



Analytic framework:
establishing
standards
for good mining
health programming

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Led by Health Partners International and Montrose International, in partnership with the Institute for Development Studies and the International Business Leaders Forum, The Mining Health Initiative aims to expand mining's contribution to good health by marshalling evidence of good practice and leveraging existing structures and programmes to create standards of good practice for expanded partnership.

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HANSHEP, is a group of development agencies and countries established by its members in 2010 with the aim of seeking to work with the non-state sector in delivering better healthcare to the poor. Current HANSHEP members include the Rockefeller Foundation, Bill & Melinda Gates Foundation, AusAID, DFID, IFC, KfW, USAID, the World Bank and the Government of Rwanda. For more, information go to: www.hanshep.org

**ANALYTIC FRAMEWORK: ESTABLISHING STANDARDS FOR GOOD MINING
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ANALYTIC FRAMEWORK: ESTABLISHING STANDARDS FOR GOOD MINING HEALTH PROGRAMMING

Executive Summary

With its overall aim of expanding mining’s contribution to better health, UK Department for International Development (DFID) and the International Financial Corporation (IFC) on behalf of the HANSHEP Group², have commissioned the Mining Health Initiative to foster agreement on standards and norms for mining health programming that can serve to provide legitimacy to existing programmes and serve as a catalyst for increased health programming more widely.

This paper outlines an analytic framework to provide an evidentiary basis for establishing standards for good mining health programming. Developed in response to Terms of Reference (ToRs)³ issued by the DFID on behalf of the HANSHEP Group, it seeks to generate insight into practical standards that stakeholders from the mining sector would embrace and which would have legitimacy with larger health and development and corporate social responsibility communities. To meet this requirement this framework is both grounded in the literature and applicable to multiple, diverse real-world situations. It will provide the basis for a methodology that is straightforward to apply and relevant to the stakeholders, particularly the mining companies. Going forward, the framework will consist of a relatively simple core which can be adapted to programmes of differentiated scope in terms of population and breadth of condition covered.

The core framework focuses on the basic processes involved in the provision of health services, their linkages and effects on larger health and governance systems, and the benefits that accrue from those processes. In terms of cost estimation, analysis focuses the estimation of financial unit costs and marginal unit costs using standard step-down accounting methods (Conteh and Walker, 2004). It is worth noting that although consideration of economic cost is theoretically desirable, it will be of less interest to most stakeholders and of questionable practical utility.

The original mandate entailed a framework that would “allow costs and benefits to be compared from different perspectives”. Priority is given to assessment from the perspective of the mining company, wider society and government. The focus on industry benefits centres on productivity gains and reduced productivity losses. While from a societal perspective, focus rests largely on coverage, utilisation and, quality of services as compared with the public sector. Measures for both input and output are disaggregated by category of client—employees, family members, wider community. Where possible, we will consider disaggregation by gender as well as proxy poverty indicators.

A second aspect of the framework seeks to measure the extent to which such health interventions influence the broader aims of public institutions; how they have contributed

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³ See Annex 1.

to health system strengthening and facilitated state actors to improve public sector stewardship and governance. The framework will assess the degree to which each stakeholder has engaged with the programme and the extent to which this might promote, or constrain their pursuit of their overall objectives. This framework is focused in positive terms on actual programming and it avoids the confusion that can come with attribution of intent as well as the categorisation of what constitutes partnership, corporate social responsibility, or simply good investment.

1. Introduction

With its overall aim of expanding mining's contribution to better health, DFID and the IFC, on behalf of the HANSHEP group, have commissioned the Mining Health Initiative to foster agreement on standards and norms for mining health programming that can provide legitimacy to existing programmes and serve as a catalyst for increased health programming more widely.

The Mining Health Initiative will undertake a programme of work with three discrete phases over the course of 2012. In its first phase, the Initiative will both collate the evidence on the current state of activity as well as draw on economic and political economy theory to outline a “theoretical framework” to outline the costs and benefits of mining health programming from both a company and a societal point of view. In this framework, emphasis will be placed on health services, but will also include attention to the range of relations with government and civil society that can contribute to health system strengthening and better governance as well as increased public good will. The principle deliverables from the first phase of the Mining Health Initiative's work is to establish an evidentiary basis for establishing standards for good mining health programming.

In its second phase, the Initiative will translate the “theoretical framework” into a practice and undertake a series of case studies. Utilising established methodology to both assess the methodology and begin to catalogue what is happening on the ground. The second phase will conclude with a set of stakeholder consultations whereby representatives from industry, government and others will have an opportunity to review the case studies, their initial inventory of findings and interrogate a provisional draft set of standards. These standards will explore what constitutes good programming in mining health and how these standards apply across the range of programme scope options in terms of conditions as well as populations covered.

Then, in its third phase, the Initiative will revise and refine the range of tools developed in phases one and two and work further with key stakeholders to secure ownership, buy in and legitimisation of the good mining health standards implied in the Initiative's overall objective. In this phase, scope will include securing key opinion leaders from academia and the multi-laterals, from industry and allied professions, to confer referential legitimacy for the overall framework. At this point, the Initiative will be working closely with representatives of industry as well as members of the HANSHEP group to explore the possibility for concrete collaboration and potential partnership.

There are two additional points worth noting. First, although it is presumed that standards of good practice can be developed, validated and endorsed, it is assumed that the application of this framework will be context specific. Second, because this framework is focused in positive terms on actual programming, it avoids the confusion that can come with attribution of intent as well as the categorisation of what constitutes partnership, corporate social responsibility, or simply good investment.

2. Cost Estimation

Following early negotiations about developing cost estimates related to the provision of mining health services and their possible attenuation, whether one adopts a company or societal perspective, early investigation into mining health programming revealed a basic insight: although there may be circumstances where multi-lateral funding, e.g., The Global Fund for AIDS, Tuberculosis and Malaria, may strengthen mining health programming, the Mining Health Initiative literature review suggests that from a financial costing perspective, funding comes exclusively from the mining companies and not from the governmental public sector. Therefore, discussion of costs and costing is consolidated in the section 2.1 that follows, while discussion of benefits is differentiated in to the company and the societal perspectives in sections 3.1 and 3.2 respectively.

2.1 Estimating Financial Costs

From the perspective of the mining company, the primary issue to be resolved by cost-benefit analysis is the extent to which the expected direct or indirect benefits from an investment in health services will offset their actual expenditures on the required resource inputs. Those expenditures will depend on the quantities purchased and the prevailing prices at the time of purchase. However, it may often be evident that these prices do not necessarily reflect the economic value of all the resources used. The most obvious example relates to goods that are subsidised either by the national government, international donors or other agencies. The South African government supplies TB drugs (possibly provided by an international donor) to the value of around £300,000 each year to support programmes managed by AngloGold Ashanti (2010: p57). In many countries, various organisations will often provide volunteers to assist in company-funded community malaria education and environmental management programmes, or the distribution of insecticide treated bed nets (which are also sometimes provided by donor agencies).

