental factors are not among the key criteria used for corporate valuations, and where they are addressed, they are viewed as risks not opportunities. Such issues have had little impact on company valuation to date but more impact was expected in the future. The main reason for the limited attention to environmental factors was lack of useful data and not a belief that environmental issues were irrelevant.

#### **Dempsey et al 1997**

The survey targeted analysts evaluating the long-term performance of companies. The survey was sent to 2,751 individuals and generated 420 usable responses i.e. a response rate of 15.3%. The aim was to determine the extent to which analysts currently use various non-financial performance measures in addition to traditional financial performance measures and to elicit their views on the predictive value of performance measures and ease of acquisition of the necessary information. Eleven of the 17 top variables used were non-financial, but social responsibility variables including environmental performance, were rather low in priority. When analysts asked about predictive value, social responsibility variables were again low on the list of priorities. In fact two variables: environmental performance and social responsibility litigation both dropped in priority in relation to their position in current use. Yet they both scored higher on ease of acquisition suggesting that lack of information on these issues was not perceived as a problem. The most significant information gaps identified were relating to measures of product quality and consumer satisfaction.

#### **UNEP/PWC 1999**

A survey was carried out in 1998 to monitor progress of the signatories to the UNEP Financial Institutions Initiative Statement on the Environment and Sustainable Development. The survey was sent to 114 institutions of which 63 responded. It found that the majority of responding organisations had an internal environmental policy and a dedicated environmental department and had in operation or under development, environmental policies and procedures for corporate credit and project finance. Fewer institutions had environmental policies covering investment banking or insurance. While 60% of organisations had taken steps to integrate environmental risk into credit decisions, only 20% had done this for strategic credit or investment portfolio management. The environmental issues most commonly considered in credit, investment and insurance transactions were legal compliance, overall company reputation and the nature and extent of environmental liabilities.

#### **4.4 Multi-Company Statistical Studies**

There is an extensive literature which attempts to assess how and to what extent financial markets take account of the environmental and social performance of companies.

There are two main strands in the literature:

1. Addressing sustainability will lower the cost of capital or release of information about environmental or social performance will affect the equity value of companies – This implies that financial institutions do capture the financial implications of company sustainability performance, if not completely, then at least partially.
2. Financial markets do not take sufficient account of environmental and social issues and therefore companies are not valued correctly. There are hidden costs or hidden sources of value which can only be uncovered through specialist analysis of the environmental and social dimensions of company performance. There is relatively little literature on this area.

##### **4.4.1 Cost of Capital Studies**

A reduced cost of capital is often cited as an argument for the business case for sustainability at company level. However, there is some circularity of reasoning in this, as the impact on the cost of capital must reflect some change in investor perception of the financial performance and prospects of the company. The studies are useful though in assessing whether financial markets do recognise the long-term implications of sustainability performance.

The only studies identified addressing this issue are from the US. Two examine environmental issues, TRI emissions and superfund liabilities (Box 7) and one addresses corporate reputation in general (Box 8). The focus of the two environmental studies is on the effect of a company's environmental performance or reputation in general, on its systematic risk, that is, the volatility of its shares relative to the overall market. This type of risk cannot be diversified away through incorporation in a portfolio of holdings, therefore investors require higher returns for accepting higher levels of systematic risk. If a company's environmental or social performance affects its systematic risk, its cost of capital will also be affected. Both studies conclude that these wider aspects of company performance do affect systematic risk and hence the cost of capital. Feldman, Soyka and Ameer (1997) estimate that the combined effect of a 50% improvement in a firm's environmental management system and a 50% improvement in its environmental performance is to reduce its beta by 13% and its cost of capital from 13% to 12.34%. Garber and Hammitt (1997) estimate that the environmental liabilities associated with Superfund imply an average increase in cost of capital for large chemical companies of 0.25-0.4 percentage points per year. However, they find less evidence of financial market reaction in the case of small companies.

### **Box 7 Environmental Performance and the Cost of Capital**

Feldman, Soyka and Ameer 1997

The study examines how changes in company environmental risk affect its systematic risk, that is, its volatility relative to the overall market. The study estimates systematic risk (beta) for 330 firms in the S&P 500 for two separate time periods 1980-87 and 1988-1994. The changes in beta between the two periods are then regressed against indicators of environmental management (presence and quality of the system, environmental performance (change in TRI releases per unit of firm capital) and non-environmental variables (financial and operating leverage, variability in operating income, productivity and other firm performance variables designed to capture known and quantifiable risk factors unrelated to the environment. The results show that as the firm improves environmental management or environmental performance, firm risk as measured by beta declines. A 50% improvement in the environmental management system combined with a 50% improvement in environmental performance reduces beta by roughly 13%. For a firm with 13% cost of capital initially this reduction in beta will reduce the cost of capital to 12.34%. The authors argue that this reflects changes in investor perception of companies and the level of risk associated with them.

Garber and Hammitt 1997

The study focuses on 73 chemical companies with Superfund liabilities and that are listed on the New York or American Stock Exchanges. The aim is to analyse whether firms' equity betas vary in accordance with the relative levels of exposure to Superfund liability. The equity betas of the sample firms are estimated over the period 1976-1992 using a capital asset pricing model specification augmented by the incorporation of a variable measuring Superfund exposure. Among the largest chemical companies in their sample (defined as real market equity over \$1 billion December 1979 dollars) equity betas and hence costs of capital appear to increase with potential Superfund costs but there is no evidence of such an effect for smaller companies. They conclude that investors are aware of differences in financial liability at least for the larger companies and penalise them not only when liabilities first revealed but during the process of resolving them and determining actual cost. They suggest that the lack of evidence for smaller firms may reflect lack of investor information about the Superfund exposure of smaller companies. They note that investors are poorly informed by companies and by analyst reports about Superfund liabilities in spite of requirement for companies to disclose material information i.e. information that a reasonable investor would consider significant in making an investment decision.

Srivastava et al (1997) in their assessment of the impact of reputation on cost of capital take a somewhat different approach, making a distinction between objective risk (beta) as measured by historical volatility of returns and perceived risk. They argue that a strong reputation can cause investors to perceive a company as less risky and so they may be willing to accept a lower rate of return than that indicated by objective risk (beta). The findings of their study suggest that a one unit increase in reputation would lead to a reduction in the required rate of return of 0.3% per year. The drawback of this study is that the reputation index is drawn from Fortune America's Most Admired Companies survey. This reputation

index incorporates several company attributes both financial and non-financial and environmental and social performance is only one of eight variables assessed. Thus it is not clear the extent to which a company's environmental and social performance can be linked with this reputation impact on the cost of capital.

