



# **An analysis of what is known about Mining Industry Health Programmes**

A Literature Review

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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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## LITERATURE REVIEW

### Introduction

Thirty percent of global mineral reserves are in Africa. The majority of mining activity is in South Africa, Ghana, Zimbabwe, Tanzania and the Democratic Republic of Congo (DRC). Mining activity also generates more than 30% of GDP in Sierra Leone, Namibia, Zambia and Botswana. HIV/AIDS, malaria and tuberculosis (TB) are public health epidemics that challenge mining operations throughout sub-Saharan Africa. But public health systems do not have the capacity to provide quality health services and private health services do not provide sufficient access to communities.

This project examines the current state of mining health programming primarily in sub-Saharan Africa. We examine the literature to assess the costs and benefits of mining health programming, their effectiveness and their broader social and community benefits. Identifying the determinants of mining health programme performance effectiveness will allow companies, governments and civil society to develop new and better partnerships to expand access to health care for poor people.

We find evidence of nine mining health programming in nine countries through a search of academic literature, industry trade publications, company reports and grey literature. The literature is limited and much of the evidence was based in company reports and industry summaries. As a result, the evidence is not standardised and easily comparable.

Based on the programme alignment with national strategies for health and the programme's performance goals, we generate a classification of mining health programme 'types'. We discuss the cost-benefit literature on mining health programmes and compare the cost-benefit literature findings to the selected mining health programmes, mining health programmes in other countries and health Programmes in other sectors.

We find four broad categories of programmes: programmes that expand the reach of public health services and develop public sector capacity with the aim of reducing macroeconomic risk and supporting the national public health strategy; programmes that utilise business skills and expertise to meet public health goals; programmes that provide financial or in-kind support with the intent of bettering social and economic development; and programmes that aim to maintain a 'license to operate'.

Based on the existing evidence, we find in the cost-benefit literature that mining health Programmes have a positive net benefit. programmes with private partners, whether for-profit or non-profit, have lower cost per case cured than purely public models. Mining health Programmes lead to lower recruitment costs for new employees, higher productivity and lower absenteeism. Companies that have mining programmes also benefit from better reputations, lower operational risk and higher leverage on social investments. We also draw that cooperation with national governments and other mining companies allows programmes to scale to other communities.

At the community level, mining health programmes appear to slow infection rates, improve the quality of care and reach neglected members of the community like women and youth. Although the evidence is limited, mining health programmes with a positive net benefit, a

lower cost of providing services and require less government financing may be a cost-effective way of scaling access to health services for the poor.

## 1. Analysis of Identified Mining Health Programmes

### 1.1. Defining Public Private Partnerships (PPPs) for Health

We define a PPP as a continuous medium to long-term collaboration between public and private (for-profit or non-profit) organisations to improve the delivery of public goods.<sup>2</sup> A PPP is a formal agreement of responsibilities, tasks and resource commitments, though it is not necessarily regulated. A PPP is also strategic and takes advantage of partners' capabilities; aims to meet defined performance objectives; and increases the efficiency, resources, scale, scope, resources or impact of the project in order to advance development outcomes beyond what would otherwise occur. If held to stricter criteria, the private partner would also aim to make a profit and also take on risk with respect to the project.

In a mining and health PPP context, a useful definition is: *A collaboration between one or more mining companies, public entities, and others from civil society and business, in which the partners contribute various resources towards a programme to strengthen health systems and/or directly provide health care for mine workers and possibly a wider community. The public entity may be a government agency (at any level: municipal, regional or national) or a donor agency.*

In practical terms, the expected outcome of a PPP may include product development, subsidized or free product distribution, improved health services, public health education, better product quality, better regulation, private sector participation in a public sector programme or private sector organisations that act in the public interest.<sup>3</sup>

### 1.2. Identifying Mining Health PPPs

In a search of academic literature, industry trade publications, company reports and grey literature, we have identified 180 mining operations in 29 countries in Africa. However, detailed information on PPPs related to those mining operations is extremely limited. This section describes the methodology of our search.

Nearly half of all mining projects are in four countries, the Democratic Republic of Congo, Ghana, Angola and South Africa. As a result, mining is important to these countries' economies; where somewhere from one-fourth to one-third of GDP is derived from mining. Country statistics for states where mining proliferates as well as countries where we identified PPPs can be found in Annex 2.

PPPs generally fall into four categories: global health initiatives, privately financed public sector projects, public or civil society led partnerships, and industry-oriented partnerships. There is an extensive number of health PPPs linked to global health initiatives, however, this type does not seem to be prevalent in the mining sector. The mining sector does have a number of industry partnerships and standards to support communities that include health services<sup>4</sup>, but they offer little health project-specific information.

<sup>2</sup> See Annex 1 for an in-depth discussion of PPP definitions

<sup>3</sup> <http://www.who.int/trade/glossary/story077/en/> (accessed 11 December 2011)

<sup>4</sup> See 'Mapping In-Country Partnerships', International Council on Mining and Minerals, <http://www.icmm.com/library>, accessed 16 December 2011.

This project focuses on the following: mining industry-oriented partnerships where the primary objective is improved health services and the primary private sector partner is a commercial, for-profit organisation. This focus excludes PPPs where the primary objective may be free or subsidised health product distribution, health education or private sector participation in a public project, although those objectives may also appear as a secondary goal in a selected mining health PPP.

The focus on for-profit lead partners also allows a focus on PPPs where industry plays a major role. Such PPPs differ from workforce health programmes in their relationship to public sector organisations and also their emphasis on public health as a public good, not only as a private good from which the employee and company benefit.

We searched for mining health PPPs that are industry-oriented partnerships, the objective is to improve health services and the private sector partner is for profit. In a search of academic literature, industry trade publications, company reports and grey literature, we sought detailed information on certain characteristics of mining sector PPPs for health. We looked for information on the project focus, the target audience and patient cost of services in existing mining sector PPPs.

We were able to locate information on nine mining sector PPPs for health in sub-Saharan Africa, with activities in South Africa, Botswana, Namibia, Tanzania, Zambia, Ghana, Guinea, Sierra Leone and Cameroon. Our literature search identified some documentation of comprehensive health service provision in addition to specific disease interventions, which adds to the sparse documentation of improving health systems.

Much of the information we found comes from voluntary company reports. There is not a standard for reporting on health initiatives in the mining industry. As a result, the programmes' details are not consistent or comparable on many of the dimensions which may interest public health officials or researchers. Much of the relevant information is proprietary and internal to the companies involved. The examples that we identified have some discussion of mining companies' assessment of risks and the relationship of health PPPs to their core business objectives.

The examples are described in detail in Annex 3. We first classify the mining PPP into four types, based on their objectives. We also discuss three aspects of the examples: the project focus, targeted audience and patient cost of services. Where information is available, we also provide information on the extent of services provided and any public health outcomes.

