

Report

Approaches to understanding development outcomes from mining

Social and Economic Development
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FOREWORD

The mining and metals sector has the potential to play an important role in social development and poverty alleviation, particularly where governments have implemented supportive policy and governance frameworks. Where countries have created an enabling environment for mining, metals and other businesses to invest and flourish, progress against the Millennium Development Goals (MDGs) can be accelerated. Without a thriving private sector, significant progress against the MDGs is unlikely to be achieved and is impossible to sustain.

While considerable sums of money are often invested in programs intended to generate economic and social returns to the local community, typically in health, education, housing and transport infrastructure, there is often uncertainty around how to quantify mining companies' contributions on human and social development. Understanding the impacts of these investments on livelihoods and the quality of life of host communities is important. Mining companies are increasingly expected to be able demonstrate the effectiveness and value of such investments – by stakeholders and shareholders – including their alignment to long-term objectives of strengthening community development. However, there is currently little guidance on how to measure this meaningfully and no generally accepted approaches to doing so within the mining and metals sector.

The objective of this report is to illustrate the methods available to measure human and social development contributions and consider the applicability of these methods for use in the mining and metals sector. We hope that this will provide ICMM members and other companies in the sector with a range of options to more meaningfully measure the societal returns on investments in social and economic infrastructure and related programs.

The report is primarily aimed at corporate level staff with responsibilities for developing strategic approaches to social and economic development issues within ICMM's membership and more broadly within the mining and metals sector. It will also be of interest to current and potential partners who collaborate with mining companies at a corporate and operational level on initiatives related to social and economic development.

We hope this report contributes to advancing the effective measurement of social investment outcomes in the mining and metals industries. We are sure there is much to learn as we move ahead.



R Anthony Hodge
President, ICMM

INTRODUCTION

“The objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives.”

Mahbub ul Haq Founder of the Human Development Report
(See <http://hdr.undp.org/en/humandev/> for the above quotation.)

Mining and human development: a new generation of questions

The development impacts of mining have traditionally been reported with reference to production, investment, employment, taxation and royalties, and direct effects on the economy. In more recent years, greater emphasis has also been placed on local development impacts, such as the procurement of local goods and services and the provision of skills and infrastructure. While these are important indicators of the contribution that the mining industry can make to local, regional and national economies, understanding the outcomes of mineral development for communities and society as a whole requires a different type of analysis.

Questions such as, what are the effects of mining activities on quality of life and livelihoods? And what is the magnitude and longevity of these effects? are increasingly being asked. The aim of these questions is to explore what has happened within local communities and societies as a result of mineral development and associated investments. Answers to these questions are more difficult to generate and demand more in terms of analysis, but have huge relevance for the mining industry and society in general.

For mineral companies to demonstrate that their projects are having a human development impact, they must move beyond measurements of input, such as the scale of economic and social investments, or descriptions of activities, programs and their outputs. Instead, they must show that:

- their investments have been co-ordinated to achieve strategic outcomes in areas of greatest need, and for greatest benefit
- there is progress towards human development goals that can be linked to mining
- mining has left long-term positive social and environmental legacies.

In short, to demonstrate whether or not mining projects have a human development impact, measurement must be focussed on outcomes and not just inputs.

INTRODUCTION

What is human and social development and why is it important?

The practice of community relations in the mining and metals industry can benefit from a more strategic focus on the human and social development outcomes of mining. Human development refers to the realization of human choices and the building of human capabilities, the most fundamental of which are to live a long and healthy life, to be empowered through the acquisition of knowledge and to have resources available for an adequate standard of living. The concept of human development gained prominence in the 1990s with the publication of the Human Development Index (HDI) by the United Nations Development Programme. Human development evolved from a related concept, social development, which refers to a broader set of concerns at the societal level whereby changes to institutions, social infrastructure and social relations enable the betterment of the human condition. The social development concept arose in the 1960s and 1970s as a critique of development as it was then espoused, which was mainly focused on national economic measures. Human and social development concepts place society and people at the centre of analysis and ask how economic development contributes to the advancement of human capability and empowerment. They demand a focus on the outcomes of activities with clear understanding of the links between means and ends.

What are the commitments of ICMM member companies to human and social development?

Member companies of the International Council on Mining and Metals, through implementation of the ICMM Sustainable Development Framework, have committed to “Contribute to the social, economic, and institutional development of the communities in which we operate” (Principle 9). ICMM has also produced a position statement on Mining: Partnerships for Development that outlines the steps that ICMM member companies should take to actively pursue partnerships with local communities, development actors, governments and civil society to achieve social and human development goals. These actors can have a defining influence on whether mining development translates into broader development outcomes.

The position statement further commits ICMM members to develop an understanding of the social and economic contribution of the project, including an analysis of the barriers that might weaken its contribution in regions where social and economic outcomes may be uncertain or where mining development might create meaningful opportunities for realization of development goals. The position statement is supported by the ICMM *Mining: Partnerships for Development Toolkit* that provides operational advice for achieving the above commitments and the ICMM *Community Development Toolkit*, which is a step-by-step guide that describes a range of available tools to address the positive and negative impacts of mining (discussed in more detail below).

How does mining contribute to human and social development?

Mineral development can contribute to human and social development in four main ways (see Figure 1). First, investments in the core activities of mining can produce a range of development impacts, including the generation of employment and the building of human capabilities.

Second, investments may be made that have a dual focus of advancing both the mining project and society. Road and rail infrastructure, for example, can assist communities by enhancing mobility.

Third, mining projects may invest in social and environmental initiatives with the specific aim of improving development outcomes in the regions in which they operate.

Fourth, macroeconomic contributions to the economy (eg taxation), if managed correctly, can also contribute to more broad-based social development. This fourth area is beyond the scope of this document as it has been covered extensively by ICMM’s *Mining Partnerships for Development Toolkit*.

Figure 1: The ways that mineral development may contribute to human and social development



INTRODUCTION

In practice, mining projects have not always led to marked improvements in human and social development in the regions and countries in which they have operated, and are often associated with negative social, economic and environmental impacts. In the absence of appropriate governance or adequate attention to the management of project impacts, the negative effects of mining may undermine any positive development outcomes, or such positive opportunities may remain unrealized.

A balanced approach requires that positive and negative impacts on the quality of life of people in a region are considered holistically and are understood through credible measures of impact. The positive and negative impacts of mining are described at some length in other ICMM reports and toolkits, including the *Mining: Partnerships for Development Toolkit* and are not addressed here. Rather, this document focuses on the potential ways of measuring the human and social development outcomes of mining project investments.

Why has ICMM produced this document and who is the target audience?

The objective in producing this document is to illustrate the methods available to measure human and social development impacts and consider the applicability of these methods for use in the mining industry context.

Many mining companies operate in countries or regions with limited social and economic infrastructure (in areas such as health and education), access to utilities (such as water and electricity) and access to finance. Mining companies often make significant investments in infrastructure or other activities to help enhance social and economic development with the ultimate goal of contributing positively to the communities in which they operate. While companies are increasingly measuring and reporting on the value of such investments – in terms of overall contribution by the company – there is currently little guidance on how to measure the effectiveness of their investments. The measurement of inputs and outputs of development initiatives does not inform a company of whether the desired results have been achieved, or provide a measure of whether local communities have benefited from a specific activity or intervention.

The target audience is not the operational managers with responsibility for managing social and economic issues at an operational level. It is primarily aimed at those with a corporate-level responsibility for developing strategic approaches to social and economic development issues within ICMM's membership and more broadly within the mining and metals sector. It will also be of interest to current and potential partners who collaborate with mining companies at a corporate and operational level on initiatives related to social and economic development.

How was this document prepared?

This document was prepared based on a review of existing indicators, frameworks and methods used by a representative range of private companies, development assistance organizations and civil society organizations to measure the effectiveness of social investments and their impact on the quality of life of communities. Organizations and initiatives were identified through a review of publicly available information. A full list of the identified initiatives is included as Annex A. A shortlist of initiatives was then subject to further analysis and supplemented where possible by interviews and solicitation of further information from the organization. A review was also undertaken of existing quality of life indicators such as the HDI, and their potential to be used as measures of the impacts or outcomes of mining activities and associated investments.

INTRODUCTION

What are the main areas addressed in this document?

Addressing issues related to the effects of mining on human, social and economic development is challenging. This is in part due to the fact that:

- social groups and society in general are dynamic
- there is a complexity of factors that influence development outcomes
- people have a diverse experience of the positive and negative effects of mineral development
- there are challenges around analysis and measurement.

Detailed and dedicated analysis and focus are therefore required. This document provides a snapshot of available methods that may be used to improve the measurement of the development outcomes of mining. The document is divided into three main sections:

- designing for outcomes – methods for aligning core business activities and social investments towards the achievement of human and social development goals
- tracking outcomes – methods for monitoring the outcomes of development and adapting programs and activities
- analyzing outcomes – evaluation methods for the identification of a correlation between activities and outcomes and causal pathways to build an understanding of change.

Each of these sections describes existing tools and examines their potential applicability to the mining and metals industry (see Figure 2). Individual methods, frameworks and initiatives are profiled within these sections as text boxes. In practice, many of the approaches described are relevant across project design, monitoring and evaluation and a choice was therefore made to highlight particular aspects.

Figure 2: Overview of the content of this document

	Designing for outcomes	Tracking outcomes	Analyzing outcomes
Overview	Methods for aligning core business activities and social investments with the achievement of human and social development goals	Methods for monitoring the outcomes of development and adapting programs and activities	Evaluation methods for the identification of a correlation between activities and outcomes and causal pathways to build an understanding of change
Content	<ul style="list-style-type: none"> • Aligning with development priorities • Mapping the program logic • Evaluating social programs 	<ul style="list-style-type: none"> • Defining the area of influence and scale of analysis • Using development indices as outcomes indicators • Involving communities in monitoring 	<ul style="list-style-type: none"> • Using experimental design • Probing the links between cause and effect
Methods/initiatives	<ul style="list-style-type: none"> • Sustainable livelihoods framework (DFID) • Financial Valuation Tool (IFC) 	<ul style="list-style-type: none"> • Development Outcome Tracking System (IFC) • London Benchmarking Group model • Managing for Development results (OECD) • Mapping outcomes for social investment (Big Society Capital) • Human Development Index (UNDP) • Calvert-Henderson Quality of Life Indicators • Community Based performance Monitoring approach (World Bank) 	<ul style="list-style-type: none"> • Difference-in-differences (World Bank) • Measuring Impact Framework (WBCSD) • Most Significant Change (Clear Horizon)

INTRODUCTION

USEFUL READING

ICMM Mining: Partnerships for Development Toolkit

ICMM has produced a toolkit for evaluating the positive and negative economic and social effects of mining at local, regional and national levels in mining countries. The toolkit was tested in five countries – Chile, Ghana, Peru, Tanzania and Lao PDR. The toolkit consists of eight modules:

- mining and the host country: developing a country profile
- the operation, its initiatives and partners: profiling the operation and understanding its stakeholders
- measuring the mining industry's contribution to the host country
- the proximate aspects of governance that influence performance
- measuring the mine's positive and negative contributions to local communities
- analyzing the life cycle impact on the host country's macroeconomic aggregates
- impact of mining on governance
- communicating your findings.

This document aims to assist ICMM member companies and interested organizations by providing additional methodologies for strengthening the analysis of human and social development outcomes.

ICMM Community Development Toolkit

ICMM has also produced a toolkit to provide guidance for all stages of the community development process, including exploration, construction, operations, decommissioning and closure, and post-closure. The toolkit includes a set of 20 tools that help explore the positive and negative effects of mining at various levels and are aimed at fostering productive relationships, building capacity and progressing opportunities for the sustainable development of communities affected by mining and metals operations.

The 20 practical community development tools are grouped together as:

- relationships tools
- planning tools
- assessment tools
- management tools
- monitoring and evaluation tools.

A step-by-step guide supports the tools to assist ICMM member companies and other interested organizations in using them. The original version of the toolkit was written in partnership with the World Bank Group's Oil, Gas, and Mining Policy Division. An updated version of the toolkit was released by ICMM in 2012.

“Human development, as an approach, is concerned with what I take to be the basic development idea: namely, advancing the richness of human life, rather than the richness of the economy in which human beings live, which is only a part of it.”

Prof Amartya Sen Professor of Economics, Harvard University, Nobel Laureate in Economics, 1998

1

SECTION 1 Designing for outcomes



Orientating development activities towards the achievement of human and social development outcomes requires careful planning. Designing programs and activities for development outcomes will usually require some form of forecasting or prediction. Analysis of the likely impacts of mining projects (core business activities) will most usually be undertaken as part of environmental and social impact assessments, while forecasting of the impact of social investments may be undertaken as part of the design of specific programs.