### **Box 8 Reputation and the Cost of Capital**

Srivastava et al 1997

This study examines how a firm's corporate reputation may influence the equity markets valuation. The hypothesis is that if a strong reputation causes an investor to perceive a firm as less risky, the investor may be willing to accept a lower rate of return than that indicated by objective measures of systematic risk (beta) or for better corporate reputations, investors will be willing to accept higher systematic risk (beta) for the same level of returns. The authors use the aggregate reputation score in the 1990 Fortune America's Most Admired Companies survey. They compare ten portfolios of companies selected using a linear programming model to make them equivalent in terms of return but to maximise the difference in reputation across them. According to the capital asset pricing model, the beta of each of these portfolios would be the same because they have the same rate of return. The authors estimate the beta of each portfolio and find that they differ. When average reputation is regressed against beta for the set of portfolios, the coefficient of reputation is found to be positive and significant - i.e. for each unit increase in reputation investors are willing to accept an increase (.0634) in beta without an increase in the rate of return. Conversely, a one unit change in reputation would lead to a 0.3% reduction in the required rate of return.

#### **4.4.2 Event Studies**

The efficient market theory maintains that information released about a company which has a bearing on its profitability and long-term prospects will rapidly affect its share price (Fama 1970). Investors on the basis of the new information will revise their estimates of the future cash flow of the company and this will be reflected in the share price. The event studies aim to examine how the release of information about the environmental or social performance of a company affects its share price immediately afterwards.

The basic approach of event studies is to estimate the abnormal market returns in the period immediately following an event such as an oil spill, an environmental award, publication of independent environmental reports, allegations of illegal activity etc. Abnormal returns are the difference between actual returns and expected returns, the latter being modelled from the returns of the company over a specified period prior to the event. The abnormal returns reflect the impact of changes in investor expectations about a company following the event. Estimates are made for a short period, one or two days after the event, to avoid the influence of confounding factors such as publication of financial reports.

Most of these studies have been carried out in the US and have generally found a statistically significant impact of events on the market value of the companies concerned. The implication is that financial markets, in the US at least, do take account of environmental and social information about companies. The studies have addressed specific environmental



events and more generally, events indicative of ethical behaviour or corporate social responsibility.

### *Environmental Event Studies*

Numerous studies have been conducted of investor response to environmental events, both negative events such as oil spills, and release of information on emissions and positive events such as environmental awards (Box 9). All the studies identified so far that relate to the US have found a significant effect of environmental events on the market value of the companies concerned, whether it be publication of independent environmental reports, the publication of the Toxic Release Inventory or environmental awards.

#### **Box 9 Environmental Event Studies**

##### **Shane and Spicer 1983**

The study examines the impact of media reports on the release of CEP studies of companies from pulp and paper, electric power, iron and steel and petroleum over the period 1970-1975. The authors found that on average the firms in the CEP studies experienced negative abnormal returns in the two days preceding newspaper reports on the CEP studies. These negative abnormal returns were larger for those companies that had low environmental performance rankings and lower for those companies that had high environmental performance rankings. They argue that the reason for this effect was that the CEP studies showed how far companies were from compliance with legislation and hence the likelihood of greater expenditure on pollution control than investors had previously perceived.

##### **Hamilton 1995**

Estimates are made of the difference between a normal return predicted by a market model and the actual return after the release of the Toxics Release Inventory to assess the extent to which investors reacted to the information about firm emissions. 75% of the sample was drawn from manufacturing sectors such as chemicals, paper, primary metals, petroleum and textile. The average loss of stock market value of each company was estimated at \$4.1 mn. The abnormal returns were found to be lower for firms for which information about emissions had been available previously. This was proxied by the number of superfund sites the company was associated with.

##### **Klassen and McLaughlin 1996**

The focus is on companies traded on NYSE or AMEX over the period 1985 to 1991. Estimates of abnormal returns are made for both positive events (a company receives an environmental award) and negative events (oil spill, gas leak etc). Abnormal returns were found to be statistically significant and on average 0.82% for positive events and -1.5% for negative events.

##### **Muoghalu, Robison and Glascock 1990**

The study examines the impact of hazardous waste mismanagement lawsuits on stockholder returns of US companies over the period 1977-1986. The sample consists of 128 initial lawsuits and 74 case settlements announced in the print media. 69 of the lawsuits involve petrochemical industries, 11 pollution management and control companies and the rest a mix of sectors. Abnormal losses of 1.2% of market value on

average were found at the time of the announcement of the lawsuit. No abnormal returns were found for the announcement of settlements suggesting that the financial implications of lawsuits are assessed at the point when the information first becomes publicly available. Pollution management firms are found to suffer the largest shareholder losses, 6.25% of market value on average.

#### White 1996

The study found that the signing of CERES principles by firms could result in positive abnormal returns for shareholders on the day of signing but a sample of only 6 firms was involved. On average, shareholders in these 6 firms had a 1.05% increase in the value of holdings the day after the signing.

One study found that an environmental event could have a financial impact going beyond the company most immediately concerned to other companies in the same sector. This may be because such an event can involve the threat of tighter regulation for the sector as a whole. Blacconiere and Patten 1994 studied the impact of Union Carbide's chemical leak at Bhopal, in India, on the share prices of 47 firms in the chemical sector. They found that firms with more extensive environmental disclosure prior to the accident experienced a less negative reaction from the financial markets. They suggest that investors interpreted extensive disclosure as a good signal given a possible tendency for firms to disclose good news and suppress bad news. A later study by Blacconiere and Northcutt (1997) which looked at market reaction to the Superfund Amendments and Reauthorization Act of 1986 also found some support for this hypothesis. Firms with more extensive environmental disclosure experienced a less negative reaction to the SARA announcements (although results were sensitive to the specific measure of extensive disclosure).

A similar effect but for companies in other sectors was found by White (1996a) in a study of investor response to the Exxon Valdez Oil Spill. White found that while there was a significant negative impact on Exxon's market value after the spill, companies from other sectors rated independently by CEP as having good environmental performance experienced a positive impact on their market value.

#### *Event Studies of Ethical Behaviour or Corporate Social Responsibility*

While there are numerous event studies on broader issues of ethical behaviour and corporate social responsibility, on closer inspection they are found to be mostly concerned with issues such as fraud and other illegal activities, product recalls and anti-trust suits. The study by Gunthorpe 1997 equates unethical behaviour with illegal behaviour (Box 10). Similarly, a review of 27 event studies of corporate social responsibility did not include any studies relating to social development and only three relating to environmental issues. The majority were mainly concerned with product recalls and law violations.