### 1.3. Initial Classification of Mining Health PPPs

The industry-oriented, health services-oriented Mining Health PPPs can be classified on the basis of their objectives: the alignment with national strategies for health and the PPP's performance goals (see Table 1). For the project focus, DFID has identified general categories that characterise each dimension and may be relevant to the understanding of mining PPPs for health.<sup>5</sup> The PPPs can align with national public health strategies in four ways: utilising business skills and expertise to meeting public health goals, expanding the reach of public health services, helping capacity development in the public sector and civil society and providing financial and in-kind support. The performance goals of PPPs can be evaluated on the basis of better social and economic development in relevant communities,

<sup>5</sup> UK Department for International Development, "Draft ToRs: Potential of Mining PPPs to Strengthen Health Systems and Extend Health Services to Underserved Populations", (London, December 2010)

reduced macroeconomic risks due to epidemics, a company's enhanced 'licence to operate', enhanced company image and increased support for the national public health strategy.

We have identified four 'types' of mining health PPPs. The groups are not mutually exclusive, but represent clusters of PPPs with similar set ups and/or performance goals. The primary grouping of mining health PPPs consists of PPPs that expand the reach of public health services and develop public sector capacity with the aim of reducing macroeconomic risk and increasing support for the national public health strategy. The only identified mining health PPP that does not fall into this grouping is the DeBeers DART programme, which provides counselling, testing and free antiretrovirals to employees and their families. Out of the identified PPPs, the DART programme probably comes closest to being a workplace health programme. However, its provision to employees' partners as well as its importance to public health outcomes means that it remains a PPP despite the fact that it does not deliberately set out to expand public health capacity.

The DART programme falls into the 'Utilising business skills and expertise to meet public health goals' category as an application of DeBeers' community relations skills and strategic management of its complex human resources situation. The emphasis is on creating a state-of-the-art workplace programme, rather than extending or supplementing public services. The DART programme provides free anti-retroviral treatment to employees and a spouse or life-partner. The programme also trains managers to deal with the business challenges of managing a workforce that has a number of HIV positive employees. As a result, the programmes' goals are to decrease the risk of operations in South Africa and maintain a license to operate in local communities that suffer from the impact of HIV/AIDS.

A third kind of programme explicitly provides financial or in-kind support with the intent of bettering social and economic development, in addition to decreasing macroeconomic risk and supporting national health strategies. The Bhubezi and Obuasi programmes have explicit plans for developing businesses and employment driven by the presence of a clinic or the increased provision of health services. Both programmes take a district, multi-village approach, which probably leads to the consideration of complementary services such as education, food and transportation and their effects on local economies. With respect to funding, AngloAmerican provided the funding for the capital costs of the buildings and equipment in the Bhubezi project. The AngloGold Ashanti-funded Obuasi malaria control programme had an annual budget of US\$1.3 million.

The fourth grouping of programmes consists of programmes that have an aim of maintaining a 'license to operate'. Sierra Rutile operates in Sierra Leone, in a fragile, post-conflict situation. Sierra Rutile's HIV programme provides HIV testing and treatment to employees and their dependents and also provides local health clinics. The programme is in cooperation with the national government's first strategy plan for HIV/AIDS. As important, the partnership is with the Mine Workers Union and supported by the International Labour Organisation.

The extent of alignment with national health policies and PPP performance goals seem to correspond. The PPP seems to perform on a broader set of criteria the more closely the programme is aligned with national health policies and goes beyond the firm's financial or technical capabilities. PPPs that expand the reach of public health services and assist with capacity development have better performance on community-oriented criteria (social and economic development, national health policy support), rather than firm-oriented criteria (licence to operate, corporate image).

**Table 1**  
Initial Classification of Mining Health PPPs

		PPP Performance Goals				
		Better social and economic development	Reduced macro-economic risks due to epidemics	Enhanced 'License to Operate'	Enhanced company image	Increased support for the national public health strategy
<b>Alignment</b>	<b>Utilising business skills and expertise to meeting public health goals</b>		DART	DART	DART	

<b>Expanding the reach of public health services</b>	Bhubezi	Ahafo AMREF Bhubezi AngloGold TB- HIV Rio Tinto HIV-TB- Malaria Tarkwa Sierra Rutile HIV	Sierra Rutile HIV		Ahafo AMREF Bhubezi AngloGold TB- HIV Rio Tinto HIV- TB-Malaria Sierra Rutile
<b>Helping capacity development in the public sector and civil society</b>	Bhubezi Obuasi	Ahafo AMREF Bhubezi Obuasi Rio Tinto HIV-TB- Malaria Tarkwa Sierra Rutile HIV	Sierra Rutile HIV		Ahafo AMREF Bhubezi Obuasi Rio Tinto HIV- TB-Malaria Sierra Rutile HIV
<b>Providing financial and in-kind support</b>	Bhubezi Obuasi	Bhubezi Obuasi			Bhubezi Obuasi

#### 1.4. Project Focus

There are two types of project focus, PPPs that aim to provide comprehensive health services or those that focus on disease-specific services. The majority of the projects represented here provide disease-specific health services, mostly for HIV/AIDS. The two PPPs that provide comprehensive health services (AMREF, Bhubezi) were initiated by NGOs, but are carried out and financed by mining companies. Both programmes reach to mining communities as a whole, in addition to employees.

Although all of the identified PPPs are concerned with the broader societal effects of disease and infection among their employees, the comprehensive health service-style programmes are explicitly intended to check the spread of sexually transmitted infections by treating local sex workers or people in employees' communities of origin. The Bhubezi programme targets miners' community of origin, which is lacking in basic health services. The AMREF programme reaches out to female bar and restaurant workers and sex workers who are part of the increased economic activity in a mining region and are vulnerable to STI transmission. Given the majority male mining workforce and the transient nature of sexual partnerships, many women would not be reached in the same proportions through a typical mining workplace health programme targeted at employees and families.

#### 1.5. Targeted Audience

The target audience may be company employees, their families, community members or a larger, regional population. For the most part, the programmes are directed to reach employees, either directly or as part of a mining community. The extent of the chosen audience appears to be closely tied to the company's strategic aims.

The Bhubezi Community Health Centre is located in Bushbuckridge, South Africa, a rural area where many of Anglo American's employees originate. There is an undersupply of health services due to its rural location and it is exacerbated by a 20% HIV-positive rate among the local population. Since the clinic attracts patients from an area of 21 villages, the project also includes the development of local businesses surrounding the clinic.



AngloGold cites malaria as “the most significant public health threat to AngloGold’s operations in West Africa.”<sup>6</sup> The Obuasi malaria control programme provided spraying for an entire district of 35,000 households. As a result of the comprehensiveness of the spraying and resulting decrease in malaria cases, the programme was scaled to 40 other districts in Ghana.

### 1.6. Patient Cost of Services

We were not able to obtain information on the cost to patients of health services for four of the nine identified mining health PPPs. The available information on pricing suggests that services are provided for free are for employees and their dependents. The cost-analysis that follows in Section 3 of this literature review suggests that companies gain directly from better employee health, higher productivity and lower absenteeism. Where mining health PPPs provide services to the broader community, there is not much information about the costs to community members. The Bhubezi project charges for basic health care but provides free diagnosis and treatment for HIV/AIDS, TB and Malaria. In general, free or subsidised services are provided to targeted segments of the broader community, such as HIV-positive people or sex workers.