Determining appropriate prices for such inputs is sometimes relatively straightforward, as in the case of the TB drugs indicated above, where it simply reflects those paid by the relevant government agency. On the other hand, deciding how to value a unit of voluntary labour is typically a highly problematic exercise involving a series of judgements as to the type of labour required and the wage rates on offer in comparable employment. In spite of such difficulties, it will be important in this study to consider economic costs where the associated resources seem likely to have made a substantial contribution to the overall value of a mining company health initiative. Resources have 'opportunity costs'. Publicly funded drugs used in a company clinic could be diverted to a local private health provider, or to expand services in a public hospital, if that was seen as a more 'productive' option. Volunteers involved in community programmes sponsored by a mining company may be less inclined to contribute additional time to similar activities run by the relevant local government. There may also be issues relating to sustainability. If a programme is to some extent dependent on subsidised drugs or volunteer labour, how would it be affected if subsidies were ended, or local communities became disaffected and withdrew cooperation?

In particular, economic costs would need to be carefully considered in any direct comparison of the costs of mining company interventions with those carried out in the public sector. Here also, the price of many goods and services may not reflect their 'opportunity cost', often a result of cross-subsidies between different components of the public sector. For such reasons, economic cost estimation procedures will be reviewed in section 2.7.

2.2 Recurrent costs

The most important items under this heading will be personnel and medical supplies, especially drug supplies. The staff of interest for present purposes may include not only those directly involved in the specific healthcare intervention (doctors, nurses, health assistants, community health workers, trainers, supervisors, etc.) but medical-support staff (pharmacists, laboratory technicians, etc.) and administrative support staff (managers, administrators, cleaners, guards, drivers, etc.). One initial task will be to assess which of these categories make a substantial contribution to the service under study and which can reasonably be disregarded.

Personnel costs should include wages/salaries and all other expenses directly associated with all those who are contributing their labour time (employees, casual workers, etc.). For a given individual this might consist of take-home pay (including overtime, allowances, bonuses etc.), tax and insurance, social security, and pension contributions. The value of any non-cash benefits, for example housing, food, transport, etc. should also be estimated, using the prices of comparable items and included.

Expenditure on supplies should in theory include the value of all materials used up as inputs to intervention activities over a given year. Note that this definition does not include materials kept as inventory stocks, but does include losses, for example where stock passes use-by dates, or is stolen or damaged. Common recurrent expenditure items will include drugs, reagents for tests, vaccines, syringes, needles, cotton wool, bandages, slides, stationery, etc... Again, there will need to be a prioritisation to match the effort required to the importance of an item in the overall expenditure total. In principle, items such as thermometers which will last more than one year are classified as capital goods. However, in practice it is customary to include all such items purchased in a given year with a value below a given cut-off (often \$100) as part of recurrent expenditure. Again, in principle, the total cost of supplies should be inclusive of freight costs to the point of use if this adds significantly to the overall value.

2.3 Capital costs

The traditional approach to estimation of the value of capital goods used in a health intervention can be set out as follows (Creese and Parker, 1994):

1. identify all capital goods in current use
2. estimate replacement cost (including freight etc.)
3. estimate likely number of years from purchased 'working life'
4. estimate the average annual cost of each capital item in terms of a simple straight line depreciation (C/N).

The main items of capital expenditure for the interventions discussed here will probably include medical equipment such as x-ray machines, microscopes, centrifuges and

refrigerators. It is possible that some interventions will also purchase or use company vehicles to the extent that they should also be considered here. Buildings such as hospitals, health centres, clinics, offices, staff-houses and warehouses may pose particular problems in terms of valuation, given that it may be difficult to assess if they would have been used for some other purpose if the intervention had not been implemented.

For example, a company health centre may originally have been built to provide primary care to employees. If it is then used to provide an HIV-AIDS clinic for community members on days when it would not otherwise be open, it is clear that in economic terms this represents the use of a capital resource but it is difficult to argue that a notional rent should be set as part of the financial cost of the clinic to the company. The standard rule of thumb for valuing buildings, where considered appropriate, is to estimate the full cost of construction at current prices (including land value, construction costs, infrastructure, architect fees, etc.) add 10% for 'fixtures and fittings' and assume a life of 20 years.

2.4 Sources of cost data

Where possible, the aim in the costing exercises should be to collect data on expenditures, quantities and prices for all items - the 'ingredients costing approach' followed by Charalambous et al, (2007) in the cost analyses undertaken by the Aurum Institute for Anglo American, as described above. This will allow cross-checks both as to the reliability of primary data and as to intermediate calculations. It will also be valuable in partitioning expenditures between different activities and allow estimation of economic costs when this is considered necessary. In addition, expenditure data is often available only in aggregate form e.g. total expenditure on fuel, which does not allow disaggregation to intervention level.

Personnel costs should be relatively straightforward, with data usually available on the time spent on different activities either available from time sheets or possible to estimate in discussion with the individuals involved. Inventory records at different levels are one of the best sources of data on the quantities of supplies. They will show withdrawals to specific uses by date and can be combined with prices obtained from supply invoices or order forms (note that prices should include transport costs) to obtain financial cost estimates. Where vehicles are used to a substantial extent, their operation and maintenance costs may need to be assessed. Again, the aim, if possible, should be to obtain quantity data, in this case mileage information from vehicle records that can probably be combined with existing company estimates of the cost per mile. Operation and maintenance costs for buildings can reasonably be obtained from aggregate expenditure data on items such as utilities (electricity, water) and buildings maintenance. Rough estimates of floor space can then be used to calculate the appropriate proportion to be included in the cost of the intervention.

2.5 Cost allocation

Much of the development literature on health sector costing is disease-specific (AIDS, TB, malaria, measles, diarrhoea, etc.) and tends to focus on the vertical delivery of relatively standardised treatment protocols through stand-alone primary facilities, where it is often relatively easy to allocate joint or overhead costs (e.g. Walker et al, 2011, Rosen et al., 2009). This may be the case with some of the interventions addressed in this project, for example where an employer establishes a clinic specifically intended to

provide HIV prevention and treatment services to their workers. On the other hand, there are many cases where an individual mining operation is providing a range of health services, some of which are embedded in its overall day-to-day activities. Medical personnel may spend part of their time on the provision of standard occupational health services – for example, undertaking health promotion or treating work related injuries – and part on providing ante-natal care for the local community. The same office workers may be ordering additional mining equipment or replenishing anti-retroviral drug supplies, both may be delivered on the same company vehicle.