1.1 Aligning with development priorities

While core business activities are undertaken for the purposes of achieving business objectives, there is sometimes flexibility to design aspects of mining projects to also meet particular social objectives or enhance outcomes for a particular social group (eg indigenous employment, provision of water and energy infrastructure, or local procurement). Direct social investment, in contrast, offers more flexibility to target activities for the greatest development need.

Development needs can be determined by both technical and participatory methods (Esteves and Vanclay 2009, Franks 2012, Kemp 2009). Baselines are a measure of the current state (and pre-existing trends) of the society, economy or environment. Social profiles refer to the collection of secondary data on demographics, services and other social characteristics. Stakeholder analysis and social mapping can assist in understanding relationships between people, social groups and institutions (described in more detail in ICMM's *Community Development Toolkit*), while the results of any previous monitoring or evaluation can provide a means to understanding community needs and the opportunity to identify areas of particular focus for development programs. Involving a community in programs and project design can also assist in identifying priorities or understanding issues in greater detail. Trade-offs will always need to be made between the extent of participatory and technical analysis; however, both are important.

There is the potential for social impact assessment of mining projects to predict the impact of projects on longer-term quality of life outcomes (Esteves et al 2012). Traditionally, however, impact assessment has focused on direct impacts on local communities within the project's area of influence. The prediction of long-term development outcomes can be undertaken through the environmental and social impact assessment process (or dedicated studies), but may be most suited for large or longer-term projects or circumstances where there are multiple projects in close proximity to each other. Co-ordination and collaboration are essential components for achieving a collective impact where there are cumulative impacts from multiple development activities (Kania and Kramer 2011). Where there is little flexibility to collaborate, the co-ordination of activities to achieve synergies in outcomes may deliver many of the same benefits of collaboration (Franks et al 2011). Some questions that may be useful when designing social investment programs are:

- Has the program been subject to a formal selection or prioritization process?
- Does the program respond to an identified community need as determined through a participatory or technical assessment?
- Does the program respond to a priority strategic risk area for the company?
- Does the program align with other existing or proposed development initiatives to create a collective impact?
- Does the program benefit a priority community or advance relationships with an important stakeholder group?
- Does the program build community independence and a lasting legacy?
- Are the intended program recipients involved in the development of the idea, design and program delivery?

“Involving a community in programs and project design can also assist in identifying priorities or understanding issues in greater detail.”

USEFUL READING

International Finance Corporation (IFC) *Strategic community investment: a good practice handbook for companies doing business in emerging markets*

The handbook provides guidance on strategic community investment programs with the aim of assisting companies and the broader private sector in emerging markets to create “shared value” by aligning business aims and competencies with key development goals held by local communities. The handbook identifies five principles for community investments: they should be strategic, aligned with both business and development strategies, multi-stakeholder driven, sustainable and measurable. These principles are developed into a framework for developing a community investment strategy (see Figure 3) that highlights the following issues:

- setting objectives that can be ascribed to community investment
- defining agreed-upon indicators and measures of success with stakeholders
- establishing a baseline
- focusing on outcomes and impacts, not only outputs
- focusing on qualitative, not only quantitative
- tracking changes in community perceptions
- ensuring measurements are participatory
- tracking results by gender
- integrating community investment into the company’s broader monitoring and evaluation systems
- using monitoring and evaluation results to drive resource allocation for community investment.

Figure 3: Framework for developing a community investment strategy

Assess the business context	Assess the local context	Engage communities	Invest in capacity building	Set the parameters	Select implementation models	Measure and communicate results
Business case	Socio-economic assessment	Community planning	Needs assessment	Objectives, guiding principles and criteria	In-house	Baseline
Risk and opportunities	Stakeholders and networks	Assets and opportunities	Target groups	Investment areas	Third party	Indicators
Core competencies	Institutional mapping	Visioning and prioritization	Types of capacities and skills	Exit strategy	Multi-stakeholder partnership	Participatory methods
Internal alignment	Partners	Expectations management	Options and strategies	Budget	Foundation	Community perceptions
Project cycle		Gender			Hybrid models	Return on investment
						Communications strategy

Source: International Finance Corporation 2010.

SUSTAINABLE LIVELIHOODS FRAMEWORK →

UK Department for International Development (DFID)

What is it?

The sustainable livelihoods framework (SLF) is a planning and management tool designed to assist development actors to better understand and analyze how people, particularly the poor, live and cope with vulnerabilities (see Figure 4). The framework was developed by the Sustainable Rural Livelihoods Advisory Committee and builds on earlier work by the Institute of Development Studies and other organizations. The framework was developed to:

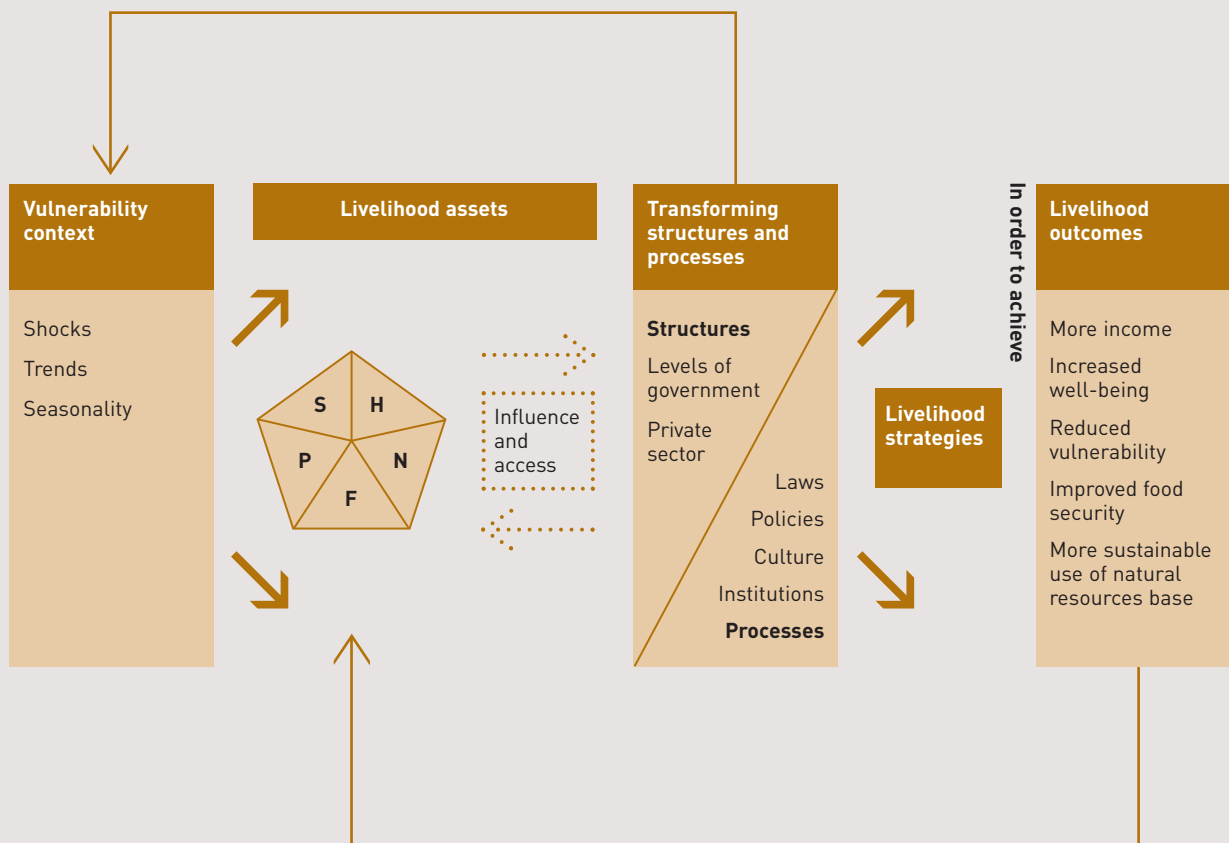
- provide a checklist of important issues
- draw attention to core influences and processes
- assist identification of the interactions between factors affecting livelihoods.

The SLF is people centred and aims to assist stakeholders from diverse backgrounds to engage in meaningful and structured debate about the range of factors affecting livelihoods, their relative importance and the way in which they interrelate. This, in turn, should assist stakeholders to identify appropriate entry points for the future support of livelihoods.

The framework argues that the starting point of livelihoods should not be an analysis of vulnerability, but rather should begin with examination of people’s assets, their objectives (the livelihood outcomes people are seeking) and the livelihood strategies they intend to adopt to attain these objectives.

Figure 4: Sustainable livelihoods framework

Key H – human capital N – natural capital F – financial capital P – physical capital S – social capital



SUSTAINABLE LIVELIHOODS FRAMEWORK



UK Department for International Development (DFID)

How is it used?

The SLF was developed to help improve DFID's ability to minimize and eliminate poverty. It may be utilized in both the planning and management of new development activities or initiatives, and in assessing contributions of existing activities to livelihood sustainability. Overall, the tool is intended to be a flexible and living tool that may be modified as required through the project/program cycle to support and assist poverty reduction efforts.

How does it compare to other initiatives?

The SLF places great emphasis on poverty and poverty reduction efforts. The framework is holistic in nature and draws on livelihoods analysis to assess how a development activity or program "fits" with the livelihoods of the poor. Also, rather than providing definitive solutions, the framework helps stakeholders to identify appropriate starting points to better support livelihoods of the poor.

Potential applicability to the sector

There is potential for the SLF to be adapted as a planning tool for use by mining and metals sector companies in their community development activities. The tool could also assist in situational analysis that may accompany mine project planning. Because of the flexible nature of the SLF, it may be applied in a range of situations to help a company's poverty reduction efforts. When planning community development and social investment activities, the framework may be used to help identify development priorities and ensure new activities are aligned with poverty reduction goals. The SLF may also be utilized when reviewing current community investment activities that were not initially designed with sustainable livelihood principles in mind. For example, it may assist mining companies to identify areas of alignment between core business activities and the goals of poverty reduction and livelihood improvement. The framework may also assist companies to better align their monitoring and evaluation systems to be more focused on poverty reduction.

Source

Department for International Development (DFID) 1999.

1.2 Mapping the program logic

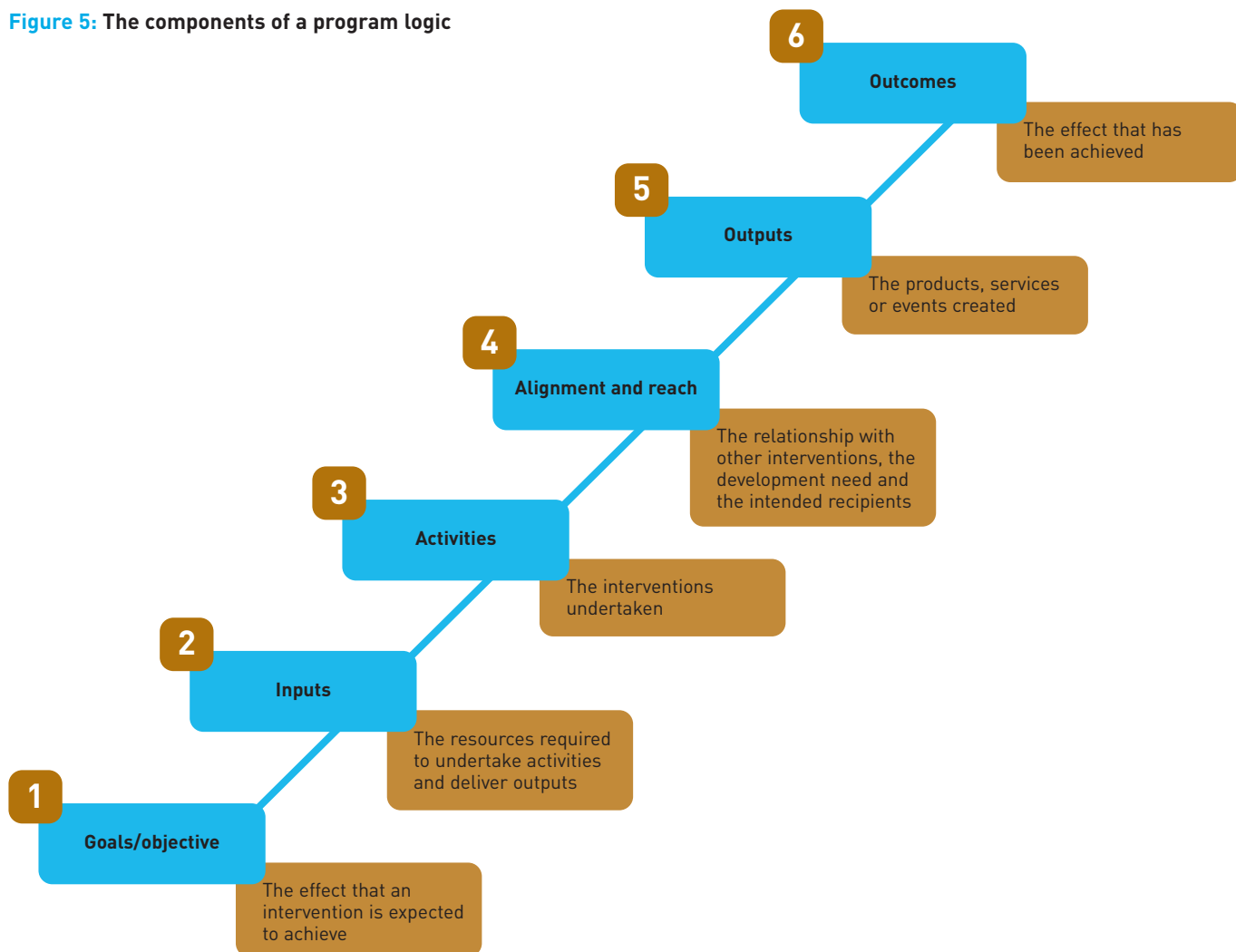
Common to many of the methods of program design is the need to differentiate between means and ends and develop a credible theory of change. A program logic (or log frame) is a representation of what a project will do and how it will do it. The model shows the logical relationships between the resources invested (inputs), the activities that take place and their outputs, and the short-, medium- and long-term changes that result (outcomes; see Figure 5). Short-term outcomes are often about capacity and capability change, medium-term about

practice change and long-term outcomes the ultimate change in conditions. Impacts typically refer to any effect brought about by an intervention but are sometimes used to refer to long-term outcomes.