## 2. Cost-Benefit Literature Review

### 2.1. Cost-Benefit Evidence

Although there is some qualitative description of mining health PPPs (mostly in company reports or industry summaries), the cost-benefit literature is limited. Few companies provide baseline figures or cost information. Brink & Pienaar (2007) analysed the Anglo American CHAPP programme that serves as an umbrella for Anglo’s involvement in community HIV/AIDS initiatives in South Africa. The programme offers voluntary counselling, testing and treatment, including free ART treatments. Brink & Pienaar found that 21% of Anglo’s workforce is HIV-positive and the cost of not providing HIV/AIDS treatment is estimated to be 5% of payroll.

As the programme grew, the per-patient cost decreased by 23% due to economies of scale. The net cost over an employee’s career was not yet estimated due to the brief existence of the programme. However, at the divisional level, Anglo found that savings from improved health and lower absenteeism were greater than the cost of providing treatment.

Mitchell, Shakleman & Warner (2001) estimated that the net benefit of the MINCA health care partnership in Venezuela is US \$1.5 million. The costs come from programme management, facility construction and partnership facilitation costs. However, MINCA derived estimated reputational benefits, reduced risk and social investment effectiveness.

Sinanovic & Kumaranayake (2006a) found that PPPs in South Africa with either for-profit or non-profit private partners have lower cost per tuberculosis case cured than purely public models. Although the for-profit partner model (US \$788–979/case cured) was more expensive than the non-profit partner model (US \$354–446/case cured), the amount of government financing needed is lower in the for-profit partner model. If PPPs for TB treatment were expanded, services could be scaled up at lower cost.

<sup>6</sup> “Obuasi malaria control programme: A model for Africa”, AngloGold Ashanti Report to Society 2007, <http://www.anglogold.co.za/subwebs/InformationForInvestors/Reports07/ReportToSociety07/default.htm>, accessed 16 December 2011

Another study by Sinanovic & Kumaranayake (2006b) supports the notion that PPPs, particularly ones with for-profit actors would require lower government financing per patient (twelve times less in PPPs with for-profit partners and four times less with non-profit partners). For-profit providers financed 95% of the total cost with a 5% contribution from the provincial government TB programme. As a result, there were no costs to patients. Whether in a for-profit or non-profit PPP clinic, the lower cost of treatment (and availability of transportation) made it more accessible to the community.

The most comprehensive cost-benefit study available covers HIV/AIDS workplace programmes in Zambia (CHAMP, 2007). The programmes are not PPPs, but they are advised by a coalition of NGOs called the Zambia Workplace AIDS Partnership (ZWAP). The study covered seven mining and agribusiness companies and found that the average net benefit per employee was US\$47, due to lower employee turnover, lower medical bills and higher staff productivity. For mining companies only, the average net benefit per employee was approximately US\$41. In general, the net benefit increased with the length of time the programme was in existence.

The cost data included sick leave, retirements and funerals, medical and insurance payouts, new employee recruitment costs, productivity, HIV programme training costs and salaries, and employee medical treatment costs. Benefits were calculated as costs that were avoided by reducing the number of HIV positive employees and improving employee health with antiretroviral medicines. In total, benefits were three times programme costs.

Providing anti-retrovirals reduced the cost of hiring one new employee (recruitment, supervision, training, lost productivity) by US\$185,999. The cost reduction per new employee by avoiding new infections was US\$309,051. The funeral costs and lost productivity costs to the company of an employee dying while on the job decreased by US\$199,699 due to antiretrovirals and US\$327,413 due to new infections avoided.

One of the mining companies in the study had a negative net benefit. The study attributed the high costs to expenses of three times more per employee than average, especially the value of employee time spent at workshops. The company was also very small, so costs were spread across fewer employees.

In the identified mining health PPPs, companies' intention appears to be achieving net economic benefits from improving employee health. DeBeers estimates that antiretroviral treatment provision through the DART programme costs US\$1500 per person per year and the cost to the company is US\$1200-3500 per year over a horizon of 10-14 years.<sup>7</sup> The companies explicitly acknowledge the high cost and uncertainty of doing business in areas with public health epidemics. However, the information that companies, industry associations and NGOs provide generally does not allow us to answer even basic questions about the performance or effectiveness of mining health PPPs.

Although we were not able to find cost-benefit analysis of any of the PPPs that we examined (except for DeBeers), the qualitative evidence suggested that the companies experienced or expected a positive net benefit. However, what information there was on the patient cost of services was not sufficient to determine whether the business models of the PPPs were appropriate or profitable.

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<sup>7</sup> De Beers Group HIV/AIDS Business Case-Study 2005, <http://led.co.za/sites/led.co.za/files/documents/75.pdf>, accessed 16 December 2011

The Las Cristinas PPP run by MINCA in Venezuela falls into the fourth grouping of programmes that aim to enhance the ‘license to operate’. The Las Cristinas programme occurs in a country with relatively high per capita income, like the DART programme in South Africa, but it has a potentially violent operating environment in common with the Sierra Rutile HIV programme in Sierra Leone.

The health project began when the Las Cristinas mining project, which was operating in a politically hostile region, was suspended due to a fall in gold prices. MINCA invested US\$2.5 million to start a community health centre to serve a region of 12,000 people. Estimates suggest that the total security cost savings from preventing unrest were US\$700,000.<sup>8</sup> The programme eventually expanded to cover nine local communities.

As described in Section 3.1, the estimated net benefit of the MINCA PPP was US \$1.5 million. The estimated return to the company’s social investments was 401% and the estimated return to the government’s spending was 501%. The programme also achieved a 30% decrease in malaria prevalence, which also decreased government health care costs.

## 2.2. Effectiveness and Broader Effects

Possibly more important are dimensions of programme effectiveness, such as achieving better health outcomes, health education and behavioural change. Ardian et al (2007) found that a district level government TB control programme in Papua Province done in partnership with PT Freeport Indonesia dealt with higher infection rates, higher rates of co-infection with HIV and more multi-drug-resistant cases, but managed to achieve treatment success rates similar to national levels.

DeBeers’ Soul City Institute for Health and Development Communications in South Africa produced a prime time television series, daily radio shows in nine languages, informational booklets distributed through newspapers and educational packages for schools (Rispel et al, 2010). The programme also complemented the multimedia educational approach with a programme to educate community trainers. The programme increase HIV/AIDS knowledge and generated a small positive behavioural change in terms of increased condom use.

Brink & Pienaar (2007) reported that fewer Anglo American employees fell ill, had sickness-related absenteeism or died of AIDS. Tuberculosis rates also fell. The company also observed increased productivity, higher employee retention and improved morale. Bloom & Mahal (2001) discussed earlier literature that showed that HIV/AIDS did not have a large effect on employee turnover (among firms in all industries), but replacing skilled workers who died posed considerable difficulties to firms.