In some cases the service may be treated as a specific intervention with its own accounts. In other cases, the proportion of a shared input cost can sometimes be readily estimated. For example, if the same pain relief drug is used both in the treatment of industrial injuries and in a company managed ANC clinic, there may well be data on the relative quantities prescribed that will allow estimation of the proportions of the total drug cost to be allocated to each. It is also possible that apportionment of some shared inputs may be neither practicable nor necessary. Drugs may be transported on vehicles that are making other deliveries. Some services may be provided using space in buildings that would otherwise be unused at that time. Incremental expenditures on lighting and water may be negligible. In the case of a mining operation there may be little point in attempting to estimate the proportion of senior management time allocated to overseeing the activities of a small workplace clinic.

In general, however, it will be necessary to at least consider the incremental shared resource implications of a given service, both in terms of personnel and material needs and the associated administrative and management overheads. In terms of cost analysis, this situation can be seen as similar to that confronted by those seeking to consider the operation of a specific department in a hospital and is commonly addressed by the procedure known as step down cost accounting (SDCA) (Conteh and Walker, 2004). The aim is to systematically allocate costs to the services under investigation, carefully setting out the steps in the estimation by following the flow resources through the enterprise and using the accounts available at each stage.

The initial step entails identification of relevant cost centres, typically involving consideration both of the specific objectives of the costing exercise and the relative ease of obtaining data, in the present case primarily from the mining company accounts. Cost centres are usually classified as *direct*, the actual delivery points for health services, *intermediate*, activities such as drug stores and laboratories that specifically support service delivery, and *indirect*, general overheads such as building costs, transport and administration that are seen as contributing resources to service delivery.

The next stage involves identification of all line items in the accounts that are relevant to any of these cost centres. The categories under which these line items would fall mirror those discussed above. Table 2.1 provides a simplified example

Table 2.1 Line items by cost centre

	Total cost	Indirect	Intermediate		Direct		
		Central Services	Pharmacy	Laboratory	Occupational Health	HIV-AIDS Clinic	Other
Personnel							
Doctor					0.8	0.2	
Nurse					0.5	0.5	
Pharmacist				1			
Secretary		1					
Clerical officer		1					
Drug store							
ART				1			
Aspirin				1			
Dressings				1			
Laboratory							
HIV test					1		
TB test					1		
Malaria test					1		
Equipment							
Medical equipment							
Office furniture							
Administration							
Communications							

The full cost of each of these line items is then estimated using the procedures described above and entered into the first column of the table. An attempt is then made to allocate indirect costs to either intermediate or direct cost centres on the basis of quantity data, for example personnel costs would often be allocated according to time spent on different activities in each centre. Table 3.2 below gives some examples as to how this might be best undertaken for different types of resource. Once all indirect costs have been allocated, intermediate costs are allocated to direct cost centres using the same basic procedure. Because personnel costs are often the largest component of overall intervention expenditure, it is important that considerable attention should be paid to their allocation between activities. As indicated above the other major component, drug costs, can often be very reliably allocated using existing monitoring data on quantities.

Table 2.2 Quantity variables used to allocate costs for selected resources

Input	Quantity variable used to allocate cost
Personnel	Time
Supplies	Number of units/weight/volume
Equipment	Time
Building space	Time/area
Building occupation and maintenance	Time/area
Vehicles	Distance/time
Vehicle operation and maintenance	Distance/time

Adapted from Creese and Parker, 1994, p42.

2.6 Unit costs

Having calculated the full financial cost for each cost centre, activity or utilisation, data can be used to estimate unit costs – *i.e.* the cost per unit of output for a given cost centre. The unit of output will depend on the type of activity. An HIV-AIDS clinic might focus on patient visits or months of treatment, a malaria prevention programme on the number of bed-nets distributed.

2.7 Economic costing

As discussed above, the aim of economic costing is to identify key items in the financial costing exercise and consider if the price used by the company reflects the price that would be most appropriate from an economic perspective in which it is assumed that every resource has an opportunity cost. The main areas of interest in the present study are donated or subsidised drugs and voluntary or below cost labour. If, as suggested, the financial costing study has attempted to find data on quantities and prices, in addition to recorded expenditures, the only requirement is to repeat the analysis using alternative prices for these items that better reflect the opportunity costs. A more problematic area that almost certainly cannot be addressed in this study is that of any government tax allowances and other subsidies. In principle, it could be argued that these might be seen as reflecting the social benefits delivered by the company⁴. However the details of such arrangements may be confidential and not linked directly to the provision of health services.

3. Benefits Estimation

As noted earlier, in contrast with costs and costing, discussion of benefits is broken out by perspective.

3.1 Benefits: Company Perspective

As discussed above, by far the largest investments by mining companies in Africa on health services, over and above those associated with traditional occupational health issues, have related to HIV-AIDS. It is not surprising therefore that much of the literature on assessment of the costs and benefits of providing such services has also focused on this topic. While the magnitudes of both benefits and costs will obviously vary, their

⁴ One estimate suggests that US company health insurance schemes receive some \$100 billion each year in government subsidies (Synthesis Project, 2011), presumably as an alternative to public spending on health.

nature may be relevant for at least some other services. As described above, in practice the range of ‘disease specific’ services provided by mining companies is heavily focused on HIV-AIDS, TB and malaria. Each has well defined treatment protocols and productivity implications to a greater or lesser extent well characterised.

Typically in the HIV-AIDS literature, the definition of ‘benefits’, from a company perspective, has been linked to the avoidance of disease-related costs. The apparently inexorable increase in HIV prevalence rates among mining workers around the turn of the millennium was one of the driving forces in the provision of additional funds for prevention and the introduction of ART programmes. There was a period before this when the aim was to isolate the mine from those with the virus (Rajak, 2010: 554). However, given the increasing likelihood that a substantial proportion of employees would inevitably become infected, it was determined that the financial position of the company would be substantially better with, as compared to without, such programmes. The approach adopted by the companies that have undertaken or commissioned economic appraisals of health service interventions has been to create a theoretical counterfactual, estimating what costs, primarily in terms of reduced productivity, they were likely to have confronted if they had taken no action. These studies were typically based on existing time series data, tracking relevant cost and productivity variables over a period which included the introduction of the intervention. Comparing the total estimated expenditure under the ‘no action’ scenario to the actual outturn provided a means of estimating net ‘benefits’.

Table 3.1 attempts to set out the possible direct and indirect costs associated with employees suffering from HIV-AIDS⁵ that might be reduced by effective prevention and treatment programmes. The direct medical care costs have been discussed above. In addition, the table identifies other possible direct costs relating to: payments to individuals who are too ill to work; the costs associated with replacing those individuals; higher insurance premiums if HIV prevalence rates are rising; and the increased risk of accidents in the workplace.