Log frames are based on a linear view of change that has intended impacts or changes via intended routes. Because of this, log frames can sometimes mask or not account for unintended consequences or the interaction between multiple interventions that may influence outcomes. For example, external factors such as natural disasters or political instability can play an important role in the success or otherwise of development activities and

may not be accounted for in logic models. Some variations of the method attempt to describe how the program is aligned with other development interventions and the extent to which the program will reach intended recipients (alignment and reach). Log frames challenge program designers to think about the assumptions behind design decisions, the links between activities and objectives and provide a means to define objectives and work back along the logic train to design effective programs. The use of log frames is a well-established technique in the mining and metals sector and they continue to be used to plan community development activities.

Figure 5: The components of a program logic



1.3 Evaluating social programs for greatest benefit

There are a suite of evaluation methods that compare the effectiveness or benefit of particular activities with reference to cost that are useful in program design (see Table 1). These methods are increasingly being used in the mining and metals sector to evaluate community development activities and social investment programs. For example, the Financial Valuation Tool, developed through a partnership between the IFC, Rio Tinto, Deloitte, the Multilateral Investment Guarantee Agency and the Government of Norway, was developed to assist companies to quantify the return of site-specific sustainability investments (more details are provided in the case study below).

Table 1: Methods for the financial evaluation of programs

Evaluation method	Explanation
Social return on investment (SROI)	An analytic tool for measuring the extra-financial value in decision making (eg social and environmental value is not usually reflected in conventional financial accounts). The measure provides a more holistic picture of how value is created and uses monetary value for representation. The measure enables a ratio of benefits to costs to be calculated.
Cost-benefit analysis (CBA)	A technique for calculating and comparing the value of the benefits of a particular action against the costs associated with it. It is often used when deciding whether to make a change or when comparing projects.
Cost-effectiveness analysis (CEA)	An economic tool that compares the relative costs and outcomes (effects) of two or more programs or interventions. The result of this analysis is cost-effectiveness ratios that represent the trade-off between a program's costs (measured in dollars) and outcomes (measured in appropriate units).
Net present value (NPV)	The difference between the present value of cash inflows and the present value of cash outflows. NPV is often used in capital budgeting to analyze the profitability of an investment or project.

“The FV Tool process provides a common platform and language for sustainable and non-sustainable business functions to assess the returns of investing in sustainability initiatives.”

FINANCIAL VALUATION TOOL

International Finance Corporation

What is it?

The Financial Valuation (FV) Tool aims to assist companies to quantify the probable net present NPV of site-specific sustainability investments. The tool refers to both the direct value creation of the investment (generated benefits and reduced costs) and the indirect value protection of investments (risk mitigation and program effectiveness). The FV Tool attempts to calculate value according to the following methods:

- Value creation (CBA) – a process for calculating and comparing benefits and costs of a project, investment or initiative. Value can be created by saving on inputs or by productivity gains.
- Value protection (indirect benefits) – value of mitigating risks. Calculating value protection is not easy. It requires working through a scenario of risks and opportunities to calculate a value of the investments that contribute to social risk mitigation and increased trust, social cohesion etc.
- Risk quantification – the total portion of risk that can be managed through community investments using the Multilateral Investment Guarantee Agency and other sources of country- and project-level risk data from historical database, to determine the potential volume of risk that a given sustainability investment portfolio can manage.

How is it used?

The FV Tool process provides a common platform and language (financial value) for sustainable and non-sustainable business functions to assess the returns of investing in sustainability initiatives. Overall, the tool can be used to encourage communication and co-ordination between business units that do not normally work together to mitigate risks.

How does it compare to other initiatives?

The FV Tool enables companies to generate financial data on their community investments and improve their ability to assess and communicate the benefits of sustainable development initiatives and to justify budgets for community investments against competing corporate priorities. Further, the ability to articulate the costs and benefits of community investments and initiatives enables companies to better integrate community investment activities into core project planning processes as it allows cross-functional alignment and communication.

Potential applicability to the sector

The FV Tool has been piloted at a number of mine sites, including Newmont's Ahafo gold mine in Ghana and a Rio Tinto greenfield project in sub-Saharan Africa. A case study of the FV Tool pilot program at Ahafo is discussed below. The case describes the potential for implementation of the tool in the mining and metals sector.

Sources

International Finance Corporation,
www.fvtool.com

CASE STUDY

FINANCIAL VALUATION TOOL Ahafo gold mine pilot, Newmont

The Newmont Ahafo mine piloted the IFC FV Tool and is currently assessing the potential for application and integration of the tool into its business process and planning cycle. Newmont found that the tool not only helped provide an estimated NPV for a specific sustainability portfolio, but more importantly, that it enabled cross-functional engagement by allowing the environment and social responsibility function on-site to develop a rationale for its programs that resonated with non-sustainability functions.

Conversation with non-sustainability functions

The FV Tool assisted sustainability functions to measure the effectiveness of community investments, quantify effective community investment delivery and communicate in more tangible terms the business case for community investment. Overall, the tool provided a common platform for social responsibility, human resources, health and safety, operations, risk, supply chain and land teams to engage in discussions to better understand the strategy, figures, analysis and decision-making processes around community and sustainability investments and their associated expenditures. This helped overcome the “silo” approach during multidisciplinary discussions.

Value protection and risk management

The FV Tool process contributed to addressing the ongoing debate about the “true value” of community and sustainability investment to the business. It helped strengthen the understanding and union between finance, risk and social responsibility teams. It also led to greater appreciation among Newmont staff of the relationships between social responsibility investments and risk management and enabled environment and social responsibility staff to communicate from a financial and risk perspective.

Value-creation perspective

During the FV Tool process, a CBA was undertaken for specific sustainability investments. The CBA was undertaken to identify the “value drivers” or productivity gains/savings for the mine. The finance team assisted the environment and social responsibility team to express the value of their program in terms of cost (operating expenditure and capital expenditure), benefits (eg cost savings and productivity leading to financial gains) and operational risk mitigation. For example, the Newmont Ahafo’s malaria program underwent a CBA and the process identified that the total cost of malaria to the company (ie costs/value lost due to workers contracting malaria and associated absenteeism) without a malaria control program over a five-year period would be approximately US\$3 million. In comparison, Newmont invested approximately US\$1.5 million in the Ahafo’s malaria control program over the same five-year period. The CBA confirmed the importance of the malaria control program and helped provide an improved understanding of shared value by non-sustainability business functions.

Overall, the FV Tool pilot program at the Newmont Ahafo mine assisted sustainability functions to measure their programs in terms of direct and indirect value, and thus enabled them to communicate, in more concrete terms, the value of the sustainability and community investments. Despite this promise, the real test of the FV Tool will be determined by the mine management’s ability to formally integrate the process into site-level management processes, including Ahafo’s budgeting and capital project process planning for operational investments.

Source

International Finance Corporation 2011.

2

SECTION 2 Tracking outcomes



As with any monitoring process, a balance will need to be struck between what is possible to monitor and what is realistic to monitor. Monitoring outcomes has the dual purpose of communicating performance and generating information that can inform management responses. As a result, there will be multiple reasons for the selection of particular areas to monitor.

The log frame (described in Section 1.2) provides a useful tool for planning particular development activities and can also assist in the development of meaningful indicators. Indicators should be chosen to provide information on inputs; alignment and reach; outputs; and short-, medium- and long-term outcomes – and, ultimately, will provide the ability to test whether change has come about in the manner predicted or intended. The same approach can be used to monitor the impacts arising from the core business activities. The links between the activities of the project and human development outcomes should be understood through monitoring.

While there are good reasons to routinely monitor inputs, activities and outputs, outcome monitoring is often the subject of more in-depth periodic evaluation focusing on a subset of the overall activities. This is because:

- outcome monitoring demands more in terms of resources and analysis
- there is often a time lag between outputs and outcomes
- the factors, trends and activities contributing to outcomes are usually more complex.

2.1 Defining the area of influence and scale of analysis

The scale of analysis should be commensurate with the scale of the intervention that you are trying to understand (see Figure 6). On the one hand, the choice of scale for analysis will reflect the desire to understand how the program or project impacts are being experienced and, as such, the boundaries of analysis will reflect the area of influence of the project. On the other hand, when attempting to understand human and social development, the contributing factors are likely to be numerous and diverse, and so analysis will need to account for other potential sources of impact, such as other mining projects, or development interventions. In addition, different stakeholders' experience and perception of impacts will vary and so analysis must also take into consideration the perspective of the people, social groups and institutions that will be affected by a project. This can be a complex and time-consuming process and so a decision must be made as to what level and frequency of analysis is required to gain a sufficient understanding of the relationship between mining project investments and effects on human and social development.

Because not all of the cumulative impacts that influence outcomes at a particular geographic scale can be understood, it is sometimes helpful to focus on the issues that are of particular significance or value: in the case of human development it may be a vulnerable or marginalized group, while in the case of environmental issues it may be a threatened species or the health of a particular waterway.

Long-term outcomes by their very nature occur slowly, so it may be necessary to collaborate with other development actors, industry or government institutions to undertake analysis over longer time or spatial scales, or to situate local scale analysis within broader studies. Another consideration will be the breadth of analysis. Tracking the outcomes of a program may necessarily focus the study on a particular issue (eg HIV/AIDS). However, to understand the impacts of a mining project on quality of life it is necessary to consider the full array of impacts, even while it is not possible to monitor all of these impacts in-depth. One indicator on one subject will not tell the full story. Instead, a range of indicators should be carefully selected with due consideration for how different impacts play out. In-depth analysis and monitoring should only be undertaken for those issues that are most important and that collectively will paint a balanced picture of the outcomes of mining investments.

The remainder of this section examines various indicators, frameworks and methods for tracking development outcomes and considers the applicability of the approaches for use in the mining and metals sector.

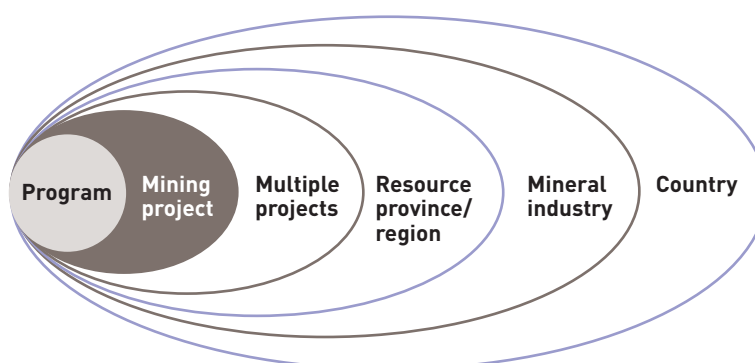


Figure 6: Potential scales of analysis

DEVELOPMENT OUTCOME TRACKING SYSTEM →

International Finance Corporation

What is it?