Quality of care is another important dimension of mining health PPP effectiveness. Sinanovic & Kumaranayake (2006c) find that the quality of TB care is higher in PPPs with for-profit or non-profit private partners versus purely public models. Governments prioritise access to services as opposed to quality of services. The government is also not positioned to respond rapidly to changes in demand for services. The authors attribute the higher quality to the extensive resources that mining companies expend on their employees in search of increased productivity. Employees are incentivised to complete their treatment due to job security. However, the for-profit employer based PPP models do not extend treatment to the greater community and the poor as well as NGO/non-profit based PPPs.

<sup>8</sup> ‘Case Study 2: Las Cristinas Gold Mine, Venezuela’, Natural Resources Cluster, Business Partners for Development, <http://www.odi.org.uk/work/projects/98-02-bpd-natural-resources-cluster/media/pdf/las/lascristinas.pdf>, accessed 16 December 2011

It was difficult to compare the data from the identified mining PPPs in order to evaluate what programmes best improves employee health, absenteeism or productivity. The AngloGold Obuasi malaria program reduced malaria incidence by 73% in two years. The programme was implemented because 20% of employees were absent due to malaria at any given time. The project had start up costs of US\$1.7 million and an annual budget of US\$1.3 million. The programme's success led to it being replicated in other districts by the national government.

DeBeers' employees in South Africa had a 10% rate of HIV infection in employees and surveys showed that many engaged in high risk behaviours such as purchasing sex and low condom use when engaging in high risk sex. In justifying its distribution of 17,000 DEET-impregnated bed nets in Guinea, Rio Tinto cites the WHO statistic that malaria infection and death reduces economic growth rates in Africa by 1.3% annually. According to its PPP description, Rio Tinto intended to do a baseline study in villages to assess the actual reduction in malaria prevalence as it scales up the programme.

Despite the dire need to implement a health plan of some sort, it is still important to make sure that PPPs align with actual need. From 2005 to 2007, the Tarkwa programme increased voluntary employee testing from 13% to 60%. But they found that the HIV prevalence rate was less than 1%. It is not clear whether their fledgling programme and community outreach had an effect or whether HIV was a severe threat to their workforce.

Conclusions about the conditions for success could also be drawn from the Ok Tedi Mining Limited company's HIV/AIDS PPP in Papua New Guinea. Started in 2003, this programme fits into the main cluster of mining health PPPs, identified in Section 2.3, which expand the reach of public health services and develop public sector capacity with the aim of reducing macroeconomic risk and increasing support for the national public health strategy. The company's HIV program aligns with Papua New Guinea government's HIV Strategic Plan.

Papua New Guinea is the second lowest ranking Asian country on the UN Human Development Index and the HIV programme was partly motivated by a visit by company representatives to South Africa to research the effects of HIV on the mining industry. The programme resembles other mining health PPPs in Africa, particularly because the social drivers of HIV/AIDS prevalence in Papua New Guinea are similar: poverty, gender inequality, misinformation about HIV/AIDS, mobile workers, sexual relationships with multiple partners (Asia-Pacific Business Coalition on AIDS, 2008).

The programme provides comprehensive health services to employees as well as staff training, community awareness programs, condom distribution and provision of free anti-retroviral treatment. Ok Tedi already had a track record of expanding the reach of public health services, as it had led a successful filariasis eradication programme (Thomason & Hancock, 2011). In 2008, Ok Tedi approved a health services capacity development programme for the entire district. The health centre treats 150 in-patients and 12,000 outpatients per month. Key elements of the programme that reduce community rates of HIV transmission are participation in the national STI surveillance programme, training of health workers to prescribe antiretrovirals and an emphasis on obstetric care to reduce mother to child transmission.

### 2.3. Broader effects on Communities and National Healthcare Systems

In theory, partnerships can provide additional resources that extend the programme benefits beyond the immediate area of the project (Davy, 2000). However, in practice, the evidence for community effects is limited and what exists is negative. The additional resources that

PPPs bring tend to attract public servants away from government and into the private sector. Rispel et al (2010) found that local stakeholders were involved in programme implementation, but not the development. As a result, the programme's educational model didn't work and the programme workers' training had to be revised. Patient confidentiality and privacy were also frequently violated, as health professional norms were not fully established among local health workers.

Thomason & Rodney (2009) write that community-oriented public health programmes are rare and they are generally motivated by epidemic-related threats to the production process. This is supported by the view presented in many of the identified PPPs was that the health epidemics were too severe to ignore and the risk of business disruption too high to not provide health services of some kind. The type of engagement was driven by the extent that a particular disease was more prevalent. PPPs address malaria in West Africa, yet centre on HIV/AIDS in eastern and southern Africa.

#### 2.4. Parties That are Most Affected

In the literature, the main beneficiary group of mining health PPPs are mining company employees. Beyond that, the programmes target the community at large by providing services through community-based clinics. The Anglo American CHAPP program aims to build capacity in government clinics and also open anti-retroviral drug sites in community clinics (Brink & Pienaar, 2007). A PT Freeport Indonesia programme for TB treatment partnered with government, private and non-profit clinics and hospitals (two hospitals, five community health care clinics and several mine-site clinics) (Ardian et al, 2007).

Aside from employees, the group that appears to benefit most from the identified mining health PPPs are women. As the spouses or life-partners of miners, as sex workers or living in communities where miners return home, they are particularly vulnerable to the spread of STIs. The AMREF Geita centre in Tanzania treats an average of 470 clients per month, where 58.6% are women. The Bhubezi programme in South Africa also reaches out beyond mining employees to provide community services. Among the two identified mining PPPs that do reach women in the broader community (AMREF, Bhubezi), both programmes provide in comprehensive health services, rather than disease specific programmes. Both programmes were also initiated by NGOs, rather than mining companies.

Other programme target groups include youth and the broader community. The Anglo American programme targets youth with teenage pregnancy and sexually transmitted infection prevention programmes, as a way to slow HIV infection rates. DeBeers' Soul City programme was directly targeted at the broader community through its television, radio and newspaper communications (Rispel et al 2010).

One constraint in reaching particular community groups is the extent of legitimate representation among the parties that negotiate partnerships (Davy, 2000). Women, in particular, may not be well represented by politicians, traditional leaders or mainstream organisations.

#### 2.5. Importance of Country/Context

It is not clear whether there is a pattern in PPP configuration or performance based on country or context. It is especially difficult to discern whether a fragile state context has an effect. We identified only one industry led health PPP, in Sierra Leone. In general, we identified few mining PPPs of any kind in fragile states, aside from the DRG.

In terms of replicating programmes between sites, Rispel et al (2010) found that contexts differed considerably even at the local level. The DeBeers' Soul City project implementation was inhibited by local differences in available transportation and HIV-related stigmas and superstitions.

## 2.6. Role of Government Policy and Regulatory Capacities

Although PPPs are intended to boost or supplement the ability of government to provide public goods, governments and regulation still play a considerable role in the success of PPPs. Schwartz (2010) recommends that governments remain engaged in PPP development, implementation and supervision, as the alignment of PPPs with national goals remains paramount. Itika, Mashindano & Kessy (2011) found that the regulatory framework explicitly legalised, encouraged and supported PPPs in Tanzania. A Ministry of Health and Social Welfare department coordinates PPPs, along with a healthy civil society around PPPs (a private sector PPP association and church-based health service provider network). However, Adler et al (2007) propose that better reporting regulation needs to be enacted around the health impacts of mining activities, particularly with respect to off-mine communities, not only for mine workers.