Table 3.1: Potential direct and indirect costs associated with employees with HIV/AIDS

	Direct (out of pocket) costs	Indirect (productivity) costs
From an individual employee with HIV/AIDS	<ul style="list-style-type: none"> • Medical care • Benefits payments • Recruitment and training of replacement employee 	<ul style="list-style-type: none"> • Reduced on-the-job productivity • Increased leave and absenteeism • Supervisor’s time • Vacancy until replacement hired • Poorer performance while new employee learns the job
From many employees with HIV/AIDS	<ul style="list-style-type: none"> • Benefits premiums • Accidents 	<ul style="list-style-type: none"> • Senior management time • Production disruptions

Source: George et al 2009.

⁵ An HIV diagnosis will probably affect well-being and productivity even in the absence of obvious physical symptoms.

For present purposes, the more interesting ‘indirect costs’ are all associated with potential impacts on productivity, some related to reduced outputs by the affected individual, others to the need to provide additional support or oversight to that individual and yet others to the replacement of that individual in the workforce. Different costs take precedence at different points in the progression of the illness (Table 3.2) and therefore estimation of future cost should take account of the current ‘stock’ and their estimate periods in different states. Note that this is one area where HIV-AIDS has a special characteristic in that treatment continues upon retirement or retrenchment. *“In Botswana and Namibia employee treatment is seamlessly migrated from company to government programmes, while in South Africa, employees’ on-going treatment is covered by medical insurance schemes or the company’s programme for the uninsured”* (DeBeers, 2010).

Table 3.2: Costs associated with HIV-AIDS illness progression

Progression of illness	Cost to company
Employee becomes infected but remains well and fully productive	No cost
Sickness begins (some opportunistic infections, some early deaths, some long term survivors)	Illness-related costs (absenteeism, productivity, management time, medical care and insurance)
Employee leaves workforce due to death or retirement (some long-term survivors)	Termination-related costs (payouts from retirement fund, funeral expenses, loss of morale, experience, cohesion)
Company hires replacement employee (some employees not replaced)	Turnover costs incurred (vacancy, recruiting, training, reduced productivity)

Source: adapted from George et al 2009.

3.2 Productivity benefits from prevention and treatment initiatives

As indicated in section 2, when Anglo American introduced ART in 2002 they did so in the absence of any detailed information as to likely implications in terms of costs and benefits. However, they then commissioned the Aurum Institute for Health Research⁶, which was originally established with funding from AngloGold Ashanti, to undertake studies of each of their HIV programmes in South Africa (Brink and Pienaar, 2007; Muirhead et al., 2006). There would appear to be consistent evidence from these and studies undertaken by other companies that productivity gains can be substantial and clearly exceed programme expenditures.

3.3 Absenteeism

The indirect costs in Table 4.1 relate to reductions in labour productivity linked either to the affected worker or their replacement. Because it is relatively easy to monitor from workplace attendance records, there are a number of workplace studies focusing on links between HIV-AIDS and absenteeism (Rosen & Simon, 2003; Rosen et al., 2003). One of the early Aurum Institute studies found that *“Mean absence per worker on treatment declined from 7.5 days per month immediately prior to treatment to 2.9, 2.2 and 2.1 days after 6, 12 and 18 months of treatment respectively”*. (Brink and Paneer, 2007). A more recent study of workers in the Debswana Diamond Company (Habyarimana et al., 2009) also indicates substantial benefits in terms of reduced

⁶ www.auruminstitute.org/ . Note that the original study reports do not appear to be in the public arena. Limited descriptions are available in a few journal articles and conference abstracts.

absenteeism from the introduction of treatment programmes. *“Enrolled workers are absent about 20 days in the year leading up to treatment initiation with a peak of 5 days in the last month. This is about five times the annual absence duration due to illness among non-enrolled workers. The introduction of ARV treatment is followed by a large reduction in absenteeism 6-12 months following treatment inception. Absenteeism 1 to 4 years after treatment start is low and similar to non-enrolled workers at the firm”*.

3.4 Presenteeism – loss of productivity when at work

There would appear to have been very few studies which have directly addressed losses in productivity in the workplace due to illness. One of the few detailed exercises relating to AIDS (Fox et al., 2004) estimated the impact of the disease on the individual labour productivity of Kenyan tea pickers. This found significant differences in terms of leaves picked each day, with productivity reduced by 6% two years prior to termination of employment, 13% one year prior and 19% at termination.

Possibly, the most difficult loss in productivity to estimate is that resulting from multiple cases of HIV/AIDS. George et al. (2009) suggest that they may include: diminishing employee morale, the disruption of established work teams, the reduced efficiency of a workforce that has less experience and probably less skill, an increase in labour disputes as benefits and job security come under pressure, and the burden imposed on managers who must cope with high workforce morbidity and mortality. They argue that most of these costs are hidden and will sometimes not be observed if prevalence rates can be constrained.

3.5 Turnover

A 2004 survey of South African companies by the South African Business Coalition on HIV and AIDS found that around 30% blamed the epidemic for increased turnover rates, 27% for lost experience and skills and 24% for additional recruitment and training costs (UNAIDS 2005). It is perhaps surprising that most mining company reports indicate that turnover is relatively low, typically less than 5%. It is not clear how this relates to the high proportion of migrant labour presumably on time-limited contracts. Given that this is the only area apart from absenteeism where there may be reliable data on those who have left for reasons of ill-health and where it should be possible to make evidence-based estimates of the costs of recruiting and training replacement workers, it would seem useful to give it careful consideration in any case study exercise.

3.6 Reputation

Most mining companies have expressed support for a Corporate Social Responsibility (CSR) agenda. In many cases they have endorsed specific CSR guidelines developed by organisations such as the International Council on Mining and Metals⁷ (ICMM). For present purposes, their motivation for doing so, whether moral or commercial or both, seems irrelevant. However, a number of authors have pointed out that CSR is closely linked to an ‘intangible asset’ of considerable commercial concern, which is usually identified in the academic literature as ‘corporate reputation’ (Hillenbrand and Money, 2007).

⁷ <http://www.icmm.com/>

There would appear to be widespread belief in the importance of a company's reputation. A recent review of the literature on corporate reputation found that "*the relationship between reputation and a sustained competitive advantage is widely acknowledged*" and that a good reputation could be linked to "*lowering firm costs ... enabling firms to charge premium prices ... attracting applicants, investors and customers ... increasing profitability ... creating competitive barriers*" and "*the likelihood that stakeholders will contract with a given firm*" (Walker, 2010:357). Gibson et al. (2006:15) go so far as to argue that according to many CEOs "*reputation is arguably the single most valued organizational asset*".