The Development Outcome Tracking System (DOTS) indicator framework was launched in 2005 by the IFC to measure the development effectiveness of IFC's client companies' investments and advisory services. DOTS was developed to track development results and outcomes throughout the project cycle and generate real-time feedback into project operations.

The evaluation framework includes an overall development outcome rating and industry-specific standard indicators. For investment projects, the assessment of the overall development outcome is a combination of four key performance components that are informed by indicators agreed upon by the IFC and client company:

- financial performance
- economic performance
- environmental and social performance
- private sector development impact.

The DOTS evaluation framework is based on a logic model, with output and outcome indicators the main focus. An additional indicator category – reach indicator – is sometimes used by the IFC to assess the broader footprint its projects and client companies have on wider development outcomes. At the beginning of a project, standardized indicators, baselines and targets are identified. The standardized indicators are used to allow the IFC to collect consistent development results and easily compare them across industry sectors and regions. These indicators are grouped into three categories:

- corporate standard indicators – development indicators consistent across all projects
- department standard indicators – indicators specific to an industry sector
- custom indicators – indicators specific to an investment not otherwise captured.

The DOTS tracking system provides relatively simple indicators to ensure that the process is not too onerous for management and so indicators can be continuously tracked. However, IFC acknowledges that mining investments are more complex and sensitive than regular investment. Thus, specific 'Oil, Gas and Mining' sector indicators have been developed to assist extractive industry companies to track indicators that are relevant to the activities.

The overall development outcome rating is based on a six-point scale with one (1) reflecting "highly successful" and six (6) reflecting "highly unsuccessful" (see Figure 7). The overall development outcome rating is a synthesis of each of the four performance component ratings. These four components receive a rating based on a four-point scale with one (1) reflecting "excellent" and four (4) reflecting "unsatisfactory". The rating of each component depends on the progress and achievement against a predefined set of standards for each performance dimension, and the development objectives as articulated through specific and benchmarked indicators. In summary, the extent to which the indicator targets are achieved provides the basis for rating the key performance components and the overall development outcome rating (see Figure 7 for further explanation).

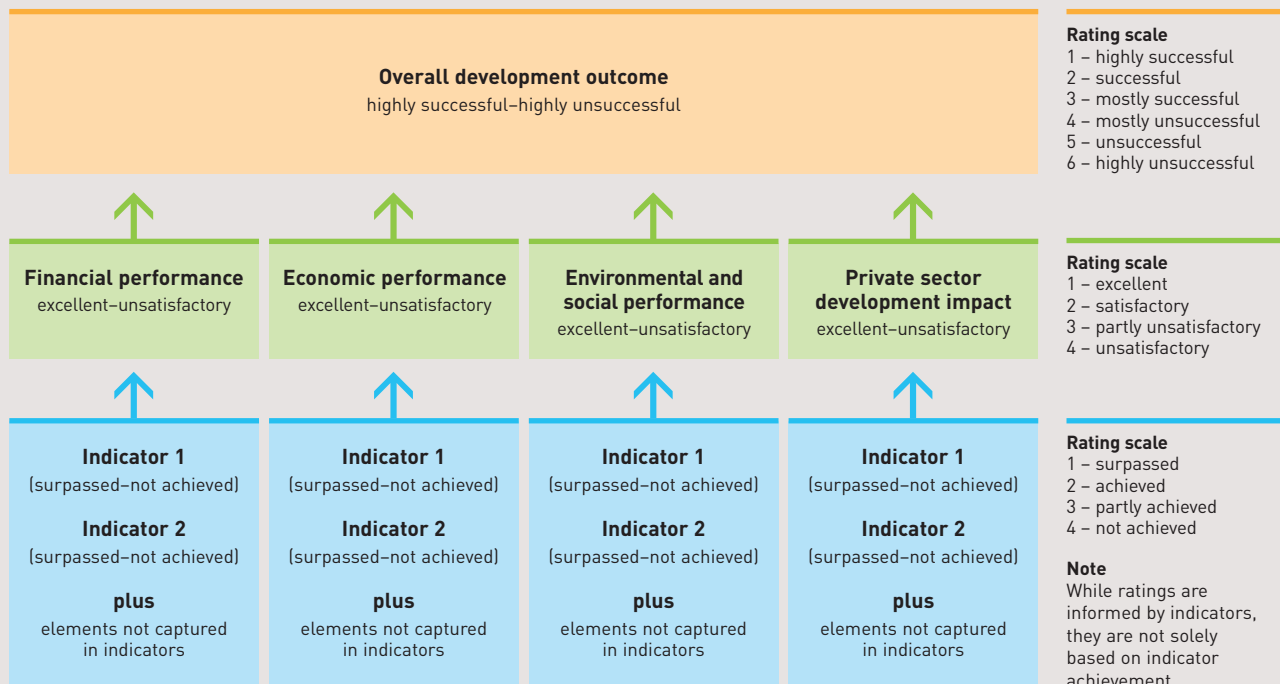
How is it used?

The DOTS framework is triggered at the outset of each new IFC investment or advisory service and continued over the project life cycle. Each new IFC investment is provided with a sector code. Once this sector code is entered into the IFC system, a notification regarding the DOTS framework and the IFC's expectations around what companies need to track appears. A system is in place that allows companies to delete unnecessary or irrelevant indicators. Companies are not required to individually report their DOTS framework and indicators. However, the IFC's annual report draws on this information when publishing an annual figure. Although information does not need to be publicly published, the IFC expects this reporting information to be made available to it if required, with some data published on the IFC website. The implementation of the DOTS framework has encountered some challenges, in particular due to the cost of monitoring and resistance from some companies in applying the framework. Although implementing DOTS may involve an initial cost, there are longer-term benefits to measuring results.

DEVELOPMENT OUTCOME TRACKING SYSTEM ←

International Finance Corporation

Figure 7: Overview of the DOTS framework



How does it compare to other initiatives?

The DOTS methodology uses a standardized system. Indicators allow for uniform tracking of the project over the project life cycle and comparison of performance across a number of projects, programs and companies. The framework requires the tracking of only a limited number of indicators to maintain simplicity throughout tracking and monitoring processes. The framework is simple yet tracks enough key indicators to show a project's outputs and to thus demonstrate what is happening on the ground as a result of the project. The DOTS system generally tracks outputs and the first-order outcomes of IFC client companies rather than their broader development outcomes (due to time and cost constraints). In addition, the methodology does not utilize more in-depth evaluation methodologies to better differentiate between project-related and non-project-related outcomes. Thus, it does not provide an estimate of the impact directly attributable to the company investment. Further, the framework does not require the involvement of impacted social groups in monitoring.

Potential applicability to the sector

The DOTS framework is currently used by mining companies in receipt of IFC investment. More broadly within the mining and metals sector, the framework may be used as a model for more consistent tracking and alignment of the first-order outcomes of investments. While the IFC system together with the internal DOTS framework and existing indicators are only available to IFC company clients, mining companies can still utilize the DOTS framework skeleton to guide their monitoring and evaluation processes. Mining and metal sector companies could use the framework to better align identified indicators under the four performance impact areas: financial, economic, environmental and social, and private sector, and aggregate these indicators at the group level.

Sources

International Finance Corporation 2007, 2012a, 2012b.

LONDON BENCHMARKING GROUP MODEL

London Benchmarking Group

What is it?

The London Benchmarking Group (LBG) model is a framework that was designed to help companies measure, assess and report on the value and achievements of community investment. The LBG model takes the form of a matrix that enables companies to quantify and summarize their community activities and achievements. The LBG model is framed on a logic model to capture company investment inputs, outputs and impacts achieved as a result of community investment contributions. In particular, it breaks down the elements of an activity, outlining the different inputs, establishing outputs and eventually the impacts achieved.

Whole-program output and impact assessment

The model involves a two-step process for assessing outputs and impacts:

- program mapping (indicators) – identify project objectives, beneficiary groups and impact types
- program assessment (measures) – identify information sources, apply measurement tools and calculate overall impact.

Indicators are proposed under five output and impact areas: people, organizations, environment, employee volunteers and the company. The use of consistent indicators across programs is used to provide the ability to consolidate results. Standard definitions are also provided, for example, definitions for the degree of change resulting from an intervention, as well as Excel-based tool templates.

How is it used?

The model is packaged for community investment managers – who are often constrained by resources and relevant skill sets – to provide them with a relatively straightforward process about how one would go about measuring change or assessing the degree to which a project might trigger change. The model provides broad tools and templates that can be used and adapted by companies and community partners to try and assess where they are making an impact and difference.

How does it compare to other initiatives?

The LBG model is based on established community investment methodologies. As such, the framework acts as a guide that includes a range of tools and approaches that may be tailored and used to suit individual company needs and reporting requirements. The broad set of tools and templates can be used by companies and their community partners to try and assess where they are making an impact.

Potential applicability to the sector

The LBG model is currently applied by some companies in the mining and metals sector to better quantify and summarize their community activities and achievements. Companies that use the LBG model have access to associated Excel-based tool templates (not publicly available) that assist to produce a program-wide assessment of what impact a particular community investment activity is having.

Source

Corporate Citizenship 2009, London Benchmarking Group and Corporate Citizenship 2008.

MANAGING FOR DEVELOPMENT RESULTS

Organisation for Economic Co-operation and Development

What is it?

Managing for Development Results (MfDR) is a results-based management strategy that uses performance information to improve decision making. The framework emerged in light of global efforts to improve the effectiveness of public management. MfDR aims to direct all human, financial, technological and natural resources – domestic and external – towards the achievement of desired development results. The results-based management approach aims to create a systematic approach for project and program management. It links and acknowledges that various activities and inputs logically lead to higher order results, including outputs, outcomes and what it calls impacts (long-term outcomes). It attempts to shift the focus of project management from inputs to measurable results at all stages of development.

How is it used?

MfDR is a framework voluntarily applied by development actors to guide the evaluation of interventions. The framework focuses on providing reliable and regular information to influence and improve decision making. It requires tracking progress and managing business on solid evidence and in a way that maximizes the achievement of development results. The process involves tools for strategic planning, risk management, progress monitoring and outcome evaluation. It states that goals must be measurable, clear, concrete and limited in number, with defined time targets. The MfDR cycle involves five core components:

- setting goals and agreeing on targets and strategies
- allocating available resources to activities that contribute to the desired results
- monitoring and evaluation of whether resources are making the intended impact
- reporting on performance to the public
- feedback information for decision making.

How does it compare to other initiatives?

The MfDR framework can be a useful tool in monitoring activities by providing guidance on how results can be attributed plausibly to programs in the achievement of strategic goals. However, in practice this is not always the case. In 2004, the Asian Development Bank (ADB) adopted the MfDR framework to enable the measurement of its contribution to development and to better manage its operations and organization. While the MfDR approach enabled the ADB to implement a results-driven approach across its operations to better help it achieve its Strategy 2020 goals, an independent evaluation in 2012 found that in practice often more attention was paid to the beginning links of the results chain (eg activities and outputs) than the later links (eg outcomes and impacts). Organizations implementing this framework need to ensure that the reporting tools used across various levels stress the importance of the later results-chain links to ensure the achievement of results.

Other difficulties encountered in practice include issues in measuring non-tangible outputs and the challenge of identifying time-trend indicators that could be regularly updated (preferably by in-country partners). In addition, aggregating data from numerous layers in an already crowded and decentralized results reporting system may also constitute a challenge.

Potential applicability to the sector

MfDR can assist companies in the mining and metals sector to better align social investments and resources towards the achievement of desired development goals. By utilizing this approach, companies may be better able to plausibly link their various social investment activities and inputs to higher order results and outcomes. When considering application of the framework, companies should be aware of past implementation challenges and ensure that all of the links of the results chains, particularly the later links (eg outcomes and impacts), are adequately recorded. Further, it is essential that any MfDR specific measuring requirements are appropriately incorporated into existing corporate systems to minimize repetition.

Sources

Asian Development Bank 2011, 2012; Organisation for Economic Co-operation and Development. 2008.

MAPPING OUTCOMES FOR SOCIAL INVESTMENT

New Philanthropy Capital (NPC), the SROI Network and Investing for Good, on behalf of Big Society Capital

What is it?

Mapping for social investment was developed by NPC, the SROI Network and Investing for Good in partnership with Big Society Capital. It is a suite of tools that seeks to assist social investors to develop and implement measures of impact. The approach aims to increase the impact of charities and funders, and to strengthen the partnership between the two groups.

The tools presented in the mapping for social investment approach are:

- outcomes matrix – divides outcomes within the social welfare and environment areas into 13 outcome areas
- outcomes maps – overviews key outcomes, indicators and data sources commonly used in each of the 13 outcome areas
- guidance on investor best practice.