### **Box 10 Event Studies of Ethical Behaviour or Corporate Social Responsibility**

#### **Gunthorpe 1997**

The focus of the study was 69 companies listed on NYSE and AMEX. The study examined the financial market reaction to announcements in the Wall Street Journal over the period 1988-1992 that firms or senior management were involved in some alleged illegal activity. For reasons of ease of data acquisition, unethical behaviour is equated to illegal behaviour. The illegal activities examined include mainly fraud, but also kickbacks, patent infringement, conflict of interest, OSHA violation and EPA violation. The estimates of abnormal return indicate that the financial markets on average impose a statistically significant one-day penalty of 1.3% and 2.3% over a seven day period.

#### **Frooman 1997**

This was a meta analysis of 27 event studies of socially irresponsible or illegal behaviour, defined as an action which a firm chooses to take that substantially affects an identifiable social stakeholder's welfare. However most studies addressed product recalls followed by anti-trust suits and only 3 involved environmental issues (1 on CEP pollution ratings and 2 on EPA lawsuits). There were few relating to social development per se except occupational health and safety citations, airline safety violations and an Agent Orange lawsuit. The study found that abnormal returns are significant and negative across the studies and concluded that shareholder wealth is decreased when firms act in a socially irresponsible or illegal manner.

#### *Event Studies outside the US*

The majority of event studies have been conducted for companies in the US in a situation where there is some probability that legislation will be enforced and liability claims pursued. Three studies conducted outside the US, two in Canada and the other in Argentina, Chile, Mexico and Philippines are more varied in their conclusions than the US studies. The Canadian studies are of particular interest because the companies they address have little direct consumer contact. They are either mining companies or other primary resource-based enterprises. This is unlike the US studies which addressed more mixed samples of firms drawn from a number of sectors, primary and secondary.

One of the Canadian studies (Box 11) which focuses on companies appearing on British Columbia's "out of compliance" and "concern" lists did not find a statistically significant abnormal loss for the sample as a whole and only for small sub-samples. The authors suggest that this may be because the lists are not comprehensive and do not rank companies, or because the companies listed are in primary sectors and thus not in direct contact with consumers or because appearing on such a list does not represent a significant threat for the companies involved.

The other Canadian study (Box 11) was more conclusive, showing that stock market returns are affected by the settlement of lawsuits but not by the announcement of lawsuits. The results are however, different from a similar study carried out in the US (Muoghalu et al 1990 Box 8) which found that stock markets adjusted as soon as the announcement of a lawsuit was made. The authors of the Canadian study suggest that the difference in result

reflects the difference in the regulatory regime between the US and Canada. In Canada, lawsuits are typically long and fines low.

#### Box 11 Event Studies of Canadian Mining and Resource-based Companies

##### Lanoie, Laplante and Roy 1998

The study focuses on 19 companies appearing on two lists published periodically by the British Columbia Ministry of Environment over the period 1990-1993: 1) companies out of compliance with environmental regulation and 2) companies of concern because they are either near a regulatory threshold or generate high levels of pollution in a non-regulated activity. These companies were mainly resource-based and include a number of mining and minerals companies. The study did not find any statistically significant abnormal loss for the sample as a whole over the period 1990-1993 (they examine the first 5 lists published every 6 months or so starting in July 1990) or when the lists were analysed separately. When the authors split the firms that appear just once and those that appear more than once they do find a significant abnormal loss, but only when firms are listed for the second time. On this basis they argue that investors may require strong signals about a firm's bad environmental performance. They also look at a subsample consisting of the two firms that appear on all five lists and find significant abnormal returns when the firms are listed for the second time but not thereafter.

##### Lanoie and Laplante (1994)

The sample consisted of 47 events published in Canadian print media between 1982 and 1991: 12 announcements of violation of environmental regulation; 9 announcements of legal action taken against firms for violation of environmental regulations, 13 relating to suit settlements and 13 announcements of investment in emission control equipment. These involve firms in the pulp and paper, mining, petroleum and chemical sectors mainly which are listed on a Canadian stock exchange or are subsidiaries of an American corporation. The first two types of events are not found to be associated with any abnormal loss. This is in contrast to the results of Muoghalu et al (Box 9). Suit settlements are found to result in statistically significant abnormal losses but only for a small sub-sample of 7 cases where events have the same level of media exposure. Finally, announcements of environmental expenditures are also associated with statistically significant abnormal losses but again for only for small sub-samples of Canadian-owned firms (8 cases) or events with same amount of media exposure (4 cases).

The study in the Philippines and Latin America is also not very conclusive as it finds that capital markets react to the announcement of some environmental events but not others. The authors try to explain this by focusing on the nature of the event, arguing for example, that agreement with or recognition by the environmental regulator is more likely to elicit a stock market response than announcement by firms of environmental expenditure.

### Box 12 A Developing Country Event Study

Dasgupta, Laplante and Mamingi 1998

The focus is on 48 listed companies in Argentina (11), Chile (17), Mexico (10) and Philippines (10) associated with positive or negative environmental events over the period 1990-1994. The sample includes some metal companies (Argentina and Chile) and mining companies in Mexico and Philippines. The analysis is conducted at the firm level rather than for the sample as a whole.

It is found that that capital markets react to the announcement of environmental events in some cases but not in others. The authors try to explain this by focussing on the nature of the event. They argue that announcements by firms of investment in environment are less likely to elicit a stock market response than agreement with or recognition by the environmental regulator as some but not all of the latter events result in statistically significant abnormal returns. As for negative events, statistically significant decreases in market values are found when in most but not all cases where governments or citizens have complained about pollution record but with one exception not when there are court actions or fines. When government and citizen complaints are pooled they are found to have a statistically significant differential impact on market values when compared to all other types of negative events. Reductions in market value ranged from 4% to 15%.

On the basis of their results the authors argue that at the margin, environmental regulators should devote less resources to the enforcement of regulations and more to the collection, analysis and dissemination of information.

#### *Implications of the Event Studies for the Mining Sector*

The event studies, at least those conducted in the US, suggest that investors do take some types of environmental information on companies into account. Some of the studies include mining and metal companies and events related to them. But as with the studies that focus on accounting returns, the types of environmental event considered in the studies are highly specific and in most cases are restricted to the US. However, the study of the Bhopal disaster shows that investors do react to overseas events as well (Blacconiere and Patten 1994). What is not clear is whether they would react to events overseas of lesser magnitude and severity.