In considering the definition of 'reputation', the literature suggests a need to distinguish it from the related terms 'corporate identity' and 'corporate image'. They are seen as responding to three distinct questions: "how do internal stakeholders view the corporation?" (identity), "how does it want to be viewed by external stakeholders?" (image) and "how is it actually perceived?" (reputation). As Table 3.3 indicates, it is generally argued that the construction of identity and image should be seen as emanating from within (and therefore to a great extent within the control of) the company, the former being most relevant to internal and the latter to external stakeholders. Image is defined as that perception *desired* by the company and is therefore assumed to be positive. Identity and reputation reflect the *actual* perceptions of stakeholders and may therefore be positive or negative.

Table 3.3 Identity, Image and Reputation

	Identity	Image	Reputation
Source	Internal	Internal	Internal & External
Stakeholders	Internal	External	Internal & External
Perceptions	Actual	Desired	Actual
Possible perceptions	Positive or Negative	Positive	Positive or Negative
Question	What do we believe we are?	What do we want others to think we are?	What are we believed to be?

As shown in the table, reputation is seen as open to influence by both internal and external stakeholders. For example, companies may behave well but suffer serious damage from attacks on their reputation by commercial or political adversaries. On the other hand they may behave badly to employees, customers and the environment but have sufficient influence over opinion leaders or media outlets to generate a highly positive public reputation. There is a general perception that reputations develop over time. One socially responsible intervention will not overturn a long term reputation for sharp practice but nor will one badly managed dispute eclipse a well established reputation for fair dealing. Reputations can be destroyed over the short term, but usually by the sudden revelation of a previously concealed record of bad behaviour.

Drawing on a systematic review of the literature Walker (2010) explores possible approaches to the measurement of reputation. One generally accepted principle is that any proposed measurement should focus on the reported cumulative perceptions of individuals – not proxy 'objective' indicators with which reputation may or may not be correlated. It is also noted that that such perceptions will generally be issue-specific and vary between stakeholder groups. To take an obvious example, reducing human

resource costs may enhance a company's reputation for good financial management in the eyes of share-holders but be perceived as exploitation by employees. Similarly, reducing purchase margins may damage a company's reputation with its suppliers but be much appreciated by its customers. However, many of the existing reputation measures use a relatively simplistic aggregate index based on the perceptions of narrowly defined stakeholder groups. For example, the most widely quoted, 'Fortune's Most Favoured Companies' (FMAC) index, combines scores on eight diverse criteria, each measured using an 11 point scale (0=poor to 10=excellent), and is mainly based on the perceptions of a purposively selected sample of executives, directors, and financial analysts.

One response to the potential heterogeneity of views on reputation in terms of defining practical measurement instruments has been to move away from attempts to assess perceptions relating to specific aspects of a company's operations, for example 'quality of management' or 'financial soundness' that are used in the most widely used indices (Chetthamrongchai, 2010), to focus on questions relating to the emotional responses of stakeholders. For present purposes, because it is both very parsimonious and has been rigorously tested in a wide range of circumstances in many countries, the RepTrak Pulse index (Ponzi et al., 2011) may be an interesting starting point. This asks respondents to rate the following statements on a seven point scale, where 1 = Strongly Disagree and 7 = Strongly Agree:

1. [Name] is a company I have a good feeling about
2. [Name] is a company that I trust
3. [Name] is a company that I admire and respect
4. [Name] has a good overall reputation

If it seems possible to devise an appropriate instrument to assess reputation, which would need to be based on pilot exercises at selected sites, it would remain an issue as to how to relate the scores on such an index to the specific health initiatives undertaken by a given mining company. There is clearly no baseline data and it would be very difficult to identify suitable comparator sites – i.e. mines without similar health service initiatives. One feasible possibility would be to determine the correlation between reputation scores and the extent of an individual's knowledge of, utilisation of and satisfaction with the health services in question. This could be done by undertaking small scale rapid surveys with individuals sampled from selected stakeholder groups, for example employees and local community members. Additional exercises, using a similar instrument might be carried out with local and possibly national officials, probably in a focus group context.

3.7 Benefit: Societal Perspective

From the perspective of society the involvement of mining companies in the delivery of health services, particularly if they are prepared to make substantial investments in this area (and those investments are not diverted from other programmes from which society might obtain greater benefit), is clearly an attractive proposition. As with any other health sector intervention, there would appear to be two key components of any attempts to assess the overall benefits: (1) estimation of process and output indicators focusing on access, utilization and quality of the services provided; and (2) estimation where possible of indicators demonstrating actual improvement (or reduced rates of

deterioration if appropriate) in the health status of population groups with access to the intervention.

Whether its ‘disease-specific’ interventions or general health services are supported, beyond those addressing conditions closely associated with employment in the mining sector *per se*, interest will fall on tracking how those services contribute to increased coverage and utilisation of key services over the period of the intervention. For priority conditions and populations, key coverage, utilisation, and outcome variables, such as those for the continuum of care for reproductive, maternal, newborn and child health, are well characterised and in the public domain (Unicef, 2008).

3.8 Benefit-Incidence analysis

Benefit incidence analysis is a crude but often informative method of identifying the various beneficiaries of a given set of expenditures, in this case by the mining companies on health services, and describing the welfare impact on different groups of individuals or households of spending (World Bank). It requires expenditure on the unit costs of providing the services and the number of individuals or households using these services. The ‘benefit’ is valued as the amount by which household income would have to increase if it had to pay for the service used.

The groups for which the analysis can be undertaken will depend on the extent to which utilisation data can be disaggregated. Thus for employees, it should be relatively easy to undertake analysis by age-group, gender and occupation. Where services are provided at an individual level to both employees and their family members, it should again be possible to disaggregate by employee/family member and by factors such as age or gender of family member.

Analysis could also be undertaken using existing data where companies support community wide programmes, for example voluntary testing for HIV-AIDS or distribution of bed-nets. However, if it is desired to disaggregate communities by factors such as poor-non poor, some form of probability survey would be required to estimate the required proportions of such groups that benefit from the programmes. Poverty status could be assessed using one of the simpler asset or self-assessment approaches (Hargreaves et al., 2007).

4. Health System Strengthening & Governance

As indicated in the above discussion, many mining companies can be said to have made substantial investments into building national health services capacity in terms of training providers and support staff, establishing additional sources of supply for drugs and other materials and in some cases building and equipping facilities. They have also initiated or at least supported major public health campaigns, for example on HIV and Malaria. All such efforts can be seen as providing tangible or intangible assets that strengthen the overall national health system. However in this section we are primarily interested in exploring the potential institutional impacts of mining sector mining. For example, whether and how they enhance government’s ability to set health sector priorities? How do mining health programmes relate with national as well as local priorities and policies, systems and standards? Do they encourage cooperation between public and private

health sectors or simply operate in an “*environment of lack of trust and commitment between the public and private stakeholders*”(Itika et al., 2011. P13).