The outcomes maps included in the series are housing and essential needs; education and learning; employment and training; physical health; substance use and addiction; mental health; personal and social well-being; politics, influence and participation; finance and legal matters; arts and culture; crime and public safety; local areas and getting around; and conservation of the natural environment and climate change.

Each outcome map examines a specific issue area and seeks to document any relevant indicators or outcomes that are currently being measured by governments, charities, academics and practitioners working in the field. The outcomes maps seek to identify and link vulnerable groups, key outcomes, related outcomes, examples of typical interventions and current approaches to measurement.

The tool notes use three different approaches to measurement with each dependent on the type of organization and the services provided. These different approaches are as follows:

- organisations may look to capture their impact locally and look at the journey and outcomes for the individuals they work with
- some organizations may seek to capture their social and economic contribution to particular areas
- organizations may try to measure their overall community impact in terms of individual outcomes, broader social and economic models and overall community impacts.

Different approaches are suggested under each outcome map area.

How is it used?

Mapping outcomes for social investment provides a suite of tools across the 13 outcome areas. The approach is intended to be used by social investors to measure the effectiveness of projects and programs. The outcomes matrix and maps are not supposed to be exhaustive but rather aim to provide a starting point and support social investors, charities, funders and social enterprises to actively think about impact measurement in practice.

How does it compare to other initiatives?

The mapping outcomes for social investment approach is based on existing social investment measurement tools. As such, the approach and its suite of tools act as a guide that may be adapted to meet a company's specific needs and reporting requirements.

Potential applicability to the sector

There is potential for the approach to be used by companies in the mining and metals sector as a prompt to assist indicator selection for monitoring social investments. The outcomes matrix and maps may help companies to evaluate community development programs and visualize the links between interventions, outcomes and impacts.

Source

New Philanthropy Capital 2013.

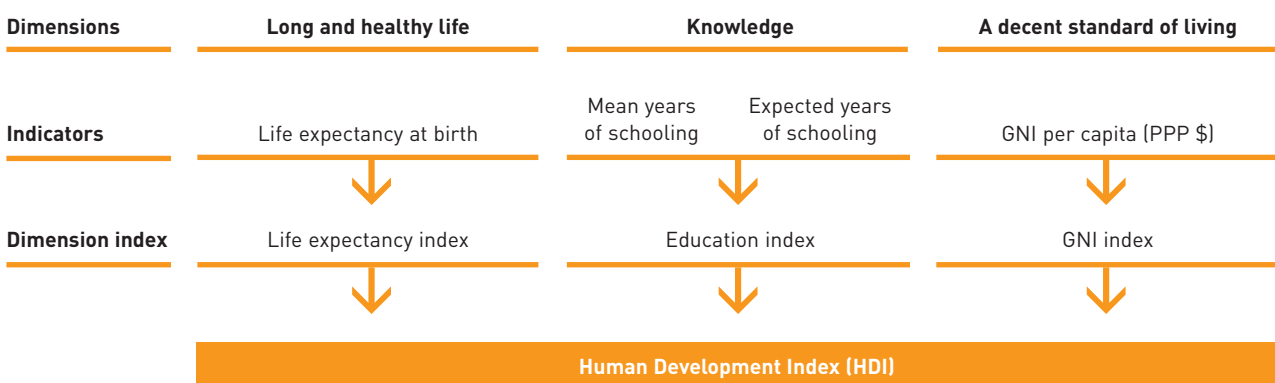
2.2 Using development indices as outcomes indicators

Indices are used as a method for measuring, evaluating and tracking progress against a set of predefined criteria. In addition to providing a compass to guide projects and programs, there may be some circumstances where development indices could provide a useful measure of the performance of a mining project in a geographic region. Development indices are usually aggregates of many different indicators and are therefore subject to many different influences. Where the level of influence of a particular activity is high (in close proximity to the mining development or program), development indices may be useful in providing a measure of performance (or of contribution to performance). However, there is likely to be a requirement for significant investments in dedicated data collection, especially if the contribution of mining alone is to be measured. On the other hand, indices may be useful at geographic scales in resource regions where data may already be available but where there are likely to be multiple contributors and difficulties in attributing the influence of a single mining project or program.

When using development indices, interim measures of outcomes will be needed to demonstrate the causality of a particular intervention (see discussion on causality in Section 4.2). Using the example of an HIV program, an outcome of change in behaviour may lead to reduced incidence of HIV, but development indices are tailored to measure outcomes at greater levels of abstraction, such as infant mortality or even life expectancy at birth. The influence of one program on a development index may therefore be small. An additional issue is that due to the level of abstraction of some development indices (such as the HDI), there can be important factors that are masked (this issue is discussed in the case study below with reference to human development in northern Chile).

“In addition to providing a compass to guide projects and programs there may be some circumstances where development indices could provide a useful measure of the performance of a mining project in a geographic region.”

Figure 8: Components of the Human Development Index



HUMAN DEVELOPMENT INDEX

United Nations Development Programme (UNDP)

What is it?

The Human Development Index (HDI) is based on the work of Pakistani economist Mahbub ul Haq. Dr Haq believed that current measures of human progress focused too narrowly on economic measures and thus failed to adequately measure people's well-being. In 1990, with the support from a group of well-known development economists, including Amartya Sen, Haq published the first UNDP's commissioned Human Development Report (HDR), which featured the HDI. The index has been featured in each annual HDR ever since 1990.

Amartya Sen was highly influential in the development of the HDI. His work on capabilities and functions provided the key foundational framework for the index. Sen's approach to human development emphasized "advancing the richness of human life, rather than the richness of the economy in which human beings live". Further, his capabilities approach to human well-being emphasized the importance of ends (eg a better standard of living) over means (eg income per capita).

Since its introduction, the composition of each index in the HDI has been subject to change in line with methodological advances and through recognizing and accepting valid critiques. Changes included broadening the scope of the analysis of education to changes in how the index is normalized to improve the time-series analysis.

The index measures development by combining indicators of life expectancy, education and income (see Figure 8 on page 25 for further explanation).

How is it used?

The UNDP has been producing HDRs for 24 years with over 600 regional, national and local reports in over 140 countries. The annual HDR is commissioned by the UNDP with editorial autonomy guaranteed by a special resolution of the General Assembly (A/RES/57/264). The UNDP uses different sources of data from major statistical agencies of the UN and other institutions (see Table 2 for the sources of data for the 2011 report). The data and frameworks used by the UNDP maintain continuity in structure, though the measures are modified regularly.

How does it compare to other initiatives?

The HDI is a composite of a number of high-level measures of human development. The index is widely recognized, demonstrates high standards of data quality and aims to influence global, regional and national policy discussion. While there is potential for the index to be used to assess the outcomes of private sector developments, the analysis is most relevant at geographical scale (see Section 3.2 for further discussion of the potential use of development indices in outcomes evaluation).

Potential applicability to the sector

Companies in the mining and metals sector may use development indices to:

- provide a compass to guide projects and programs
- inform their understanding of the regions in which they are operating
- align project and program monitoring to some of the individual component measures of the HDI
- potentially measure the influence of mining on human development in a geographic region where the level of influence of mining is high.

In-depth analysis of the influence of one project or one industry sector on the HDI would require significant investment in dedicated data collection. Such analysis is most relevant only when considering the influence of mining over long timescales or in collaboration with other partners and contributors (see the case study below – Human development in northern Chile – for an example of the analysis of human development in mining regions).

Sources

Khodabakhshi 2011, Kovacevic 2011, Stanton 2007.

Table 2: Measurements included in Human Development Report

Human Development Index and components	Gender inequality	Poverty	Environmental
<ul style="list-style-type: none"> • Human Development Index (HDI) • Life expectancy at birth (years) • Mean years of schooling • Expected years of schooling • Gross national income (GNI) per capita • GNI per capita rank minus HDI rank • Non-income HDI • HDI rank • Average annual HDI growth (%) • Inequality-adjusted HDI • Inequality-adjusted life expectancy index • Inequality-adjusted education index • Inequality-adjusted income index • Quintile income ratio • Income Gini coefficient 	<ul style="list-style-type: none"> • Gender Inequality Index • Maternal mortality ratio • Adolescent fertility rate • Seats in national parliament (% female) • Female population with at least secondary education (% ages 25 and older) • Female labour force participation rate (%) • Contraceptive prevalence rate, any method (% of married women ages 15–49) • At least one antenatal visit (%) • Births attended by skilled health personnel (%) • Total fertility rate • Purchasing power parity 	<ul style="list-style-type: none"> • Multidimensional Poverty Index • Population in multidimensional poverty <ul style="list-style-type: none"> – headcount (total and %) – intensity of deprivation (%) • Population vulnerable to poverty (%) • Population in severe poverty (%) • Share of multidimensional poor with deprivations in environmental services <ul style="list-style-type: none"> – clean water % – improved sanitation (%) – modern fuels (%) • Population below income poverty line <ul style="list-style-type: none"> – \$1.25 a day (%) – national poverty line (%) 	<ul style="list-style-type: none"> • Composite sustainability measures <ul style="list-style-type: none"> – adjusted net savings – ecological footprint – environmental performance index • Primary energy supply <ul style="list-style-type: none"> – share of fossil fuels – share of renewables • Carbon dioxide emissions <ul style="list-style-type: none"> – per capita – growth • Pollution <ul style="list-style-type: none"> – greenhouse gas emissions per capita – urban pollution • Natural resource depletion and biodiversity <ul style="list-style-type: none"> – natural resource depletion – fresh water withdrawals – forest area – change in forest area – endangered species
Human development effects of environmental threats	Perceptions about well-being and the environment	Education and health	Population and economy
<ul style="list-style-type: none"> • Population under five suffering from <ul style="list-style-type: none"> – stunting (%) – wasting (%) • Impact of natural disasters <ul style="list-style-type: none"> – number of deaths (average annual per million people) – population affected (average annual per million people) • Deaths (per million people) from <ul style="list-style-type: none"> – water pollution – indoor air pollution – outdoor air pollution – malaria – dengue • Population living on degraded land (%) 	<ul style="list-style-type: none"> • Well-being <ul style="list-style-type: none"> – overall life satisfaction (0, least satisfied, 10, most satisfied) • Environment <ul style="list-style-type: none"> – humans cause global warming (% yes) – global warming threat (% serious) – active in environmental group (% yes) – satisfaction with government to reduce emissions (% satisfied) – satisfaction with actions to preserve the environment (% satisfied) – satisfaction with air quality (% satisfied) – satisfaction with water quality (% satisfied) 	<ul style="list-style-type: none"> • Education <ul style="list-style-type: none"> – adult literacy rate – gross enrolment ratio primary, secondary, tertiary – primary education resources (pupils per teacher, school teachers trained to teach) • Health <ul style="list-style-type: none"> – one-year-olds lacking immunization against: DTP, measles – mortality: under five (per 1,000 live births) – mortality: adult (per 1,000 people) – HIV prevalence: (% of youth ages 15–24) (female, male) – health-adjusted life expectancy (years) 	<ul style="list-style-type: none"> • Population <ul style="list-style-type: none"> – total (millions) – average annual growth – urban (%) – median Age (years) – dependency ratio (%) • Economy <ul style="list-style-type: none"> – gross domestic product (GDP) per capita (PPT \$) – foreign direct investment (net inflows (% of GDP)) – net official development assistance received (% of GDP) – remittance inflows (% of GDP) – public expenditure on education (% of GDP) – total expenditure on health (% of GDP)

Source: United Nations Development Programme 2011.

CASE STUDY



HUMAN DEVELOPMENT IN NORTHERN CHILE

Antofagasta and Tarapacá are the most important mining regions of Chile, accounting for approximately 19 per cent of worldwide copper production. Copper mining has long been a feature of economic activity in each of these regions, but significant expansion followed the return to democracy in Chile in the early 1990s. The prominence and long duration of mining in this region provides an opportunity to

consider the impact of mining on human development. Figure 9 presents a comparison of an estimated HDI in the region of Antofagasta with results from Chile as a whole, and selected countries. Increases in GDP per capita and mean years of schooling in Antofagasta now place this region in similar terms to Belgium, France or Austria with a very high level of human development.

Figure 9: Estimated Human Development Index for comparison of Antofagasta (0.884), Chile (0.805) and selected countries

The estimated HDI for Antofagasta is much greater than that for Chile as a whole and is equivalent to that of France. Calculation based on data for 2011.



CASE STUDY



HUMAN DEVELOPMENT IN NORTHERN CHILE

However, while significant, such a comparison can mask important aspects of human development in these regions. Both Antofagasta and Tarapacá have experienced dramatic decreases in poverty in the past two decades (see Figure 10). Poverty decline has been steep and pronounced but other regions in Chile and Latin America have followed similar trends.