It also appears that the way investors react is quite context-specific. Where there is confidence in the enforcement ability of the regulatory regime as in the US, the announcement of a lawsuit against a company on environmental grounds will trigger a reaction in the financial markets. In other countries, where the regulatory regime is different, this reaction does not happen in the same way or at the same stage in the process from announcement of a lawsuit to settlement. Thus the results of the Canadian studies and the study in developing countries are somewhat different from those of the US.

A common criticism of event studies is that they provide no way of knowing if the change in market value following the event is an accurate reflection of the cost and benefit implications for the company. As Cohen (1998) points out, the event studies do not

compare the loss in stock value to the legal penalties and other costs incurred. Thus it is not known if the decline in value accurately reflects the losses actually incurred by the firms or whether it constitutes an additional penalty. Cohen (1998) suggests that in the case of the Exxon Valdez accident, there was an additional market penalty for Exxon. He estimates that the direct costs paid by the company for cleanup, fines and civil settlements were US\$8.9 billion, between US\$1.2 billion and US\$2.4 billion less than the loss in market value as estimated by Jones et al (1994).

Similarly, Lanoie et al 1998 argue that the changes in market value should be higher than the potential penalty imposed by courts and regulators. They believe that the change in market values will also reflect expectations that the company will be subject to closer regulator scrutiny in the future and that citizens and community may pressure the firm to reduce its emissions. They cite a study by Jarrell and Peltzman (1985) which finds that capital markets penalise producers of recalled drugs and cars more than the direct costs of legal penalties.

However it could be argued that environmental costs are different and less likely than product recall costs to be internalised in the market reaction because the people affected are not the consumers of the product. This is the conclusion drawn in a study by Karpoff et al 1998 (Box 13) who find that the market value losses on companies that are found to be violating environmental laws are similar in magnitude to the legal penalties imposed (fines and clean up activities). There is no additional reputation effect incorporated by financial markets because there are no other costs imposed on the firm. In contrast, firms accused of fraud suffer mainly reputational losses such as lost sales and legal penalties imposed are relatively minor.

### **Box 13 The Relative Impact of Legal Penalties and Reputation Costs on Market Value**

**Karpoff et al 1998**

The study examines data from 283 cases where publicly traded US companies over the period 1980-1991 were investigated, accused or settled charges of environmental violations of various kinds. The costs of legal penalties (fines, payments to damaged parties, compliance costs and cleanup expenses) were estimated for 117 of the 283 cases. Two-day abnormal returns are estimated for the initial press announcements of environmental violations for all 283 cases. On average they equate to  $-0.85\%$  implying a significant loss in market value but the effect is found to depend on the type of event. Announcements concerning allegation and filing of suits result in a statistically significant abnormal loss but settlement announcements have very little effect.

Market value losses experienced by the companies concerned are compared with the costs of the legal penalties imposed for 24 cases for which there is data available. They are found to be roughly equal implying that reputational effects are less important in affecting market value. The authors conclude that legal penalties and not reputational losses are most important in disciplining and deterring environmental violations.

The argument of the study above is that reputation costs are relevant when a company's social and environmental performance impacts on parties that it does business with e.g. consumers, employees and suppliers. There are three possible counter-arguments:

1. The situation may have changed since the period Karpoff et al studied, as environmental and social issues are more prominent now.
2. Financial markets do not adequately address the costs imposed on the firm by lost reputation and recognise only the most visible costs such as the legal penalties.
3. The influence of reputation in the study is being examined in a context where there is relatively good law enforcement and the event is an alleged or actual violation of law. Reputation may be more important in situations where firms are complying with local laws but NGOs and the general public expect them to do better. This is particularly relevant to the mining sector.

Part of the problem is that the event studies can only speculate as to why the financial markets react to these events in the way they do. Also it is not clear what aspect of the event it is that causes most reaction, the environmental impact and associated clean-up costs or the way the company handles the event. In the case of the Exxon Valdez accident, it has been claimed that Exxon's management exacerbated the damage to its corporate reputation through its reluctance to provide information on the nature of the spill (White 1996a).

For the mining sector there is strong evidence to suggest that a US company in the sector that is associated with a well publicised environmental event, whether positive or negative, will experience some financial market reaction. It is less clear whether this reaction will fully capture the cost or benefit implications for the company. As for events related to community or human rights impacts, which are of particular concern for mining companies, no studies have been identified which address these issues.

#### **4.4.3 Longer-term Market Value Studies**

Another common criticism of the event studies is that they are too short-term and do not establish what happens in the long-term e.g. to the market value of companies associated with poor environmental and social performance. Attempts to relate sustainability performance of a company with stock market returns over time run up against the problem of interpretation. An early study (Alexander and Buchholz 1978) found no statistically significant relationship but as they themselves point out, the result could reflect the immediate incorporation of new information about a company's performance in its share price, as suggested by the efficient market theory, rather than the lack of any relationship.

Four studies attempt to address the issue in different ways and all four find some evidence of a positive linkage between environmental and/or social performance and the market value of a company (Box 14).

Cormier, Magnan and Morard (1993) in a study of Canadian resource-based sectors find weak evidence that, the higher a firm's pollution in relation to regulatory standards, the lower its market valuation. Konar and Cohen (2000) examine the link between reputation and intangible asset values. They find that firms with poor environmental performance as defined by level of TRI emissions have lower intangible asset values. As TRI emissions can be perfectly legal, they attribute the impact on intangible asset values to a reputation effect.

Their results are consistent with those of a study of US multinationals (Dowell, Hart and Yeung 2001), one of the few studies that examine the overseas operations of companies. It finds that corporations employing stringent global environmental standards in their overseas operations tend to have higher market value (per dollar of replacement cost of tangible assets) than those adopting host country standards. A recent study (Little and Little 2000) which sets out to strip out the financial halo effect from the Fortune America's Most Admired Companies reputation rankings, finds a positive relationship between financial performance as measured by the price earnings ratio, and social performance as measured by the community and environmental responsibility criterion.

The weakness of all four studies is that they cannot provide evidence for the direction of causation.

#### *Relevance to the Mining Sector*

These studies highlight the importance of intangible assets and the role of reputational capital as one type of intangible asset. But the level of intangible assets is very sector-specific. Lindenberg and Ross (1991) estimate that consumer brand companies have q values (ratio of market value to replacement value of tangible assets) considerably greater than 1 while firms specialising in industrial products or commodities have relatively low q values. For example, for the period 1960-77 Coca Cola's q value was 4.2 while the average for primary metals producers was 0.9. Simon and Sullivan (1993) give similar results for 1985: for primary metals intangible asset value was 11% of tangible asset replacement values, implying a q value of 1.1. Brand equity value was estimated to be only 1% of the replacement value of tangible assets. For fabricated metals, intangible assets were even less important, with brand equity equal to -1% and intangible asset value equal to 7% of tangible asset replacement value.