4.1 Nature of the Programme and Institutional Relationships

The initial step in the exploration of this area should be a detailed review of the precise nature of the programme under consideration. In some cases this will involve the assessment of the probable implications of the key provisions of any written contracts between the mining company and any of the state and non-state institutions relating to the provision of health services. Relevant sections of existing contracts of employment should also be examined as should any formal corporate policy statements relating specifically to the programme. It may often be the case that some aspects of the programme will involve informal verbal agreements between, for example, company officials and local communities and it would be necessary to clarify such arrangements by separate discussions with representatives of each of the bodies involved to assess their understanding as to the precise content and status of such agreements. Key issues to be determined in both written and verbal contracts would include identification of the parties to the agreement, other stakeholder groups⁸, the responsibilities of each stakeholder, the services provided to and costs (including resource costs) to be incurred by each stakeholder group and the intended duration of the agreement.

4.2 Roles and Responsibilities

While contracts and agreements may provide a useful starting point in understanding the intentions of the various parties involved in a programme, it has frequently been pointed out that one key issue leading to the failure of health systems is the lack of regulatory capacity. Within the poorly regulated circumstances of the public sector health governance in many low income countries public, contracts of employment, formal agreements with facilities and standard treatment procedures are often ignored, in the almost certain knowledge that there will be no consequences for those involved. It has been argued that a similar situation may arise in the mining sector itself, where implementation of multinational corporate responsibility policy often “*relies heavily on the will and capacity of project site staff in the given country*” (Perks, 2011. p2). Therefore, consideration of both formal and informal relationships within a programme context should assess practice against theory. This can be seen as addressing two key questions: how different stakeholders influence decisions to (1) enforce the terms of the agreement (for example take effective action if services are not provided as stated); and (2) modify those terms (for example extending service coverage to a wider population)? These questions can obviously be addressed by obtaining the perceptions and opinions of stakeholders via key informant interviews or focus group discussions. However, where possible, the most convincing approach would be to thoroughly review any actual instances of enforcement or modification that have occurred. Selected areas of interested are discussed below.

4.3 Priority setting

As discussed above, mining companies have, as might be expected, generally addressed health concerns of particular importance to their employees and in particular those specifically linked to mining activities or impacting on productivity as the starting point to any larger health programming. It will be interesting to compare the priorities of

⁸ In contract terms these might be considered ‘third party beneficiaries’.

the company with those of other stakeholders, for example employees, employee family members, the ministry of health, local public health officials and community institutions. Key informant interviews followed by participatory ranking exercises could be used for this purpose. As indicated above, it would then be interesting to explore how different stakeholders might be able to influence decisions on priority setting over time and to report as to whether there are any examples of such influence proving effective. The role of NGOs as agents, either in provision of technical assistance in programme delivery or in mediating between company and community priorities may be of particular interest if, as suggested by a recent article, *“Increasingly, companies seek the services of local or international NGOs to mitigate some of the potential conflicts ... These organizations often serve a bridging role between companies and local governments to align priorities”* (Perks, 2011, p4).

4.4 Policy-making

It would seem evident from the examples provided above that the majority of health service interventions by mining companies have been very largely shaped either by the mining companies themselves or by their agents where services have been contracted out. This is not inconsistent with many health sector Partnerships, where the focus of many public health initiatives are negotiated in the context of information asymmetries as well as differentiated incentives. One interesting question for present purposes is the extent to which the mining health programme aligns with and feeds into local or national government health policies.

One obvious, though hotly contested, example would be the extent to which South African government policy was influenced by the decision of mining companies to provide ART. While this might be an exception, there is still value in considering how specific aspects of the programme which had been taken up by a national or local government agency. This might involve treatment protocols, testing procedures, public health campaigning methodologies, procurement practice, *et al.* It will be important to identify not only which innovations might be attributed to the programme but also, where possible, the reasons why this had occurred. For example treatment protocols could be modified on the basis that those adopted by the programme were seen to be superior to existing practice or because the Partnership had made resources available (e.g. provided more advanced laboratory facilities) or reduced their cost (e.g. by sourcing drugs from an alternative source). The basic research methodology here would be key informant interviews with government officials and public sector providers.

4.5 Resource allocation

Control over resource allocation is probably the most important guide in determining the extent to which the various stakeholders can effectively influence the design and implementation of a programme initiative. Perhaps the most interesting approach is to compare the extent to which each stakeholder contributes resources with the extent to which they can influence resource allocation. The aim here is not to repeat the detailed costing exercise described above but to derive rough estimates of the resources contributed as compared to resource allocations directly or indirectly controlled by the various stakeholders. Of equal interest is how coverage for particular conditions or populations may free up resources to shifting investment to other priorities.

4.6 Access

Acknowledging the prerogative of a programme sponsor to define health programme investment decisions in light of its particular culture and context, there remains an interest in understanding the degree to which the various stakeholders can influence the level of access that different population groups have to the services provided. As discussed above, this should consider both the ability to ensure that individuals intended to benefit under the terms of a programme initiative are not excluded and the ability to influence extensions of the initiative to additional groups. One long standing concern relating to an increased role for enterprise-based provision of social services is the risk of creating “islands of development” (Kapelus, 2002, p. 292) that in terms of health provision may inadvertently undermine the commitment of many governments to the long term goal of health equity. The specific issue to be addressed here is therefore the extent to which services have been or might be made increasingly inclusive and the influence over such decisions exerted by stakeholders other than the mining company itself.

4.7 Ability of partners to access the data required for effective Partnership monitoring.

Finally in this section it will be interesting to assess the extent to which different stakeholders have access to the data required to undertake effective monitoring and evaluation of the programme initiative. Given that the study will have accessed the available sources in order to undertake the activities described above, the key issue here will be to ascertain which of the stakeholders has access to each of those sources.

5. An illustrative example

In this section an attempt will be made to bring together the various methods discussed above to consider their practical application to a specific example. The example is based on the following assumptions:

1. The mining company is operating in a remote region of the country in which there are minimal alternative public or private sources of quality health care.
2. The health service intervention being considered is one under which care is being provided for a limited number of defined medical conditions.
3. The primary aim of the analysis is to use data from an existing health intervention by the company to explore the incremental costs and benefits relating to an expansion of the intervention to a wider population or extension to include other services.

5.1 Costs

The financial cost analysis should aim to be comprehensive, including not only the obvious medical inputs such as provider time, drugs and laboratory tests but also management and administration time and infrastructure costs. However, as discussed above, time and resources should be focused on estimating major cost items. The ingredients costing approach, measuring resource quantities and multiplying by relevant price estimates, should be adapted to the extent possible, both to allow for sensitivity analysis and to explore alternative approaches to economic cost estimates.