The success of PPPs is bound by well-known problems of government: bureaucracy, corruption, lack of funds, lack of transparency, inexperience in working with the private sector. The PPP experience is also intended to build government capacity by training staff, improving professional norms, increasing availability of services, drugs and equipment (Itika, Mashindano & Kessy, 2011). PPP partners have the potential to influence officials, build capacity and promote better planning (Perks, 2011). Yet Perks notes that PPP partners should also be subject to equally thorough observation and sector reform, despite corrupt or inept governance.

In the identified mining PPPs, the role of government policy and regulatory capacities is unclear. Most of the programmes seem to be operating in lieu of or supplementing government policies. An example of where the government has capacity to expand its services based on a PPP is the Obuasi malaria programme in Ghana. However, Ghana is not a difficult environment as Ghana has low infant mortality and HIV prevalence for its level of per capita income.<sup>9</sup> Zambia has a good regulatory framework for PPPs, but from a company perspective, PPPs are driven by threats to business, not PPP potential. It is not clear whether given the same public health threat, having a good regulatory framework makes a company more likely to do a PPP, rather than a workplace health programme.

## 2.7. PPP Governance

The shortcomings of government capacity also arise with respect to PPP governance. PPP partners need to develop independent processes for PPP management, given that regulatory frameworks do not provide guidelines and many governments lack regulatory capacity. Firstly, PPP partners need to ensure that stakeholders are legitimately represented (Davy, 2000). Perks (2011) recommends that mining companies develop better conflict mitigation and risk management practices, implement formal learning and feedback processes and subject their methodology and practices to external evaluation.

We were not able to find detailed information about governance issues with respect to the identified mining sector PPPs for health (representation, accountability, competency or

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<sup>9</sup> See Annex 2

resources). We also did not find information that addresses the relationship management issues that arise between private and public sector organisations.

## 2.8. Conflicts in Incentives

The intention of PPPs is actually to resolve incentive conflicts in the provision of public goods. Davy (2000) writes that partnerships can make the division of risk, investment, and responsibility explicit. Although companies already have a strong incentive to get a 'license to operate', PPPs can make their social efforts more sustainable. Risk wise, though, the companies are the most vulnerable partnership party (aside from the already vulnerable local community) if the partnership fails.

Each government (national, regional or local) will have different goals for a health PPP and the ways performance is measured will differ accordingly. Schwartz (2010) raises the question, *"...is it by overall wellbeing of a state's population or designated 'vulnerable groups'? Should the gains be measured by selective project gains as 'little-drops' fundamental in filling the ocean? Should it be measured by good donor relations with consequential implications for other sectors of the economy, or by the politics of how much aid a government can attract?"*

It is also important to note that outcomes are also influenced by patients' compliance. Ardian et al (2007) noted that TB patients in the Indonesian mining health PPP that they studied paid a deposit of approximately US\$ 20 to ensure their commitment to completing the full course of treatment.

## 2.9. Scaling or Transferring Mining PPP Programmes

Although three of the identified mining health PPPs are based in multiple countries, there is little available information about how the programmes are scaled or transferred between within-company mining locations. However, the community dimensions of the Obuasi (AngloGold Ashanti) and Ahafo (Newmont) programmes were scaled with the assistance of national governments and aid donors.

Newmont received US\$81,500 from the IFC to provide technical assistance and financial support for two years for its HIV/AIDS and Malaria programmes. As part of the IFC Linkages programme, Newmont expanded its programme to local SMEs. Newmont also contributed approximately US\$400,000 to partnerships with local NGOs and district health organisations to support local health facilities and continue malaria eradication efforts. The funds contributed to the opening of three community health centres and distribution of more than 2,000 insecticide treated bed nets.

The Obuasi district-wide spraying campaign was highly effective and the Ghanaian government hoped to spread it to 50 other districts. The national government unsuccessfully applied to the Global Fund for US\$75 million over five years. Instead the Obuasi site became a pilot for a malaria control programme that is a joint venture between the government, the Ghana Chamber of Mines and five mining companies. Internally, AngloGold Ashanti rolled the programme out to mines in Tanzania and Guinea.

## 2.10. Comparing Mining Health PPPs to Oil & Gas Health PPPs

The Ernst & Young Business Challenge Report 2011<sup>10</sup> identified PPPs as a top strategic opportunity for all businesses. However, 40% of the oil and gas executives surveyed reported that they have no interest in PPPs. Ernst & Young found that for executives from all industries, the primary reasons for lack of interest in PPPs were: a lack of organisational focus on PPPs; conflicting interests that make PPPs difficult to sustain; the slow pace of public sector decision-making; a lack of flexibility in the public sector; and a lack of experience in cooperating with the public sector.

In a search of academic literature, industry trade publications, company reports and grey literature, it was difficult to identify substantive information on oil and gas industry health PPPs. Although oil and gas companies are focused on similar issues as mining companies (HIV/AIDS, malaria, TB), oil companies tend to work through their corporate foundations in providing health services, if they partner at all.<sup>11,12,13</sup> In addition to the lack of information and tendency to avoid PPPs, it is difficult to classify oil and gas health PPPs according to the criteria in Section 2.3 because there is little description of efforts to align with national health strategy and there are few explicit statements about the how PPP success would be measured.

Idemudia (2007) describes oil industry efforts in Nigeria to shift from corporate philanthropy and social investment to building local capacity and economic empowerment. MPN (ExxonMobil) provided the funding for a PPP with an NGO that facilitates and promote community health services in 14 communities in regions where MPN operates. Following a community health needs assessment, the PPP provided better primary health care, training of local health personal, potable water and drugs. Total/EPNL entered a PPP with the Rivers state government. The company renovated an abandoned health care facility and contracted to provide logistics and drugs. The state government provided the health care workers, whose wages were subsidised by Total/EPNL.

There is some cost-benefit evidence for workplace health programmes (though not necessarily PPPs) in agriculture. As described in Section 3.1., a cost-benefit study of HIV/AIDS workplace programmes in mining and agribusiness companies in Zambia found a positive net benefit per employee (CHAMP, 2007). Net benefits were lower for agriculture companies than mining companies because mining companies had higher costs (wages and medical costs) and also higher benefits (returns to having healthy employees). Programme expenditures were approximately the same between mining and agriculture companies. In general the mining industry spent more on employee time and salaries, whereas the agriculture programmes spent more on education, training and administration. Mining companies spent far more on health care costs and the average amount spent per employee with HIV was US\$27 versus US\$2 in agriculture.