Furthermore, when comparing the level of social development in Antofagasta and Tarapacá with other countries with a similar level of GDP, there are stark differences in a number of key indicators that would be masked by strict analysis according to the components of the HDI. Parra and Franks (2011) developed targets for indicators of income, education, health, local communities and institutional development that could be expected in localities that exhibited GDP similar to that in Antofagasta and Tarapacá. For some indicators, given current trends, it would take more that a century to reach comparable levels of social development (see Figure 11).

Source

Parra and Franks 2011.

Figure 10: Decreases in poverty (%) in Tarapacá, Antofagasta, Chile and Latin America between 1990 and 2006

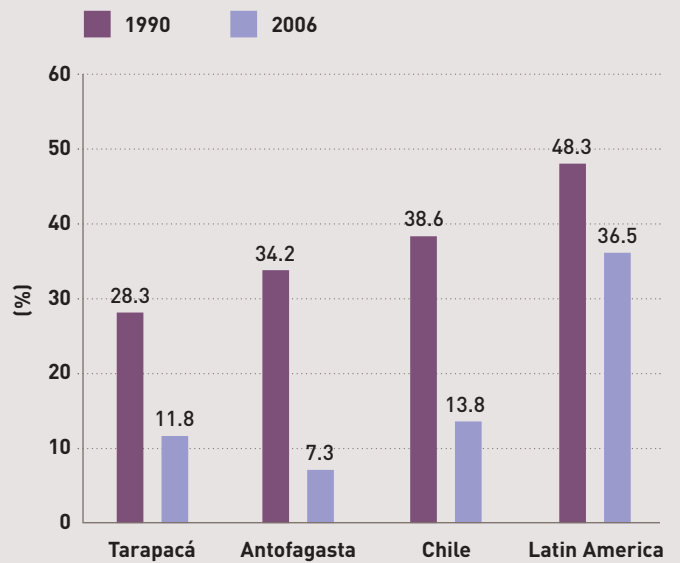
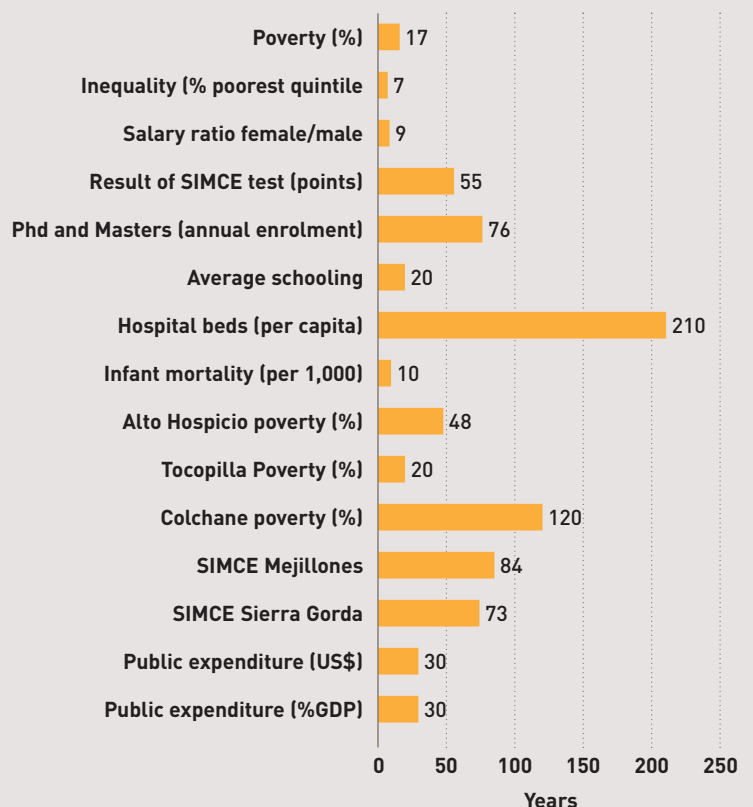


Figure 11: Number of years to reach expected human and social development targets in northern Chile given level of GDP per capita



Note: The SIMCE test is an indicator of quality of education in Chile.

CALVERT-HENDERSON QUALITY OF LIFE INDICATORS

Calvert-Henderson

What is it?

The Calvert-Henderson Quality of Life Indicators were first published in 2000, as a result of a collaborative six-year study by a multidisciplinary group who saw the need for more inclusive and practical metrics of societal conditions. The tool measures data and trends in 12 key socioeconomic areas to help evaluate how and in what sectors a particular country is improving (or getting worse) against stated policy goals and reforms. The 12 individual indicators include are education, employment, energy, environment, health, human rights, income, infrastructure, national security, public safety, re-creation and shelter.

The 12 quality of life indicators move beyond traditional economic performance measures (eg GDP, consumer price index, interest rates, national budget) and dig deeper to reflect national statistics on health, education, employment, the state of national infrastructure and national security. All indicators are related to each other. Consequently, the indicators aim to supplement traditional indicators by identifying gaps in understanding the impact of an intervention on quality of life.

How is it used?

The Calvert-Henderson Quality of Life Indicators were developed to measure national well-being beyond traditional economic indicators. The indicators can be used like other traditional indicators to measure the wealth of a nation or community. To date, the indicators have been utilized to undertake an assessment of the quality of life and liveability in the United States of America. Assessment data is available online via the Calvert-Henderson website.

The indicators use a systems approach, whereby the 12 indicators, or dimensions of quality of life, are incorporated in a circular iterative manner. The systems approach is holistic in nature. During analysis, a given situation is examined to identify the external forces affecting it. Any situation is seen as a system composed of interconnected parts and related to other systems. Weighting formulae and macroeconomic aggregation are not used within this approach in an attempt to minimize distortion and opacity. Each indicator area is mapped by a subsystem model and uses specific metrics for its particular data stream.

How does it compare to other initiatives?

The Calvert-Henderson Quality of Life Indicators offer an alternative measure for quality of life and sustainable development. The model illustrates the connections between institutions, decisions and outcomes. The systems model assists to identify why, in each domain, a country has improved or worsened against its stated policy goals. It also allows one to present the diverse and wide-ranging data accurately without losing detail as with other single index approaches.

Potential applicability to the sector

The Calvert-Henderson Quality of Life Indicators are designed for application at the national level and as such the approach is not directly transferable to mining and metals sector projects. There are aspects of the initiative, however, that could be incorporated into company monitoring approaches, including individual component measures of quality of life and the method for modelling the relationships between indicators.

Sources

Calvert-Henderson Quality of Life Indicators 2006, Henderson et al 2000.

2.3 Involving communities in monitoring

Involving people in the design, monitoring and evaluation of programs and mining projects has the potential to create a sense of ownership and value, promote community-level change and increase the credibility of information collected. Participatory monitoring can ensure that the perspectives and insights of stakeholders are considered. Community-based participatory monitoring methods are often designed with stakeholders themselves responsible for collecting and analyzing information, and for developing recommendations for change. In circumstances where there are multiple contributors, or cumulative impacts, multi-stakeholder approaches that involve participants from industry, government, civil society and other community stakeholders may be appropriate. Such approaches can demand significant investments in time and resources and may be only appropriate for the highest priority areas (Franks et al 2012).

“Community-based participatory monitoring methods are often designed with stakeholders themselves responsible for collecting and analyzing information, and for developing recommendations for change.”

COMMUNITY BASED PERFORMANCE MONITORING APPROACH

World Vision

What is it?

Community Based Performance Monitoring (CBPM) was developed with support from the World Bank. The method was developed in an attempt to improve governance and outcomes of development through social accountability. CBPM involves the monitoring and evaluation of community development by a community so that the community can make independent choices about its own development. CBPM incorporates focus group methodologies and enables local communities to identify any constraints and gaps and to negotiate reforms in the delivery of a particular community-level service. In addition, the data generated from community gatherings may also be used for advocacy purposes (eg to contribute to monitoring of a strategy/intervention). The CBPM process consists of three key stages:

- preparatory groundwork
- community gathering:
 - input tracking matrix preparation
 - provider self-evaluation
 - community scorecard preparation
 - interface meeting
- implementation of agreed reforms to services.

Preparatory groundwork begins one or two months prior to the community gathering and involves defining the intended sectoral scope, geographic coverage, standard indicators and inputs, and identifying and training facilitators. Preparation activities involve identifying, contacting and securing co-operation of community partners, relevant service providers and the main user groups and identifying the relevant benchmarks and inputs to be tracked. A few weeks prior to the community gathering, staff begin raising awareness of the upcoming activity and making logistical arrangements to accommodate the meeting. The community gathering takes place over two to three days to explain the context and focus of the CBPM activity.

At the community gathering an input-tracking matrix is prepared. This part of the CBPM process gives communities a rough overview of the efficiency and resource constraints of a particular service or facility. Facilitators assist communities to locate data and complete the matrix, which is kept with the community. Development of a community scorecard then follows. Indicators are developed in a participatory process and selected by voting. The focus group process concludes with a discussion regarding the necessary reforms required to ensure an improvement in the quality of service provided at the facility. The overall results and proposed reforms are then documented and summarized in a community scorecard for presentation at the interface meeting.

An interface meeting is a facilitated discussion about the input-tracking matrix and the scorecards generated by the community (user groups) and the service providers. It provides a formal process to ensure that the community's feedback is taken into account and that suggested measures are considered to reduce the shortcomings of the facility and service delivery. The attendance and participation from both users and providers facilitate productive dialogue, help generate concrete reform suggestions, and document agreed-upon follow-up actions and reforms to implement and monitor.

How is it used?

The CBPM method may be used as a participatory monitoring tool within the project or program cycle. The method helps empower grass-roots communities to enable them to influence the quality, efficiency and accountability with which services are provided to them.

How does it compare to other initiatives?

CBPM, like other participatory monitoring approaches, can help promote social accountability, community empowerment and the provision of more appropriate basic services. However, in order to be successful, continuous follow-up on the implementation of local reform action plans is required. Follow-up helps support the community empowerment process and thus its impact on development outcomes.

Potential applicability to the sector

In the context of the mining and metals sector, the CBPM approach could be applied to the evaluation of company-delivered community development programs. The tool may be utilized to generate improvements from a community perspective; encourage community involvement in programs; and consider the links between company community development programs, civil society development initiatives and government-delivered public services.

Sources

Edgerton 2005, Thindwa et al 2005, Toledano et al 2002.

3

SECTION 3 Analyzing outcomes



Detailed evaluation is usually required to build a credible story of development impact or to understand the changes induced by a mining project. Analysis of actual experience will usually cover one of three areas:

- **identification of change over time with reference to baseline conditions and existing trends**
- **correlation of the identified change with the development intervention through comparison over space and time (experimental design or quantitative analysis)**
- **verification of causation and the logic between activities and outcomes (most often undertaken using qualitative analysis).**

3.1 Using experimental design

Quantitative measures of relationships between variables are sometimes feasible in the development context and can provide a measure of credibility in the identification of program or project effects. Experimental design requires significant time, resources and effort. It may only be appropriate under particular circumstances, where very large-scale investments have been made and where periodic evaluation of a sample may be representative of the effectiveness of a broader program.

Experimental design usually involves carefully controlled studies of at least two groups – a treatment group (participants in the study) and a control group (non-participants) – that are randomly assigned. The impacts of a development intervention are then determined through comparative analysis. Where randomization is not possible or practical, quasi-experimental evaluations are sometimes used that adjust for selection bias (for example, see difference-in-differences technique described on the next page). The assumptions made in such cases are determined through evidence-based analysis of the similarity of characteristics and factors between the treatment group and the control group.

Despite the challenges of undertaking experimental design, it is increasingly used in the development context. Evaluations have been implemented in government, academic and business domains. To date, experimental designs have been largely used in the natural sciences and in policy arenas such as education and health. However, they have also been implemented, to a lesser extent, in the private sector development realm. For example, the IFC currently has 30 experimental and quasi-experimental impact evaluations in its portfolio, with 23 currently under way. While the majority of these evaluations are undertaken for their advisory service operations, the evaluations run across a number of business lines, including infrastructure, environment and social sustainability.

3.2 Probing the links between cause and effect

Verification of the causality between actions and outcomes can enhance confidence in any identified relationships or correlations. In most cases, there will be complex variables and factors and multiple initiatives and contributors. Thus, instead of clear and unequivocal relationships, the outcome of any evaluation of causality should be to understand the complexity more fully and develop a fuller understanding for how change has come about. Qualitative evaluations can be useful in this regard. Methodologies such as Most Significant Change (described on page 40) can offer a means to explore outcomes with impacted parties and probe the links and relationships that define the program logic.