Given the primary nature of the mining sector and the relative lack of importance of intangible assets and brand equity, it has to be questioned whether reputation is value relevant for mining companies. However, a recent report (ABI 2001) cites Monsanto as an example of a non-consumer-branded company which suffered from reputation problems and whose market value was affected as a result.

#### **Box 14 Studies of Long-term Impact on Market Valuation**

##### **Konar and Cohen 2000**

The environmental data used are 1988 TRI emissions expressed as pounds of toxic chemicals per dollar revenue of the firm and number of environment-related lawsuits in 1989. The authors estimate an equation for Tobin's q (ratio of market value to the replacement value of tangible assets) which includes as well as the two environmental variables the following financial variables: market share, industry concentration ratio, sales growth, advertising intensity, research and development intensity, firm size and import intensity in the markets for the firm's products. They then calculate the average intangible asset liability associated with environmental performance. They find that on average over the 233 firms in the sample the average liability is US\$380 million or 9% of the replacement value of assets. The loss is greatest for chemical, manufacturing, primary metals and paper industries and lowest for food products, transportation equipment and



petroleum. Most of the loss is accounted for by the TRI variable. The authors conclude that being sued does not appear to have a significant effect on firm valuation but that firms that voluntarily over comply with environmental regulations are rewarded by financial markets. However, they point out the problem of determining causation are highly reputable and profitable companies environmentally sound because they can afford to be, or does environmental concern enhance their reputation?

Cormier Magnan and Morard 1993

The sample consists of 26 Canadian companies from the pulp and paper, steel, metals and mines, and chemical and oil refining sectors, over the period 1986-88. Pollution performance is measured by the ratio between actual emissions and pollution standards for a pollutant considered representative of the sector (e.g. suspended solids for steel, metals and mines). The accounting identity: assets = liabilities + stockholders equity is used as the basis of a regression model in which the market value of equity is regressed against net monetary working capital, inventories, fixed assets, debt and preferred stock (all represented by their book values), the price earnings ratio (as a proxy for intangible assets) and the pollution index. The pollution index coefficient is found to be negative and statistically significant at the 10% level. In a second formulation all the financial variables are deflated by the book value of equity to assess the extent of green investing premium but the pollution index is shown to be non-significant at any accepted level. With a reweighted least squares regression, the pollution index was found to be negative and significant at the 0.08 level. The authors conclude that there is weak evidence that a firm's pollution performance negatively affects its market valuation.

Little and Little 2000

The hypothesis examined is that the non-financial components of corporate reputation explain a significant proportion of variation in firms' price-earnings ratios. The sample consisted of 141 firms included in the 1992 Fortune reputation index, for which financial performance data was available from Value Line. The reputation scores were first stripped of their financial halo. This was done by regressing financial performance data (log of sales, return on assets, long-term debt-to-assets ratio, debt equity ratio and current ratio) against each dimension of reputation. The residuals for each dimension were then used in a subsequent regression. The price earnings ratio was regressed against earnings per share growth and beta and the residuals for each dimension of reputation. This was done using standardised figures from 20 portfolios drawn from the sample. The only reputation residual variable found to be statistically significant was that of community and environmental responsibility.

Dowell, Hart and Yeung 2000

The focus is on the environmental standards of US-based multinational enterprises involved in manufacturing or mining over the period 1994-1997. The sample of 89 MNEs was drawn from the S&P 500 and the data source for environmental standards was the Corporate Environmental Profiles of the Investor Responsibility Research Center. Only MNEs with operations in countries with GDP per capital below \$8,000 were included. The market value of companies (as indicated by Tobin's q, the ratio of market value to the replacement value of tangible assets) is regressed against environmental standards and some control variables: R&D intensity, advertising intensity, leverage and multinationality. Environmental standards were based on the IRRC corporate environmental profile and

were of three categories: local – the corporation adheres to host country standards only; US – the corporation applies US environmental standards in all its operations; and stringent global – the corporation has its own internal standard that is stricter than any national standard. The results show that firms with stringent global environmental standards have significantly higher q values than firms in the other two categories. The authors acknowledge that there are several interpretations for such a result but argue that developing countries which use lax environmental regulations to attract foreign direct investment may attract poorer quality and perhaps less competitive firms.

#### 4.4.4 Hidden Value/Hidden Cost Approach

This type of study starts from the premise that financial markets are not addressing environmental and social performance of companies adequately and that capital allocations are being made on the basis of insufficient or misleading information. This means that share prices are not accurately indicating the discounted value of future cash flow. The implication is that there are hidden costs for investors in the case of companies with poor environmental and social performance, and alternatively sources of hidden value where companies are characterised by good performance and take a proactive approach to sustainability issues.

This is the basis of the methodology used by Innovest and other similar investment analysis organisations. Innovest summarises its approach as follows:

Innovest's EcoValue 21<sup>TM</sup> environmental ratings (ranging from AAA to CCC identify environmental risks, management quality and profit opportunity differentials typically not identified by traditional equity analysis. As a result EcoValue 21 ratings uncover hidden value potential for investors.

As Innovest's methodology is proprietary, it is not possible to comment in detail on its approach. It is however, primarily focused on environmental performance and in its individual analyses of companies there is little mention of the social dimensions of sustainability performance.

There is also the issue of demonstrating that this analysis is uncovering hidden value or hidden costs, not identified by other players in the market, and determining the time frame over which they will be revealed. A study carried out by Blank and Carty of QED International for Innovest (cited in ABI 2001) looking at the period 1997-2000 finds that the companies rated highest by Innovest outperformed the market in each of the four years with the magnitude of out-performance increasing each year. Moreover the volatility of their stocks was lower. This result also applied when the returns of highest rated and lowest rated companies in environmentally sensitive industries such as chemicals, utilities, mining etc were compared. This result therefore appears to provide evidence of a link between environmental performance and financial performance. However, it seems to suggest that the financial markets do recognise the financial implications of environmental performance and that the extent of hidden values and costs may have been overstated. An alternative interpretation of the results of the study is that the above-average returns to investors from

the Innovest portfolio reflected other attributes of the companies such as management quality and not necessarily environmental performance.