<sup>10</sup> 'Turn Risks and Opportunities into Results', Ernst & Young global report, [http://www.ey.com/Publication/vwLUAssets/The\\_top\\_10\\_risks\\_and\\_opportunities\\_for\\_global\\_organizations/\\$FILE/Business%20Challenge%20main%20report-%20SCORED.pdf](http://www.ey.com/Publication/vwLUAssets/The_top_10_risks_and_opportunities_for_global_organizations/$FILE/Business%20Challenge%20main%20report-%20SCORED.pdf), accessed 16 December 2011

<sup>11</sup> Chevron Health and Global Issues, <http://www.chevron.com/globalissues/economiccommunitydevelopment/health/>, accessed 16 December 2011

<sup>12</sup> 'Partnering to Save Lives with Bednets', [http://www.usaid.gov/stories/angola/ss\\_ago\\_malaria.html](http://www.usaid.gov/stories/angola/ss_ago_malaria.html), accessed 16 December 2011

<sup>13</sup> 'Oil Search addressing health issues in PNG', <http://www.nri.org.pg/news/press%20releases%202011/Oil%20Search%20Press%20Release%20on%20Behavioural%20Surveillance%20report.pdf>, accessed 16 December 2011



## 2.11. Questions for Case Study Research

The identified mining health PPPs and cost-benefit literature review reveal a need for more case study research on mining health PPPs. The necessary research would need to be more detailed in quantitative and qualitative senses than currently exists for the examples that we were able to identify. Callan (2012) writes that although more information is needed, generally, reporting on the impact of business on development is oriented toward corporate needs rather than government or civil society. There is not a standard reporting format for corporate social responsibility programmes in general, let alone mining health PPPs.

With respect to community impact, Callan recommends indicators that include funding sources, number of beneficiaries and total expenditure. For mining health PPPs, useful quantitative data would include baseline and comparables for patient numbers and demographics, types of treatments, treatment effectiveness, cost-benefit analysis, health service pricing and programme profitability/financials. Qualitative analysis of mining health PPPs should include detailed discussion of how PPPs align with national public health strategies, their performance goals and gender, youth and community impacts. A more detailed list of desirable measures is in Annex 4. Once such information is available, we would be better positioned to evaluate the effect of various PPP qualities (governance, lead partner, financing, local/regional/national government) on programme effectiveness.

Sinanovic & Kumaranayake (2006a; 2006b) present a useful model for evaluating a small number of mining health PPPs. As this type of involvement grows, it would be useful to adopt more standard reporting requirements. Reporting requirements could offer a light-touch alternative to more cumbersome regulation of PPPs. Companies and industry trade associations would have the funds to comply with reporting requirements, but lack interest in compliance. NGO and government partners would be likely to be compliant, but they lack the funds.

In selecting case study settings for further research, it appears that a comparison between mining PPPs and oil and gas PPPs would be more relevant than a comparison to agriculture (tea plantations, for example), due to the extreme differences in cost structure and drivers of PPP net benefits between mining and agriculture. Within the mining sector, it would be useful to compare the net benefits and effectiveness of PPPs between countries, perhaps with similar disease prevalence rates, to assess the extent to which regulatory structures matter. Selecting on the geographic level of the partnership (local/regional/national), the business model or the type of alignment with national health strategies could also be revealing. As non-communicable diseases become part of national health agendas, they too might be targets for potential mining health PPPs.

### 3. Conclusion

#### 3.1. Key Findings

We examined nine mining sector PPPs in SSA in nine countries and found four ‘types’ of mining health PPPs based on their alignment with national strategies for health and the PPP’s performance goals:

- PPPs that expand the reach of public health services and develop public sector capacity with the aim of reducing macroeconomic risk and supporting the national public health strategy
- PPPs that utilise business skills and expertise to meet public health goals
- PPPs that provide financial or in-kind support with the intent of bettering social and economic development
- PPPs that aim to maintain a ‘license to operate’

The identified PPPs seemed to perform on a broader set of criteria the more closely the PPP was aligned with national health policies and went beyond the firm’s financial or technical capabilities. PPPs that expanded the reach of public health services and assisted with capacity development had better performance on community-oriented criteria (social and economic development, national health policy support), rather than firm-oriented criteria (licence to operate, corporate image).

The literature and the examples that we were able to identify suggest that there is a positive net benefit for mining health PPPs. PPPs with private partners, whether for-profit or non-profit, have lower cost per case cured than purely public models. The advantages come in the form of lower recruitment costs for new employees, higher productivity, lower absenteeism and fewer deaths of skilled workers. The costs decrease with programme scale and over time. Given the limited evidence, the year-on-year costs are less than the benefits gained and the net benefit over the course of an employee’s career is positive.

When mining health PPPs in sub-Saharan Africa were compared to mining health PPPs in Papua New Guinea and Venezuela, there were not apparent differences between mining health PPPs by geographic region. There is a great deal of innovation in health PPPs in sub-Saharan Africa and mining health PPPs elsewhere are patterning their programmes on African examples.

There is a need for more evidence on oil and gas industry health PPPs before it is possible to make useful comparisons to mining health PPPs. The oil and gas industry engages in public health and community development through different venues (corporate philanthropy, workplace programmes), so the industries do not have similar or comparable international development partnership practices.

At this stage, the links between programme structure and programme performance remain unclear. It is difficult to draw conclusions about optimal PPP design or make recommendations to improve PPP performance.

#### 3.2. Implications for the Mining Industry

For companies operating in sub-Saharan Africa, infectious disease will continue to be one of the greatest challenges to doing business. In sub-Saharan African countries where mining contributes more than 25% of GDP, HIV/AIDS prevalence rates among the overall population range from less than 2% to as high as 26%. 21% of Anglo American’s South

African workforce is HIV-positive and the cost of not providing HIV/AIDS treatment is equivalent to 5% of payroll.

Based on the identified examples, companies that participate in mining health PPPs secure a healthy work force and reduce health, turnover and training costs. But they also gain better reputations, reduce their operational risk and increase the effectiveness of their social investments.

Companies that do not receive a positive net benefit from mining health PPPs may have much higher costs than average or have a smaller employee base to spread costs across. The evidence suggests that many of the returns to mining health PPPs are returns to scale.

Mining companies themselves transferred the mining health programmes to other company mining sites. We found little information about any difficulties in doing so. With respect to community-oriented programmes, national governments and aid donors played a role in scaling programmes to other communities by providing financial and technical assistance. There seem to be two separate flows of funds: from national governments or donors to companies to support knowledge transfer to local communities; and a flow from companies to local communities to pay for infrastructure and programme support. In the absence of donor funds, one example demonstrated that the national government, industry trade association and multiple companies came together to pay for the knowledge transfer to other communities.

### 3.3. Implications for Public Health

Mining health PPPs appear to slow infection rates, increase community knowledge and generate mildly positive (if any) behavioural change with respect to infectious diseases. The positive net benefit, lower cost of providing services and lower need for government financing suggests that PPPs are a cost-effective way of scaling access to health services.

Mining health PPPs also appear to improve the quality of care. Governments trade off quality of care for access; mining health PPPs do the reverse. Mining companies have greater resources to spend on their employees and they are also able to respond more quickly to changes in demand for health services. Mining companies and employees have aligned incentives to participate in mining health PPPs because mining companies seek to reduce turnover and increase productivity and employees desire job security.