DIFFERENCE-IN-DIFFERENCES

World Bank

What is it?

Difference-in-differences (double differencing; DD) is an impact evaluation methodology designed for estimating causal effects. The method is based on collecting baseline data and follow-up survey data for a sample project (treatment) and comparison-group projects (non-treatment) to compare changes in outcomes between the two. Ideally, treatment and comparison groups (projects or communities) should have the same observed and unobserved characteristics; the only difference between the two projects is that the treatment group is impacted by the intervention and the non-treatment group is not.

DD aims to provide an unbiased estimate based on the assumption that the selection bias is consistent over time. To allow for the possibility of variation in the selection bias, the World Bank uses a “propensity score matching” method (technique used to overcome selection bias due to observable differences between sample and comparison groups) and a “logit function” (the function is used to produce a score, which helps better equate the differences between the two groups) to compute an unbiased estimation of treatment effects. Once an unbiased estimation of the treatment effect is developed, impact estimates are then constructed by comparing the before-intervention and after-intervention change for the project group with those for the matched-comparison project group.

The method uses a multiple indicator multiple cause model to approximate the impact of the intervention on multiple indicators. This is because it is often difficult to use more than one variable to measure one specific outcome, while a single variable only measures the outcome partially.

How is it used?

DD is an estimation methodology utilized in both experimental and non-experimental design. It is often used in impact evaluation and applied in situations where program assignment rules are not clear or where other quantitative impact evaluation methodologies (randomized assignment, randomized promotion and regression discontinuity design) are not feasible. It may be used to define the actual project-related impact of a particular intervention or activity.

How does it compare to other initiatives?

DD is a quantitative method for understanding the causal relationships between a development intervention and an outcome. Further, the method also takes into account other external socioeconomic factors that may affect outcomes and impacts.

Potential applicability to the sector

DD requires specialist application and significant time and resources. Like other experimental design techniques, DD may only be appropriate under particular circumstances, where very large-scale investments have been made and where periodic evaluation of a sample may be representative of the effectiveness of a broader program or type of development intervention. Within the mining and metals industry, the methodology could be used in conjunction with other methodologies to measure outcomes and impacts of company community investments, infrastructure or programs where these activities are large scale, geographically widespread or where impacts are likely to be generated over long time periods. In this context, it may be used to identify the difference between the treated observation and the counterfactual (what happened without the intervention) and thus to estimate the causal effect of the intervention on the outcome and the overall impact.

Sources

Gertler et al 2011, Gertler and Martinez 2006, Lechner 2011, Mu, and Van de Walle 2007.

MEASURING IMPACT FRAMEWORK



World Business Council for Sustainable Development (WBCSD)

What is it?

The Measuring Impact Framework (MIF) aims to assist companies to understand their contribution to development and utilize this knowledge to inform their operational and long-term investment strategies and decisions. The framework assists in designing, tracking and analyzing development outcomes.

The MIF is based on a four-step methodology:

Step 1: setting the boundaries

Step 2: measuring direct and indirect impacts

Step 3: assessing contribution to development

Step 4: prioritising the management response.

Step 1: set boundaries

Step 1 involves determining the scope and depth of the overall assessment in terms of geographical area and the types of business activities to be assessed. Objectives are also set along with the collection of baseline and profiling information.

Step 2: measure direct and indirect impacts

Step 2 involves identifying and measuring the direct and indirect impacts arising from a company's activities, identifying what impacts are within the control of the company and what they can influence through its business activities. The step also involves identifying relevant indicators for measuring direct and indirect impacts.

Prior to measuring impacts, companies need to identify what aspects of the selected business activity are likely to be the key "sources of impact" and thus what requires further investigation. Measuring direct and indirect impacts requires quantitative and qualitative indicators. The framework provides a list of suggested indicators for each business activity, along with additional sources of information that companies may utilise to help further refine and/or develop their own additional indicators. The selected indicators reflect both positive and negative changes resulting from business activities. Companies are also encouraged to map out the results chain and illustrate linkages between the key direct impacts and the indirect (first- and second-level) impacts.

The measurement of impacts requires extensive data gathering. In the instance secondary data is not available, the framework recommends that companies develop and undertake questionnaires and/or conduct household surveys within the assessment area to obtain primary data. A score may also be applied to each direct impact to assist when assessing the compliance against a standard.

Step 3: assess business contribution to development

Step 3 builds on the business's perspective of its impacts by assessing to what extent these impacts contribute to social and economic development within the assessment area. To achieve this, companies must first understand what constitutes "value" in development terms to the relevant stakeholders in the assessment area. Consequently, active stakeholder engagement is recommended in this step. To build a hypothesis about the company's contribution to the identified development priorities, companies should take the measurements and results from Step 2 and frame them in the development context. This process acknowledges that attribution is difficult to definitely define and that one company is likely to be one of a number of factors contributing to a development priority.

Building the hypothesis involves two parts: linkage and hypothesis of contribution. The first stage of developing the hypothesis is to outline the key linkages between what the company does (based on the business activities and related impacts outlined in Step 2) and the development of priorities/issues. This should answer the questions, is the business contributing to this development priority/issue? and, if so, how (through which impacts) is it contributing?

Rating system for determining linkage between impacts and development priorities

No link

Impact has no (or limited) relationship to the development priority. Impact does not contribute to development priority.

Link

Impact has a relationship to the development priority that may or may not be direct. In some cases, the impact may be the last impact (measured by the company) in the chain reaction but still somewhat removed from the development priority. Companies may want to qualify their linkages as either strong/weak.

Link through another impact

Impact has a relationship to the development priority. However, the relationship is through another impact (most likely an indirect impact). Impact contributes to development priority.

The second part of developing the hypothesis involves determining whether the company is contributing in a positive or negative way to achieving the priorities/issues. It should answer the question, to what extent is the company contributing to the development priority/issue? Companies may include a scale outlining the magnitude of the contribution (eg high/low).

MEASURING IMPACT FRAMEWORK



World Business Council for Sustainable Development (WBCSD)

Each impact that is linked to a development priority is then assessed in terms of its development contribution.

Proposed definitions to determine impact's contribution

Positive (green)

Impact supports the achievement or enhancement of the development priority.

Negative (red)

Impact hinders the achievement or enhancement of the development priority.

Once companies have developed their contribution to the development hypothesis, the framework recommends testing the hypothesis. Testing the hypothesis will enable the company to identify any differences in perception between the company and stakeholders about the business contribution and to confirm or alter the assessment of the company contribution on the foundation of dialogue with stakeholders. All stakeholder comments, any key differences in perceptions between the two groups and any agreed changes should be recorded.

Figure 12 illustrates an example output for Steps 1–4, when assessing the hypothesis of business contribution of “infrastructure” to the “small–medium enterprise (SME) development” development priority.

Step 4: prioritize management response

Step 4 involves companies developing a management response to help make better-informed decisions. This process involves first identifying the priority areas for action based on the company's understanding of its comments from stakeholders. This can be achieved by identifying the key risks and opportunities arising from the assessment process. To do this, companies are encouraged to illustrate the key impacts relative to each of the development priorities.

Once the key risks and opportunities have been identified, companies consider the possible responses or feedback and prepare appropriate recommendations to management. The framework identifies three possible categories of responses that may be useful:

- action through core business activities – companies may consider how they can alter their business practice in a way that minimizes or mitigates, and/or enhances impacts with the assessment area
- action through social investment program – companies may consider developing or reviewing a social investment program in the assessment area
- action through communication – companies may consider where more could be done to better communicate their societal contribution to stakeholders.

After these recommendations have been put forward, company decision-making processes need to be followed to help determine an agreed-upon response.

Figure 12: Hypothesis of business contribution of “infrastructure” to the “SME development priority”

Business activity	Infrastructure		Hypothesis of contribution to SME development		
Source of impact	Construction of roads and bridges		Linkage	Hypothesis	Rationale
Direct impact	Investment in roads and bridges	US\$10 million	Link through another impact		Through growth in informal sector SMEs, congestion and access to markets
Indirect impact	Increased access to markets and health services	Travel time reduced by 45 minutes	Link	High	With greater access to markets thanks to improved roads and bridges, more families are setting up small businesses in the area

MEASURING IMPACT FRAMEWORK



World Business Council for Sustainable Development (WBCSD)

How is it used?

The MIF is a tool designed for measuring societal impacts that aims to align company strategy with social development goals. The framework was developed to help companies better understand their contribution to development and to use this knowledge to inform their operational and long-term investment decisions and to encourage more informed dialogue with stakeholders. The framework was designed to work in conjunction with existing tools (eg the Global Reporting Initiative and IFC performance standards).

How does it compare to other initiatives?

The MIF builds on traditional monitoring and reporting by assessing to what extent these impacts may contribute to social and economic development within a particular area or community. The framework encourages active stakeholder engagement throughout the process and encourages the early assessment of societal impact. The framework also provides companies with appropriate direction to guide them to help identify relevant indicators, develop a means to measure direct and indirect impacts of different interventions, and provide examples of potential management responses staff can make regarding identified issues.

However, in practice there have been a number of challenges. The framework's focus is largely localized and context specific and does not easily allow for aggregation of results. Further, because of this context specific-focus, challenges have also arisen when analyzing complex development issues. Time and the quality of information collected may also be challenges within this process.

Potential applicability to the sector

The MIF is the most comprehensive of the frameworks evaluated in this document. The framework is publicly available and has significant potential for application at the project level for companies in the mining and metals sector. As discussed, there are limitations, such as difficulties in aggregating outcomes beyond the project level as well as significant requirements for resources, time and effort but the MIF offers a robust framework for maximizing development outcomes from mining.

Sources

Lynch nd, World Business Council for Sustainable Development and International Finance Corporation 2008.

USEFUL READING

WBCSD Measuring socio-economic impact: a guide for business

The guide was developed by the WBCSD to help companies better understand the complex landscape of socioeconomic impact measurement resources and to identify those that best meet their specific needs. The guide comprises four sections:

- The business case – outlines business motivations for measuring socioeconomic impact
- The essentials – introduces key terminology and basic theory for a business audience
- The tools – provides an overview of 10 publically available tools tailored for business needs
- The road ahead – suggests areas of focus to further business efforts to measure and manage socioeconomic impact.

Overall, the guide aims to:

- translate development language for a business audience
- present an overview of existing socioeconomic impact measurement tools and resources so that readers know “who is doing what”
- identify the benefits and limitations of the different tools, and outline the ways different tools complement each other
- assist companies select the right tool or combination of tools for their purposes
- position companies to inform further resource development
- accelerate company efforts to measure socio-economic impact.

The tools profiled in the guide include:

Name of the tool	Value to business
1 Base of the Pyramid Impact Assessment Framework	Understand and measure how your business influences different dimensions of poverty in your customers, local distributors and surrounding communities
2 GEMI Metrics Navigator	Identify environmental and social performance indicators to measure and prioritize issues for management response
3 Impact Measurement Framework	Identify relevant socioeconomic indicators to measure impact in four specific sectors: agribusiness, power, financial services, and information and communication technology
4 Impact Reporting and Investment Standards	Select standard indicators to use within your overarching impact measurement framework
5 MGD Scan	Estimate the number of people your company is affecting in ways related to the Millennium Development Goals
6 Measuring Impact Framework	Define the scope of your assessment, identify socioeconomic impact indicators for measurement, assess the results and prioritize issues for management response
7 Poverty Footprint	Understand your company’s impact on poverty, working in collaboration with a development NGO
8 Progress out of Poverty Index	Calculate the percentage of customers, suppliers and other populations of interest that live below the poverty line
9 Socio-Economic Assessment Toolbox	Measure and manage the local impacts of site-level operations
10 Input-Output Modelling	Calculate the total number of jobs supported and economic value added by your company and its supply chain on a particular national economy

Source: World Business Council for Sustainable Development 2013.

MOST SIGNIFICANT CHANGE



Clear Horizon

What is it?

The Most Significant Change (MSC) methodology is a form of participatory monitoring and evaluation. It involves the collection of significant change (SC) stories from the field, and the methodological selection of the “most significant” of these stories by a panel of preselected stakeholders or staff.

It is a participatory technique as project stakeholders are involved in choosing the types of “change” that are recorded and in analyzing the collected data. It is a form of monitoring as the process is undertaken on an ongoing basis throughout the project cycle. The collected data on outcomes and impacts contributes to program evaluation and the assessment of the performance of the program as a whole.

The MSC technique involves 10 implementation steps. The first steps involve finding and introducing a range of stakeholders to the MSC technique and obtaining commitment from those stakeholders, identifying and defining agreed-upon broad domains to monitor, and deciding on how frequently to monitor and report changes taking place. SC stories are collected at the field level from those most directly involved in the project. Respondents are required to allocate their own SC story to a broad domain category and are encouraged to report why they consider this change to be the most significant one.