The approach taken by Repetto and Austin 2000 is to evaluate the financial implications of company exposure to environmental risk through a scenario approach (Box 15). Focusing on a single sector, the pulp and paper sector, they formulate scenarios involving different regulatory and market outcomes and estimate the likelihood of each scenario occurring, the extent of each company's exposure to the risks implied by each scenario and the financial consequences. At least half of the companies in the group were found to have expected financial impacts of 5% or more of shareholder equity. But their exposure to these risks was not reflected in their financial statements. On the basis of the findings the authors conclude that financial analysts could benefit from paying more attention to environmental issues. They also highlight the inadequacy of company environmental data reporting, for example on energy consumption, and the need for a standardised reporting protocol.

#### **Box 15 Evaluating Company Exposure to Environmental Risk**

The study focussed on 13 publicly traded pulp and paper companies in the US and consists of assessing the companies' exposure to environmental risks of different kinds, the probability of those risks materialising and their financial implications.

Impending environmental issues that could affect these companies were identified through discussions with senior environment executives of leading companies in the sector and their potential financial impact assessed. Scenarios were formulated incorporating the environmental issues with significant financial impact e.g. regulatory and market outcomes. Through consultation with industry and environmental experts the likelihood of each scenario was assessed. Each company's exposure to each scenario was assessed through a facility-by-facility investigation. The financial impact of each scenario was then assessed through estimates of regulatory compliance costs, site remediation costs, impacts on input prices and the ability of firms to pass on higher prices. From this information a probability distribution of potential financial outcomes for each company was derived. From this the expected impact on the net present value of company earnings over a ten year period was estimated.

The results showed that at least half the companies in the group faced expected financial impacts of at least 5% of total shareholder equity and some more than 10%. But some companies faced very little risk such that their earnings would be unaffected by the impending environmental issues.

These differences in company exposure to risk were not reflected though in their financial statements despite the requirement to disclose risks that are material to financial performance.

Source: Repetto and Austin 2000

### *Relevance to the Mining Sector*

This study demonstrates the financial implications of environmental risk and thus provides support for the argument that there are financial benefits to investors from examining more closely the environmental performance of companies and the context in which they operate. The sector addressed is a primary sector like the mining sector but is more vertically integrated and hence is less distant from consumers. The study considers only production facilities in the US. Moreover, the scenarios of exposure are based primarily on regulatory change directly and indirectly. Thus its conclusions depend on action being taken by government and assume that regulations will be enforced.

Applying this type of approach to the mining sector may be much more challenging. This is because the main issues concern companies operating in developing countries where regulations are not as strict and not well enforced and where human rights and community relations and reputation impact may be more important. Formulating and assessing the likelihood of scenarios and their financial implications may prove to be a much more subjective exercise. The main type of risk to be contemplated in the scenarios may be reputation risk rather than regulatory risk and as such more difficult to translate into financial terms. It would be more difficult than in the Repetto and Austin study to distinguish between material and non-material risks.

One study has attempted to examine hidden environmental costs in the context of the mining sector. A study commissioned by the United Steelworkers of America alleged that the environmental disclosures made by Phelps Dodge in its 1997 Annual Report were incomplete and misleading (USW 1998). It is claimed, for example that the Annual Report did not mention environmental controversies and community opposition at the local level and that its estimate of clean up of a contaminated site was significantly less than that made by the courts. It is notable that this study deals only with environmental disclosures and only for the US operations of Phelps Dodge, although the company has operations in numerous countries. This may reflect lack of information and also greater difficulty to assess financial implications.

## **5 Barriers to Financial Institutions Addressing Sustainability Performance**

Different types of financial institution have an interest in the mining sector and this affects the type of barriers to some extent. Commercial banks providing loans for project finance may have more resources to address environmental and social issues related to the specific project but will be less interested in the performance of the project after the loan has been recovered. The overall sustainability performance of the company involved may be of less interest although the track record of the company will be important in determining the approval and conditions of the loan. This does little though to affect the performance of the company at its other operations. For this reason the asset management institutions which invest in mining companies are crucial, as they are not evaluating incremental projects but the performance of the company over its various operations worldwide.

The surveys of financial institutions discussed in Section 4.3 have found that asset management institutions have so far shown less interest in environmental and social issues than those involved in project finance. However, the studies in Section 4 relating environmental and social performance to stock market returns suggest that equity markets do recognise differences between companies in their approach to sustainability issues. The strongest evidence is provided by the event studies. Moreover, an event related to a specific company may affect other companies in the same sector and even in different sectors as investors adjust their expectations.

But, it may be that the reaction of the financial markets comes too late. The environmental and social performance of companies is not addressed by equity markets until a strong signal is sent or an environmental disaster occurs. Companies that invest routinely in environmental management systems to manage risks and prevent problems from occurring may not necessarily be rewarded by the financial markets. Where they are rewarded, it may be for reasons outside their immediate control. An accident affecting another company may cause investors to pay more attention to environmental and social performance and to the level of disclosure on such issues. The studies also suggest that it is only for larger companies that there is any response from stock markets to environmental issues. This is presumably because of the costs of information gathering.

While the barriers to financial institutions addressing sustainability performance depend to some extent on the type of financial institution and transaction involved, there are some common issues. The UNEP Survey of financial institutions found that the most significant obstacles to integrating environmental issues into decision-making were translation of environmental impacts into financial implications, availability of comparable data between companies and a perception that environmental issues are not material to profitability (UNEP/PWC 1999). This is echoed by the US EPA Environmental Capital Markets Committee which, as well as highlighting problems with imprecise environmental terminology and lack of information exchange, takes the view that only when leading firms in many sectors can quantitatively demonstrate the contribution of their environmental strategies to operating margins and net profits will they be rewarded by the financial markets (US EPA).

Similar issues were raised at the World Bank/UNEP/MMSD conference on Finance, Mining and Sustainability held in April 2001. There were calls for improved metrics for the sustainability performance of mining and for agreement on a common set of benchmark standards against which comparisons could be made. It was also suggested that the linkages between sustainability performance and profitability needed to be made clearer for institutional investors.

Initiatives like the GRI are attempting to improve the quality and consistency of company reporting on environmental and social issues and considerable work has been done on establishing indicators for the mining sector (see Warhurst et al 2002). Certification schemes have been set up for other sectors and their application in the context of the mining sector is being studied (Higman and Nussbaum 2001). This report focuses on the other two issues identified: translating sustainability issues into financial terms and demonstrating that sustainability can be material to profitability.

## **5.1 Translating Sustainability Issues into Financial Terms**

While backward-looking information on a company's environmental and social performance is useful, it is forward looking information on the sustainability-related risks and opportunities facing a company in the future that is most needed. Perhaps the most important barrier for financial institutions to take account of sustainability is the uncertainty involved in identifying environmental and social risks and assessing their financial implications.