Mining health PPPs also have public health benefits at the community level. Women benefit considerably from mining health PPPs. Programmes that provide comprehensive health services, rather than disease specific programmes seem to be more effective in this respect. Such programmes tend to be initiated by NGOs, rather than mining companies. The inclusion of women may be the result of better representation by community representatives in NGO activities than in mining-related activities.

A drawback is that mining PPPs' considerable resources tend to attract public servants away from government and into the private sector. Also, local communities are integrated into the programme implementation, but they are not sufficiently consulted in the development stages.

### 3.4. Further Research

The evidence on mining health PPPs is extremely limited and due to the lack of reporting requirements, the programmes and reporting are non-standardised. Much of the evidence

comes from company reports and industry summaries and as a result, they are not rigorous or reliable. Until this is remedied, it is difficult to know whether certain ‘types’ of mining health PPPs have better performance and which business models work best. In Annex 4, we make recommendations for appropriate indicators for research on mining health PPP cost-benefits and effectiveness. These indicators would also be valuable guidelines for the design and initiation of a mining health PPP.

There is a need for more research about the relationship between alignment with national health policies and PPP performance goals. This information is needed to make inferences about better design of mining health PPPs. We would also like to understand better the costs, benefits and effectiveness of disease-specific programmes versus comprehensive health services and appropriate funding models for these services.

We would recommend that there is potential for further case studies to address a number of dimensions: gender, youth, other industries (oil and gas), and other geographic regions. Further research will need to be more detailed in both quantitative (i.e. treatment effectiveness, cost-benefit analysis, health service pricing) and qualitative (i.e. governance, financing) respects.

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## Annex 1

### Public-Private Partnership Definitions

Definitions of public-private partnership vary considerably and the common link is that they involve collaboration between private actors and public organisations (Asian Development Bank, 2008; Global Health Initiative, 2003; Fourth High-Level Forum on Aid Effectiveness, 2011; Ratzan, 2007; Global Health Initiative, 2007). However, the defined boundaries of a PPP differ considerably with respect to their Objectives, Legal Nature, Financial Nature, Management Structures and Governance.<sup>14</sup>

The World Health Organisation uses a descriptive definition<sup>15</sup> that captures all the permutations of PPPs, rather than setting boundaries: “The term public-private partnerships covers a wide variety of ventures involving a diversity of arrangements, varying with regard to participants, legal status, governance, management, policy-setting prerogatives, contributions and operational roles. They range from small, single-product collaborations with industry to large entities hosted in United Nations agencies or private not-for-profit organizations.”

The UK Treasury is equally general and defines PPPs<sup>16</sup> as such: “Public private partnerships (PPPs) are arrangements typified by joint working between the public and private sector. In the broadest sense, PPPs can cover all types of collaboration across the interface between the public and private sectors to deliver policies, services and infrastructure.”

It is useful then, to clarify what is meant by a public organisation and what is considered to be private. The public sector includes governments (national, regional, local) and government institutions; generally, governmental agencies that are responsible for delivering public goods (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2009; Widdus, 2005). The term private usually to two spheres: for-profit commercial enterprises and businesses and non-profit civil society, philanthropic foundations, NGOs, academic organisations and faith-based organisations.

When more tightly defined, PPPs are described as having two kinds of objectives: societal and strategic. The societal aims of a PPP are mutually-agreed upon between the partners and may include advancing research, product development, providing services, sector reform or public investment in order to meet social commitments (Asian Development Bank, 2008; Ratzan, 2007). The World Economic Forum, Asian Development Bank and Global Health Initiative definitions say that PPPs have strategic aims. Those objectives might include minimising costs, maximising project performance, increasing the resources, scale, scope, resources and impact of projects, maximising partners’ advantages in performing specific tasks, appropriately allocating risks among partners and optimise resource allocation.

The goal is to create value-added systems of delivering public services that cross industry or sector boundaries. Sekhri, Feachem and Ni (2010) write, “The goal of any partnership with the private sector is to actively enlist private capital, both human and financial, to help governments fulfil their responsibilities for providing equitable access to high-quality public services.”

<sup>14</sup> See Barr 2007 for an in-depth treatment of the boundary dimensions of PPPs

<sup>15</sup> <http://www.who.int/trade/glossary/story077/en/> (accessed 11 December 2011)

<sup>16</sup> [www.hm-treasury.gov.uk/ppp\\_index.htm](http://www.hm-treasury.gov.uk/ppp_index.htm) (accessed 11 December 2011)



Although the WHO and UK Treasury definitions do not define PPPs as formal legal arrangements, it is still likely that PPPs involve some form of written agreement. Such agreements specify the details that may vary and that the WHO and UK Treasury definitions do not specify: project objectives, any formal contractual arrangements, financial and non-financial resources and transactions, governance structures and exit arrangements (Global Health Initiative, 2003; Fourth High-Level Forum on Aid Effectiveness, 2011; Widdus, 2005).

The Fourth High-Level Forum on Aid Effectiveness and the Asian Development Bank PPP definitions both take financial transactions into account. The partners may contribute capital, assets or in-kind contributions. However, each party may expect a financial benefit in return: the government may expect an infrastructure or technology investment from the private sector partner and the private sector may expect a concession, lease or payment for services from the government. The services that the private sector PPP partner provides come from its core business and are provided for a profit.

The Fourth High-Level Forum on Aid Effectiveness and the Asian Development Bank PPP definitions have similar views of the stakeholder roles and responsibilities that make up a PPP. The role of business is to use its core business or capabilities and invest in and efficiently implement the PPP. The government regulates, provides contextual knowledge and makes political connections to support the PPP. Civil society has a role representing stakeholders. Finally, donor agencies are expected to support capacity building of government PPP partners.

Many organisations are careful to note what types of arrangements are not considered to be PPPs. Short-term projects and one-time donations are not considered PPPs, nor are projects that aren't strategic by drawing on partners' strengths (Global Health Initiative, 2003). Privatisation (a permanent transfer of ownership rights) or a fee-for-service arrangement where the government agency unilaterally sets goals and regulations also do not apply.

## Annex 2

### Country Statistics

Country	No. of Mining Operations	Population	Area/ sq km	Pop. Density	Status	Language	Infant mortality /1000	HIV/AIDS %	GDP /capita \$USD	Industry GDP %
DRC	33	71,000,000	2,400,000	29.3	Fragile	French	79.36	4.2	342	26
<b>South Africa</b>	22	50,000,000	1,200,000	41		English	43.78	18.1	10,243	31.2
<b>Ghana</b>	17	24,000,000	200,000	101.5		English	49.89	1.9	1,600	24.7
Angola	12	18,500,000	1,300,000	14.8		Portuguese	178.13	2.1	6,412	65.8
<b>Namibia</b>	8	2,000,000	900,000	2.5		English	45.52	15.3	6,614	32.7
<b>Guinea</b>	8	10,000,000	300,000	40.9		French	63.09	1.6	991	45.7
<b>Zambia</b>	8	13,000,000	800,000	17.2		English	68.4	15.2	1,541	33.7
<b>Botswana</b>	4	2,000,000	600,000	3.4		English	11.79	23.9	13,992	45.8
<b>Tanzania</b>	4	44,000,000	950,000	46.3		English	68.13	6.2	1,416	18.1
<b>Cameroon</b>	3	19,000,000	500,000	39.7		French	62.15	5.1	2,300	30.9
<b>Sierra Leone</b>	3	5,000,000	71,000	79.4	Fragile	English	80.16	1.7	759	31

\*Countries with identified mining health PPPs in this project are in bold.