5.2 Recurrent costs

The most important items under this heading will almost certainly be personnel and medical supplies.

5.3 Personnel

The initial step will involve listing all staff directly or indirectly involved in service delivery, identifying the unit in which they are employed and the total associated time inputs and personnel costs. The latter should include wages/salaries and all other expenses directly associated with all those who are contributing their labour time (employees, casual workers, etc.). For a given individual this might consist of take-home pay (including overtime, allowances, bonuses etc.), tax and insurance, social security, and pension contributions. It should also include the value of any non-cash benefits, for example housing, food, transport, etc., estimated using the prices of comparable items.

Table 5.1: Personnel costs

	Total cost	Total time	Indirect Central Services	Intermediate		Direct	
				Pharmacy	Laboratory	Intervention	Other
Personnel							
Doctor						0.2	0.8
Nurse						0.5	0.5
Health assistant						0.5	0.5
CHW						1	
Pharmacist				1			
Laboratory technician					1		
Secretary			1				
Clerical officer			1				

In the above table, the cost of health staff has been allocated on the basis of the estimated time spent on the intervention as compared to that spent on other service delivery activities, for example general occupational health services. In this case, a number of community health workers (CHWs) receive payment for taking part in the intervention but are not involved in other service delivery activities. The nurses and health assistant involved in the intervention are estimated to spend half of their time on this activity and the doctors allocate one day in five. Note that recording both personnel costs and time inputs will allow for a later calculation of opportunity costs. For example, if the CHWs are only being paid expenses it may be useful to reassess the social value of their inputs using local wage rates.

It remains to allocate the time inputs and associated costs for those personnel not directly involved in service delivery. In some cases, for example if clerical staff are employed only to support service provision, allocation may be made directly to this unit and proportioned in the same manner as for health service personnel. In other cases, for example where central staff are employed to support the work of intermediate units (pharmacy, laboratory, etc.) it may be helpful to use the step-down accounting approach describe above, allocating initially across these units in terms of estimated time inputs by

those staff and then reallocating to direct services in line with the volume of work the support units undertake for each direct service unit.

5.4 Supplies

Expenditure on supplies should include the value of all materials used up as inputs to intervention activities over a given year. Note that this definition does not include materials kept as inventory stocks but does include losses, for example where stock passes use-by dates or is stolen or damaged. Common recurrent expenditure items will include drugs, reagents, vaccines, syringes, needles, cotton wool, bandages, slides, stationery, etc. In principle, items such as thermometers which will last more than one year are classified as capital goods. However, in practice it is customary to include all such items purchased in a given year with a value below a given cut-off (often \$100) as part of recurrent expenditure. The total cost of supplies should be inclusive of freight costs to the point of use. These are likely to be significant for a company operating in a remote region.

Table 5.2: Supplies costs

	Total cost	Total quantity	Indirect		Intermediate		Direct	
			Central Services	Transport	Pharmacy	Laboratory	Intervention	Other
Drugs								
Paracetamol							0.2	0.8
Tetracycline							0.2	0.8
ACT							0.6	0.4
Reagents								
Malaria							1	
TB							1	
Equipment								
Syringes							0.1	0.9
Thermometer							0.3	0.7
Office supplies								
Furniture				1				
Stationary				1				
Buildings, Utilities								
Maintenance				1				
Electricity				1				
Water				1				
Communications				1				
Vehicles								
Maintenance					1			
Fuel					1			
Insurance					1			

Where possible, the allocation of supplies should be on the basis of actual quantities used, or purchased in the case of minor items of capital equipment. As above, where expenditure is recorded at an indirect unit, for example central services in the above, it may be allocated immediately to direct service provision or allocated via intermediate units. For example, stationary may include forms that are intended for use in recording laboratory tests. Expenditure on such forms can be allocated to the laboratory and then proportioned on the basis of the number of tests undertaken for the intervention and

other direct service units. The quantity unit of measurement and basis for allocation will vary depending on the type of input and available data. For example, vehicle running costs could be allocated on a basis of distance travelled or period of use and building costs using a measure derived by multiplying floor space by period of use.

5.5 Capital costs

Estimation of the value of capital goods used in a health intervention can be set out as follows:

1. Identify all capital goods in current use.
2. Estimate their replacement cost (including freight etc.), C.
3. Estimate the number of years of use from purchase, the 'working life', N.
4. Estimate the average annual cost of each capital item, in the simplest case using straight line depreciation (C/N).

The main items of capital expenditure may include buildings, such as clinics, offices, staff houses and drug stores, medical equipment such as x-ray machines, microscopes, centrifuges and refrigerators, and vehicles. Non-recurring events, such as a promotional activity to launch the intervention should also be included under this heading.

Table 5.3: Capital costs

	Annualised replacement cost	Total quantity	Indirect		Intermediate		Direct	
			Central services	Transport	Pharmacy	Laboratory	Intervention	Other
Buildings								
Clinic							1	
Drug Store							0.2	0.8
Equipment								
X-ray machine							0.1	0.9
Refrigerator						1		
Vehicles								
Delivery truck				1				
Events								
Launch							1	

The standard rule of thumb for valuing buildings is to estimate the full cost of construction at current prices (including land value, construction costs, infrastructure, architect fees, etc.), add 10% for 'fixtures and fittings' and assume a life of twenty years. Buildings that have multiple uses can pose particular problems in terms of cost estimation, given that it may be difficult to assess the appropriate additional cost to be assigned to the intervention. For example, a small section of a warehouse constructed to provide general storage space for mining equipment and commodities may be adapted to serve as a drug store. In economic terms this clearly represents the use of a capital resource and therefore an opportunity cost. However, it may not be obvious that the company incurs an actual financial cost from this arrangement if the warehouse space was rarely or never required for other purposes.

As indicated above the most useful quantity measures will vary by type of input. For buildings, floor space by period of use may again be most appropriate; period of use could be used for equipment and vehicles, though alternative measures, for example number of x-ray exposures might be preferred for specific items.

5.6 Incremental financial costs

Having calculated for each input the full financial cost that should be allocated to the intervention service delivery cost centre, activity or utilization data can be used to estimate unit costs – i.e. the cost per unit of output. The unit of output will depend on the type of activity and the objectives of the analysis. A company scheme might focus on the number of employees covered by the intervention, an MNCH clinic on the number of patient visits, a vaccination initiative on the number of infants vaccinated, a malaria prevention programme on the number of bed-nets distributed and an HIV-AIDS initiative on the number of patients enrolled on care programmes.