As discussed in Section 4.4.4, Repetto and Austin (2000) provide a methodology for examining the exposure of companies to environmental risks but the data requirements are considerable and there is a certain amount of subjectivity involved in formulating scenarios and assessing their likelihood. It is notable that even for company operations in the US they were not able to get all the data they needed e.g. to formulate climate scenarios. Moreover, they were looking at environmental issues and risk exposure of US operations only in a context where the most significant risks were related to impending regulation. Applying a similar methodology to mining, addressing both environmental and social issues in various countries would be very challenging. This is exacerbated by the fact that the risks concerned in the mining sector go beyond legislative change in the near future and are more about reputation and changes in society's expectations. In some overseas operations companies are operating to higher standards than required by local legislation e.g. in Chile, mining EIA have used stricter standards than those applied elsewhere in Chile and in many cases refer to aspects not even regulated by Chilean legislation (Borregaard and Dufey 2001). Some NGOs expect mining companies to go beyond local legislation and apply international standards e.g. Mineral Policy Institute, Australia. Changes in society's expectations regarding an industry are difficult to predict and any predictions made by mining companies could have a self-fulfilling element to them. If these predictions are made public, they could affect the expectations of NGOs and regulatory agencies.

Such analysis would be beyond the resources of most equity analysts and even specialised research services. Given the low returns to shareholders from mining experienced over the last 15 years (Elliott 2001) the costs of such detailed analysis might not be justified by the returns. While it may be in companies' interests to conduct such analysis (and Rio Tinto is engaged in such analysis - Elliott 2001), it may not be in their interest to make the results publicly available. Financial regulators, following the lead of the SEC in the US are increasingly requiring companies to report on their approach to managing risk. But as the Repetto and Austin report shows, such requirements need to be backed by enforcement on the financial regulator's part if they are to result in comprehensive disclosure of risks.

The response of the SEC to the Repetto and Austin report is revealing. The SEC stated that it lacked resources to conduct its own assessments of company environmental liabilities. Moreover, its lawyers questioned whether there could be any meaningful measure of financial liabilities that companies choose not to disclose (IRRC 2000).

## **5.2 Demonstrating that Sustainability Issues are Material to Profitability**

Wider dissemination of approaches to estimating the financial implications of sustainability performance, like the scenario approach discussed in the previous section will no doubt help in overcoming perceptions. However, in cases where improved sustainability performance does not contribute to profitability, then no amount of improved information or new methodologies can change the perception of financial markets. As seen in Section 3.4 empirical studies at the company level of the links between financial performance and sustainability performance do not provide conclusive evidence of the business case. Although representatives of financial institutions highlight the business benefits from addressing sustainability issues they also express concern about the cost implications of voluntary initiatives for improvement in the sector (Holden 2001a).

The implication is that it is important to consider both the barriers to financial institutions addressing sustainability and the factors that drive the business case for sustainability.

### **5.2.1 Government Regulation and the business case**

The business case implies a market-driven approach in which companies will be driven by self-interest to improve their sustainability performance. Yet many of the studies purporting to demonstrate the business case rely on the action of the environmental or social regulatory agency. This is either directly, as in the event studies where investors are assumed to factor in the financial implications of regulatory action such as lawsuits against a company, or indirectly, where concerns about reputation are attributed to concerns about future increased attention from the regulatory authority.

The studies examined in the previous sections provide a clear indication that regulatory change related to environment will involve additional costs and risks for companies but for some more than others. In particular, the Repetto and Austin study makes it clear that investors can gain or protect themselves from losses by taking a forward looking approach to regulatory change and considering how it will affect the companies they invest in.

The event studies highlight the context-specific nature of the reaction of financial markets to environmental events. Investor expectations about the implications of an event depend on the nature of the regulatory system in the country in question and the extent to which legislation is enforced, or perceived to be enforced.

The conclusion to be drawn is that the stronger the regulatory system relating to environmental and social performance, the more likely there will be a differentiation made by financial institutions between companies on the basis of these issues. The business case depends on the regulatory system and cannot be a substitute for it.

### **5.2.2 The Role of Reputation**

Where neither tighter regulation nor market reaction can be expected to drive improvement in environmental and social performance, then concern about reputation is the key issue (although as mentioned above reputation sometimes implies a concern about increased

attention from the regulatory authority). Consumer reaction is often cited as the main loss here but this is of little relevance to most mining companies as they sell mainly intermediate goods. Investor reaction is cited as another loss but this seems a bit circular. Ultimately investors should be concerned about the effect of loss of reputation on future cash flow of the company, for example from loss of sales. Unless they are driven more by ethics than by financial returns, they should react only if they believe that other stakeholders such as consumers or regulators will. Community and employee perceptions may be the most important explanatory factor. Nevertheless, mining companies are concerned about their international image as well as their local image as demonstrated by a recent survey of the mining sector in Chile (Borregaard and Dufey 2001).

Much depends on whether loss of reputation can be transmitted to other players in the minerals production chain or to supporting financial institutions. If the companies at the end of the chain to which mining companies sell, i.e. the ones that sell to the final consumer, feel tainted by association, then the reputation effect may be transmitted. This has happened to some extent in the forestry sector where supply chains are shorter. But it is less likely in most parts of the mining and minerals sector (except for high value products like diamonds) because of the complex nature of supply chains and the commodity nature of the product. NGOs have therefore focussed attention on the financial institutions that support or service the mining industry rather than the companies that buy or use minerals. For example, after the Baia Mare cyanide pollution accident in Romania, Dresdner Bank, which had invested US\$8.5 million in the Romanian firm concerned, became the target of an NGO campaign (CEE Bankwatch 2000).

Many of these financial institutions have a closer consumer connection than the mining industry. For this reason they may have more to lose in terms of consumer reaction from their own loss of reputation through association with mining companies with alleged poor environmental and social performance, than from the effects of loss of reputation on mining company cash flow.

Government regulations on disclosure may be an important determining factor of the extent to which loss of reputation can be transmitted to other players. This applies particularly to the rules on disclosure of the identities of those investing in a company or those companies that are supported by a financial institution. The rules vary considerably by location. For example, Canada's Export Development Corporation is exempt from the Access to Information Act and thus is not legally required to disclose which companies it finances. In contrast, its equivalent organisations in the US (OPIC and Ex-Im Bank) are both subject to the US Freedom of Information provisions (Environmental Mining Council of BC)<sup>3</sup>. Similarly, the reason given for the decision by Huntingdon Life Sciences to move its company registration<sup>4</sup> from the UK to the state of Maryland in the US was that according to the rules there, the names of shareholders in companies do not have to be disclosed to the general public and can only be disclosed to other investors who have held a stake of 5% for at least six months (Clark 2001).