## Annex 3

### Mining PPP Examples

Country (Programme Name)	Company	Project Focus	Project Details	Targeted Audience	Patient Cost of Services	Treatment Metrics	Results
<b>Ghana (Ahafo)</b>	Newmont	Disease-specific: HIV/AIDS, Malaria	HIV/AIDS since 2005; Malaria since 2007. The programmes include voluntary counselling, treatment and testing; condom distribution; peer educator training by district health staff; peer education; malaria treatment; spraying and breeding site elimination; and laboratory equipment procurement.	Employees, Community	Information not available	From January-August, 2008 Site has 2000 employees; Newmont records 10,100 educational encounters; 30,250 condoms distributed; 230 VCT treatments initiated	From 2005-2006 to January-September 2008: New STI infections decreased from four per month to two per month; Condom distribution from zero to 8,000 per month; Malaria cases down 44% from 2007 to 2008
<b>Tanzania (AMREF)</b>	Barrick Gold, Ashanti, Anglo American	Comprehensive health services: HIV/AIDS, Malaria, STIs, Family Planning, TB, Water and Sanitation	Since the early 2000s. Partnership between the African Medical Research Foundation (AMREF), NGOs, private mining companies and district government health authorities. Programmes include peer education; mine worker health education programmes; condom distribution; educational materials; basic medical care and family planning; home based care.	Employees, Local Female Food and Recreational Facility Workers, Sex Workers	Some free services to high risk women and their male clients	470 Clients per month; 192 HIV tests per month	Information not available
<b>Bhubezi Community Health Centre (South Africa)</b>	Anglo American	Comprehensive health services	Started in 2006. Intended to provide one-stop health care to approximately 70,000 people in 21 villages. Partnered with PEPFAR, Virgin Unite, and the South African Government	Community (Employees' community of origin)	Full-cost services for basic health care, Free diagnosis and	From 2007-2011, more than 145,000 patient visits; 5,900 ART treatments	3,600 of patients still in ART treatment; 51 jobs created

					treatment for HIV/AIDS, TB and malaria	initiated	
<b>South Africa, Botswana, Namibia (DART)</b>	DeBeers	Disease-specific: HIV/AIDS	Launched in 2003 in South Africa. HIV/AIDS management and prevention programme providing Voluntary Counselling and Testing (VCT) and Anti-Retroviral Therapy (ART).	Employees and their families	Free	Information not available	Information not available
<b>Ghana, Guinea, Tanzania (Obuasi)</b>	AngloGold Ashanti	Disease-specific: Malaria	Programme started in 2006. Malaria control programme; including vector control, disease management, surveillance and monitoring; Community Information, Education and Communication (IEC) and health promotion; diagnosis and treatment; now supported by the Global Fund to Fight AIDS, TB and Malaria (GFATM) and Ghana's government and rolled out to 40 districts in Ghana.	Community of the Obuasi Municipal Assembly area, made up of 35,000 dwellings	Information not available	By the end of 2007, 98% of the intervention area had been sprayed	2005-2008, malaria cases decreased from 6,700/month to 1,128/month; employee incidence rate fell from 238/1000 to 69/1000; 116 new spraying jobs created
<b>South Africa</b>	AngloGold Ashanti	Disease-specific: TB and HIV	Set up in early 2000s. Integrated testing, prevention, treatment and education. Research programme offering preventative TB therapy and TB control with infrastructure and equipment support. (This is a collaboration between the South African Medical Research Council, the Aurum Institute for Health Research and the South African Government).	Employees	Information not available	New HIV treatment enrolments 140/month in 2009; 30,000 employees (87% of S. African workforce) tested; 51% of wellness clinic attendees receive ART	From 2005-2011, rate of new cases of occupational TB fell from 3.4% to 1.5%; new HIV positive tests increased from 2.2% of employees to 3.4%; percentage of employees with HIV counselling has fallen from 100% in 2008 to 41% in 2011; Deaths in-service rate

							down from 12/1000 to 7.3/1000
<b>Cameroon, Guinea, South Africa</b>	Rio Tinto	Disease-specific: HIV/AIDS, TB & Malaria	Since 2006. Peer education, voluntary counselling, testing, treatment; Network of community agents; bed net distribution. The programme also focuses on the development of an HIV/AIDS prophylactic vaccine by supporting research into a therapeutic vaccine in South Africa.	Employees and Community	Anti-retroviral treatment is 50% subsidised	In 2008, 1,1718 HIV tests conducted, 70,000 condoms distributed at Palabora mine in S. Africa	Information not available
<b>Ghana (Tarkwa)</b>	Gold Fields Ghana	Disease-specific: HIV/AIDS	Since 2004. Peer education, voluntary counselling and testing; condom distribution; training for other community organisations; regional educational radio programme	Employees; Community organisations; Local sex workers	Information not available	60% of employees were tested in 2007; condom distribution increased from 32,000 to 76,000 from 2005-2007	As of 2008, 88% of all employees and 30% of contract workers underwent counselling and testing, usually before going on annual leave; employee HIV prevalence rate is less than 1%
<b>Sierra Leone</b>	Sierra Rutile Limited	Disease-specific: HIV/AIDS	Programme started in 2006. Testing and treatment; weekly clinics in local communities to provide basic and emergency care. Partnered with International Labour Organisation, United Mine Workers and National HIV/AIDS Secretariat	Employees and their dependents	Free	Clinic treats 2,000 people/month	Total lost time injuries decreased by 17% in 2009.

## Annex 4

### Recommended Case Study Indicators<sup>17</sup>

Descriptive	Health Outcomes	Financial	Other
Geographic location(s)	Disease incidence rates	Total funding amounts disaggregated by cash, in-kind and management contribution	Number of direct and indirect beneficiaries by sector and programme
Type of business model	Case-finding protocols	Funding sources	General measure of benefit provided
Number of staff	Case finding rates	Type of investment	Measures of community social development
Population served	Services provided	Corporate contributions to government or aid donor programmes	Governance structures (representation, accountability)
Type of facility	Treatment Outcomes	Service delivery costs per patient (disaggregated by cost category, funder, outcomes)	Absenteeism, lost-employee-days, deaths in-service
	Quality of Care measures		
	Measures of public health capacity development		

#### *Other important reporting considerations*

Relevant corporate objectives and targets

Data for multiple reporting periods (Changes over Time)

Data disaggregated by geographic location and gender

<sup>17</sup> The recommended indicators are derived from the mining PPP examples and the following sources: Callan (2012), UK Department for International Development, “Draft ToRs: Potential of Mining PPPs to Strengthen Health Systems and Extend Health Services to Underserved Populations”, (London, December 2010), Sinanovic & Kumaranayake (2006a; 2006b; 2006c)