When considering possible expansion of activities, two types of incremental unit cost can be considered. In some cases the intended degree of scaling-up may not imply a need for additional capital or administrative resources because these are not working at full capacity. For example, it might be possible to substantially increase the volume of service using the existing buildings, vehicles and medical equipment. Similarly, the administrative burden may, within limits, be relatively inelastic with regard to the number of patients.

An initial step in the analysis should therefore involve an estimation of the cost per additional unit of output taking into account only those inputs – provider time, drugs, test reagents, etc., – which are directly linked to the production of that unit. This analysis should also consider the extent to which this estimation remains valid, i.e. it should assess the extent to which output could be expanded within the capacity constraints relating to capital equipment, administrative resources, etc.,

Expansion of output beyond these constraints can then be considered by estimating incremental unit costs that include these capital, administrative and other inelastic inputs. Where relevant, this may also be undertaken incrementally, considering each constraint as it becomes effective. For example, substantial expansion may be possible simply by purchasing additional items of laboratory equipment with no corresponding increase in other capital inputs.

5.7 Economic costs

To explore the economic, and social, costs associated with the intervention it will be necessary to assess each input identified in the financial costing exercise and consider if the price used by the company reflects the price that would be most appropriate from an economic perspective in which it is assumed that every resource has an opportunity cost. The most likely areas of interest are donated or subsidised drugs and voluntary or below cost labour. In some cases, additional inputs may have been made into training or advocacy programmes, for example making public buildings, vehicles or employees available at reduced cost. If the financial costing study has succeeded in gathering data on both quantities and prices, in addition to recorded expenditures, the only requirement

is to repeat the analysis using alternative prices for these items that better reflect their opportunity costs.

Although this consideration is more important from an academic rather than pragmatic standpoint, it should not be forgotten altogether. While there may be difficulty generating data necessary for formal estimation of economic/social costs, there will be areas of particular interest among academic and public policy key opinion leaders. Two areas of particular interest are: 1) understanding how tax allowances and other subsidies which might contribute to programme underwriting; and, 2) assessing the extent to which the programme affects local markets for qualified human resources including how programming may strengthen capacity or contribute to human capital formulation as well as their role in has attracted professional health staff from other public or private health sector activities and estimation of associated opportunity cost.

5.8 Benefits

In this section the focus is on estimation of the potential benefits to the company arising from the expansion of the intervention. Three main types of benefit are considered – productivity gains arising from the reduction of working time lost to ill health by members of the company work force, reduced compensation payments to employees affected by ill health, and gains in the reputation of the company among different stakeholder groups which are generally regarded as having the potential to improve the financial position of the company over the medium to long term.

5.9 Productivity

Three type of productivity gain from the expansion of health service interventions might be expected: reduced absenteeism; reduced ‘presenteeism’ (reduced capacity by employees while at work due to ill health; and reduced staff turnover, with its associated detrimental effects on production. However, as there would seem to be no simple method of reliably estimating the costs of presenteeism and turnover, the focus here is on absenteeism. It would be of interest to track the number of employees leaving the workforce overtime due to a health problem related to the intervention under consideration if such data are available. In some cases it may also be possible to obtain rough estimates of the costs of recruitment and training for a replacement worker.

The data required to estimate the potential gains from reduced absenteeism are workplace attendance records which indicate the reason for absence and provide detailed information where this is linked to ill-health. Because the analysis is concerned with the impact of the intervention, it will require access to data that extends over a substantial period before implementation. Where access to the services provided by the intervention is limited or where employees have the option of enrolment, it will also be necessary to identify those employees who have access to the intervention services at any given time.

Using this data it should be possible to identify those workers absent for a reason related to the condition targeted by the health service intervention. The value of each day of paid absenteeism for this group can be estimated at the daily compensation (wage plus benefits) of the affected employee. This assumes that a suitable replacement who can undertake the work with equal efficiency is immediately available at the same wage, and is therefore almost certainly an underestimate of the true cost. It may be informative to

also calculate an ‘upper limit’, which could be estimated by multiplying the average net daily income of the company by that employee’s compensation and dividing by the total compensation for all employees. The relative costs to the company of such absenteeism over time, comparing employees with and without access to the intervention services can then be estimated on an annual or quarterly basis and linked to the number of employees with access to the intervention at a given time.

5.10 Compensation payments associated with ill-health

Where a company has schemes that provide payments to workers forced to retire through ill-health, or to their family members on death, it should be possible to identify from company records those retiring or dying for reasons linked to the health concern addressed by the intervention. For this group the appropriate calculation in terms of the benefit to the company of the intervention is an overtime comparison of those with and without access to the intervention services of the difference between the present value of payments due upon death or disability retirement and the present value of pension payments due upon retirement at their normal retirement age.

5.11 Reputation

As discussed above, because of the essentially subjective nature of this topic, the suggested aim here would be to focus on questions relating to the emotional responses of various groups of stakeholders using the RepTrak Pulse index (Ponzi et al., 2011). This asks respondents to rate the following statements on a seven point scale, where 1 = Strongly Disagree and 7 = Strongly Agree:

1. [Name] is a company I have a good feeling about
2. [Name] is a company that I trust
3. [Name] is a company that I admire and respect
4. [Name] has a good overall reputation

One possible way to relate the scores on such an index to the specific health initiatives under consideration is to determine the correlation between reputation scores and the extent of a respondent’s knowledge of, utilisation of, and satisfaction with the health services in question. This could be done by undertaking small scale rapid surveys with individuals sampled from selected stakeholder groups, for example employees and local community members. Additional exercises, using a similar instrument might be carried out with local and possibly national officials, probably in a focus group context.

5.12 Social benefits

As discussed above, from a social perspective, the benefits deriving from a company health services intervention can probably best be assessed as would any other project or programme intervention, by assessing changes in relevant health outcome or impact indicators. The indicators to be estimated will vary depending on the nature of the intervention and data availability. Lists of potential indicators relating to some of the most common interventions are proved in section 6 above.

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Annex 1

DFID ToRs for Theoretical Framework

(from <http://www.dfid.gov.uk/Documents/procurement/draft-trms-of-ref-pot-min-ppps-str-hlth-sys-extd-hlth.pdf>)

II. Develop a theoretical framework on how the costs and benefits (indirect as well as direct) of such PPPs could be measured and compared to those of relevant alternatives. The framework must take into account different business models of on-going and planned mining sector PPPs and other (non-PPP) ways that mining companies are involved in the delivery of health services (e.g. whether PPPs aim to provide comprehensive health services to a wide client base or, as has been more common, to focus on the provision of a narrow range of disease-specific services). The framework will allow costs and benefits to be compared from different perspectives, including (but not limited to) that of society as a whole, government, the mining industry in general, mining companies, mining workers, the social cohort dependent on the industry in general.