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<sup>3</sup> In response to recommendations for increased disclosure from a Government review, EDC is now developing a disclosure policy (EDC 2001).

<sup>4</sup> This was through acquisition of Huntingdon Life Sciences by Life Sciences Research which is incorporated in Maryland, US and was established solely for this purpose (HLS 2002).



## 6 Conclusions

### 6.1 *Is there a business case at the company level for sustainability?*

The business case can be considered at two levels: companies and the financial institutions that support or service them. There are numerous theoretical arguments as to why companies can increase profitability and improve their economic performance by improving their sustainability performance. But the evidence is patchy. Case studies conducted of individual company benefits are too partial identifying some benefits but not necessarily detailing all the costs. Moreover, few go beyond estimates of future costs and benefits to an evaluation of actual experience. No positive mining case studies have been identified but the negative experience of specific mining projects show that mining companies can incur significant costs as a result of inadequate attention to environmental and social issues.

Multi-company statistical studies examining the business case at the company level have mostly been carried out in the US, concentrate on a limited set of issues and have produced conflicting results. Only one study of this nature outside the US was identified and it did not find any statistically significant relationship. Even where studies find a positive relationship between sustainability performance and financial performance, various weaknesses of the analysis such as determining the direction of causation are acknowledged.

There is also the tricky question of what is sustainability performance and how to measure it in a way that can be rigorously correlated with financial performance. Many of the studies do not distinguish between easily internalised aspects of sustainability performance e.g. product recalls and external aspects e.g. environment, human rights etc. The few studies which examine these aspects separately are more convincing but do not find any statistically significant link between financial performance i.e. profitability and external aspects e.g. community and the natural environment.

The studies have been mainly of large firms in a mixture of sectors, many of them consumer-oriented (except for one study which concentrated on the pulp and paper industry). It is not clear that they are particularly representative of mining, which is characterised by its limited contact with the final consumer. Even though many of the companies concerned operate overseas, the analysis is often limited to US operations because data is more readily available for these. Therefore many studies do not address the issues that are of most concern to mining companies that of operations overseas in countries where regulation is not strict or not enforced and where community relations and human rights issues could be key.

The statistical evidence on financial and sustainability linkages at the company level is not very conclusive. Moreover, the studies carried out so far are not very representative of the main sustainability issues facing the mining sector.

## **6.2 What evidence is there that financial markets take company attention to sustainability performance into account?**

There is evidence from surveys of analysts and financial institutions that sustainability issues are increasingly being taken into account. Asset management institutions have shown less interest apart from the SRI funds.

Evidence from the statistical studies of the relation between the sustainability performance of companies and financial market derived indicators is more mixed. Strong evidence is provided by the event studies that equity markets respond to environmental events at least for companies in the US. All the studies identified of environment events in the US found a significant effect on the market value of the companies concerned. Moreover, this effect extended to other companies in the same sector or even in other sectors. Studies conducted outside the US are less conclusive highlighting the possibility that investor response to events may be influenced by the context, in particular the characteristics of the regulatory system. It is also less clear whether financial markets take account of the social performance of companies, or whether the sustainability performance of smaller, less visible companies is considered. More importantly, investor behaviour appears to be a reaction to events rather than a result of a forward-looking assessment of how a company is dealing with sustainability issues and how this will affect its future cash flow.

Thus the evidence suggests that a mining company in the US associated with a well-publicised environmental event will experience some stock market reaction. Whether the change in market value will fully capture the cost or benefit implications for the company is less clear. Outside of the US, the evidence is less conclusive. But it seems likely that the reaction of equity markets to environmental or social events comes too late. Companies that have systematic approaches for dealing with environmental and social issues may not necessarily be rewarded by the financial markets.

## **6.3 What are the barriers to financial institutions addressing sustainability performance - and how can they be overcome?**

Surveys of financial institutions have highlighted the following barriers:

- Lack of comparable data
- Difficulties in translating environmental and social issues into financial issues
- Perception that environmental issues are not material to profitability

A number of initiatives such as the GRI have been developed to improve company reporting, and certification schemes are being explored as a way of providing objective assessment of performance. The other two barriers may be more complex to deal with.

Translating environmental and social issues into financial terms requires a forward-looking approach to assess the risks and opportunities facing a company. The Repetto and Austin 2000 study of the pulp and paper sector provides a methodology but the data requirements are considerable and there is considerably subjectivity involved. Applying the same type of approach to the mining sector would be much more challenging because of the need to

address operations in developing countries and less tangible issues such as community relations and human rights and changes in society's expectations. Moreover, the formulation of scenarios may actually drive the expectations of NGOs and regulatory agencies and thus be self-fulfilling.

It is unlikely that financial institutions will consider such analysis cost-effective. Companies may conduct such analysis but are unlikely to disclose the results. Even though they are increasingly being required by financial regulators to report on their approach to managing risks including sustainability related risks, enforcement has proved difficult.

Overcoming the perception that sustainability issues are not material to profitability may require more than better methods for estimating their financial implications. If environmental strategies etc do not contribute to profitability, then no amount of improved information can change the perception of financial markets. It is therefore important to examine the factors that drive the business case and consider how positive linkages between financial performance and sustainability performance can be encouraged. Two factors are key: regulation and reputation.

The business case depends on the extent of regulation or government action to internalise externalities whether through command and control regulation or economic instruments. While investors have been shown to respond to environmental events, their reaction depends very much on the nature of the regulatory system and the extent to which legislation is enforced.

For companies operating in developing countries or in relation to issues that are not regulated or only lightly regulated, the issue is about how far should they go on a voluntary basis. Because of the nature of the mining sector, benefits through differentiation of the product in the market do not seem likely except in some niche markets. The business case derives more from good relations with local communities and from reputation. Externalities will be internalised if damage to company reputation has economic or financial implications i.e. affects its future cash flow. The evidence for this does not seem as strong as often claimed. There is some empirical evidence suggesting that the market value impacts on companies following environmental events equate to the legal penalties imposed.

The indirect effect on the reputation of financial institutions associated with mining companies may be more important than the effect on mining company cash flow. But much depends on the extent of disclosure of the identities of the financial institutions involved.

If financial institutions, and in particular asset management institutions, are to play a role in leveraging environmental and social change in the mining sector then the conditions in which the business case can operate need to be created. Improvements in environmental and social reporting are necessary but not sufficient. This implies the need for:

- More effective enforcement of environmental and social regulation
- Better enforcement of disclosure of company approaches to managing risks
- Greater transparency about the identities of the financial institutions involved in mining projects.

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