Once these changes have been collected, they are analyzed and filtered up through the levels of authority in the relevant organization or program within each of the domains. This requires the individuals from each level of hierarchy sharing identified SC stories, discussing the value of the reported changes, further selecting SC stories that they believe are most significant, and sending them to the next level of hierarchy. Each time an SC story is selected, the criteria used to select it should be recorded and fed back to stakeholders to ensure that the next round of story collection and selection is informed by the previous round of feedback.

After this process has been adopted for some time (eg for a year), a document should be produced outlining all the SC stories selected at the uppermost organizational level over that period for each domain category of change. The reasons outlining why each story was selected should accompany the selected stories. The program funders are then asked to assess the document and stories, select ones that best represent the type of outcomes they would like to fund and provide reasons for their choices. This information is then fed back to project managers.

The verification of selected SC stories may be undertaken by visiting the sites where the outlined events took place. The step provides facilitators with an opportunity to check that the selected and reported stories are accurate and honest, and to gather more detailed information about the events if required.

The final steps of the technique involve quantification of the data, including quantifying the extent of MSC, followed by the monitoring of the monitoring system itself. This may involve observing who participated, and analyzing how and how frequently different types of changes were documented. Finally, the MSC process and system should be revised taking into account the learnings from its past application.

How is it used?

Within the project cycle, MSC can be used as a monitoring tool and evaluation tool in different forms. Davies and Dart (2005) describe how MSC often “sits on the line” that differentiates monitoring from evaluation, and thus it is difficult to describe how it may be used. In terms of monitoring, MSC can be used to provide ongoing data about program performance and thus can assist project management activities. Yet MSC goes beyond many conventional forms of monitoring as it measures outcomes and impacts, rather than just activities and inputs. In MSC, participants are required to make judgements about the worth of different outcomes and thus describe achievements in the form of MSC stories. In this case, MSC contributes to evaluation as it tends to take a broader view of the entire project and its longer-term impacts and achievements.

MOST SIGNIFICANT CHANGE



Clear Horizon

How does it compare to other initiatives?

MSC provides qualitative data on the human impact and outcomes of interventions, activities and projects. The data may be used within the mining sector to assist companies to assess the performance of their interventions as a whole.

MSC is a technique that helps identify unexpected changes and encourages analysis of data rather than just data collection. In this sense, it provides a richer picture of what is happening on the ground, rather than a simplified picture where social, economic and organizational development are reduced to singular indicators. Further, it can be utilized to monitor and evaluate bottom-up initiatives and activities that do not have predefined indicators and outcomes against which to evaluate.

In practice, the MSC technique has encountered some challenges. Unlike other quantitative-based approaches, MSC is based on qualitative data collection in the form of MSC stories. Thus, data collection and analysis is highly dependent on the quality of stories collected and the story collectors who collect them. Thus, it is essential that adequate time is taken in the initial stages to train story collectors adequately and appropriately so that they are ready and able to collect good quality stories and are aware that adequate time needs to be set aside to properly analyse stories after collection to identify the relevant learnings. The linking of insights and learnings from MSC stories with future project systems and planning can also prove challenging as it can be difficult to fit MSC-derived outcomes and impacts within predefined monitoring and evaluation processes and systems.

Other external factors that may inhibit the effectiveness of the approach may include the political and social context of an area. As with other types of interviewing techniques, participants will likely be reluctant to share information and stories that may jeopardize their safety, particularly when discussing any negative experiences they have encountered with a project.

Potential applicability to the sector

MSC may be an effective method to document the outcomes of community development activities or even community experiences of mining-induced change. The participatory nature of the process can provide rich data about community experiences. However, often the process of training facilitators, collecting and selecting stories, and organizing meaningful feedback can be very time-consuming and in some cases can be underestimated. Further, commitment and support among some partners may be lacking. If this method is to be effective, these challenges need to be addressed.

Source

Davies and Dart 2005; Oxfam Australia 2009, 2012.

CASE STUDY

MOST SIGNIFICANT CHANGE “Gender Impact Study”, Oxfam Australia

Women’s empowerment in Oxfam Australia’s Sri Lanka program, 2009

Oxfam Australia’s gender impact study (GIS) utilized the MSC technique along with other participatory methods to identify and monitor complex social changes associated with a particular intervention. The pilot study included workshops with 17 partner community-based organizations (CBOs), and tested methods and indicators. The study then focused on five of the CBOs and utilized a range of methods, including MSC, focus group discussions and workshops, to gather information on the gender impacts of their work. The study ran for 18 months and included a seven-month pilot study and three weeks of fieldwork. The pilot study involved design aspects and testing indicators.

In this case, MSC was used to assess whether and how Oxfam Australia’s development projects in Sri Lanka had resulted in change in gender inequality and empowerment of women. The MSC study was designed to primarily focus on impacts and reveal the root causes of changes, the likely sustainability of positive changes and the effectiveness of change strategies.

Within the GIS, MSC was not implemented in its purest form as MSC stories were collected by Oxfam Australia staff rather than trained community members due to external constraints. A minimum of five MSC interviews were undertaken with women from each CBO. Women were selected as they had shown good progress towards empowerment and gender equality. Five pilot interviews were completed by Oxfam Australia staff prior to the GIS fieldwork and the rest were completed with each CBO after the focus group discussions, so that any key themes or issues raised in the groups could be followed up in MSC interviews. Each respondent was initially asked what had caused the positive changes that had taken place in their lives.

Although there was no available quantitative baseline data to compare and measure the extent of change for each indicator, the scope, type and magnitude of changes were systematically explored. Further, the general baseline that was used for comparisons was each respondent’s own perception and idea of the situation before the project, compared with the situation at the time of the study.

Overall, MSC was considered effective in identifying impacts, especially when coupled with quantitative data – for example, using quantitative data to establish a trend and using MSC stories to back up this trend. Further, the method allowed a sense of *value* to come through, which is often lost in traditional monitoring and evaluation methods (eg standard indicators and log frame). Within such methods, no value is placed on indicators, whereas through MSC participants are given an opportunity to articulate what they value (Oxfam Australia 2012). In addition, the method enabled the facilitators to differentiate between program-related impacts and impacts caused from other external factors. This was achieved through careful framing of the MSC questions (eg “what brought this particular change about?”).

Source

Oxfam Australia 2009, 2012.

4

SECTION 4 Conclusion



The mining and metals sector has the potential to positively and negatively influence development outcomes in the regions in which it operates. For mining to demonstrate positive development outcomes from its presence in a region, a balanced approach is needed where impacts on the quality of life of people are considered holistically and are understood through credible measures. The range of methods available to design, track and analyze development outcomes is increasing. While no one framework can provide all of the tools necessary to definitively assess outcomes, and many of the initiatives described in this document would need to be carefully assessed for adaptation within a mining context, there is much to gain from a more strategic approach to measuring the human and social development outcomes from mining.

“For mining to demonstrate positive development outcomes from its presence in a region, a balanced approach is needed where impacts on the quality of life of people are considered holistically and are understood through credible measures.”

5

SECTION 5

Glossary and references



Baseline data

Information collected on key social, cultural, economic, environmental or political conditions prior to a project being developed that can be used as a benchmark from which deviations and comparisons of expected losses and gains, as well as future actual losses and gains, can be measured.

Causation

The relationship between an action (cause) and an outcome (effect) where the outcome is understood to be the consequence of the action.

Community

A social group possessing shared beliefs and values, stable membership and the expectation of continued interaction. It may be defined geographically (by political or resource boundaries) or socially (as a community of individuals with common interests).

Community development

The process of increasing the strength and effectiveness of communities, improving people's quality of life and enabling people to participate in decision making and to achieve greater long-term control over their lives.

Community profile

A picture of a community that reflects the demographic, economic, human, social, visual and natural resources, as well as the needs and assets of the community.

Correlation

An identified relationship or connection between two variables.

Cost-benefit analysis (CBA)

A process that weighs the total expected costs against the total expected benefits of one or more actions in order to choose the best or most profitable option. Benefits and costs are often expressed in money terms and are adjusted for the time value of money, so that all flows of benefits and flows of project costs over time (which tend to occur at different points in time) are expressed on a common basis in terms of their "present value".

Cost-effectiveness analysis (CEA)

An economic tool that compares the relative costs and outcomes (effects) of two or more programs or interventions. The result of this analysis is cost-effectiveness ratios that represent the trade-off between a program's costs (measured in dollars) and outcomes (measured in appropriate units).

Double differencing (or difference-in-differences)

A quasi-experimental technique used to measure the effect of some sort of treatment or intervention by comparing the treatment group (after treatment) to a control or comparison group. The difference in outcomes is a single difference measure of impact.

Evaluation

Systematic investigation of the worth, value, merit or quality of an object. It is an assessment of the operation or the outcomes of a program or policy compared with a set of explicit or implicit standards as a means of contributing to its improvement.

Ex ante

Analysis undertaken before an event involving prediction or forecasting.

Ex post

Analysis undertaken after an event that considers actual experience.

Governance

The traditions and institutions by which authority in a country is exercised, including the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.

Gross domestic product (GDP)

The total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment and government spending plus the value of exports minus the value of imports.

Gross national income (GNI)

The total value of goods and services produced within a country (ie its gross domestic product) plus the income received from other countries (notably interest and dividends) minus the similar payments made to other countries.

Human development

The realization of human choices and human capabilities, the most fundamental of which are to live a long and healthy life, to be empowered by knowledge and to have resources available for an adequate standard of living.

Impact

Any effect, whether anticipated or unanticipated, positive or negative, brought about by a development intervention.

Indicator

Quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect the changes connected to an intervention or to help assess the performance of a development actor.

Meta-evaluation analysis (or meta-analysis)

A process of comparing and combining results from several individual evaluations in an attempt to identify trends, disagreements or any other relationships among study results.

Monitoring and evaluation

A management tool that provides managers with feedback on project effectiveness during implementation. This is important in enabling project managers to move away from prescriptive planning towards a more flexible planning approach that enables those in charge of projects to learn and adapt to changing conditions and experience on the ground.

Net present value (NPV)

The difference between the present value of cash inflows and the present value of cash outflows. NPV is often used in capital budgeting to analyze the profitability of an investment or project.

Objective

An expression of an effect that a program is expected to achieve if completed successfully and according to plan. Objectives are often viewed as a hierarchy, beginning with strategic goals, purposes, outputs and activities.

Outcome

An objective of a project or program, ie a longer-term result aimed for at the end of a project or program.

Participation

A process through which stakeholders influence and share control over development initiatives and the decisions and resources that affect them. Participation can improve the quality, effectiveness and sustainability of projects and can strengthen ownership and commitment of government and stakeholders.

Partnership

Negotiated relationships that exist between two or more entities that have voluntarily entered into a legal or moral contract.

Primary data

Qualitative or quantitative information that is newly collected to address a specific research objective. Primary data may include original information gathered from surveys, focus groups, independent observations or test results.

Program logic (or log frame)

A representation of what a project will do and how it will do it; the logical relationships between inputs, activities, outputs and outcomes.

Qualitative survey

Research that is more subjective than quantitative research and that uses very different methods of collecting information, mainly a relatively small number of individual, in-depth interviews and focus groups. Qualitative surveys are exploratory and open-ended and allow respondents greater freedom to influence the research scope and design. Qualitative research is often less costly than quantitative surveys and is extremely effective in understanding why people hold particular views and how they make judgements.

Quantitative survey

Research concerned with measurement of objective, quantifiable and statistically valid data. Simply put, it is about numbers. In quantitative surveys, a relatively large and scientifically calculated sample from a population is asked a set of closed questions to determine the frequency and percentage of their responses.

Secondary data

Qualitative or quantitative information that has already been assembled, having been collected for some other purpose. Sources may include census reports, journal articles, technical or academic studies, and other publications.

Social development

Changes to institutions, social infrastructure and social relations to enable the betterment of the human condition.

Social return on investment (SROI)

An analytic tool for measuring and accounting for extra-financial value (eg social and environmental value not usually reflected in conventional financial accounts) in decision making, providing a more holistic picture of how value is created and uses monetary value to represent it. This enables a ratio of benefits to costs to be calculated.

Stakeholder analysis

A process that seeks to identify and describe the interests and relationships of all the stakeholders in a given project. It is a necessary precondition to participatory planning and project management.

Stakeholders

Persons or groups who are affected by or can affect the outcome of a project. Stakeholders may be individuals, interest groups, government agencies or corporate organizations. They may include politicians, commercial and industrial enterprises, labour unions, academics, religious groups, national social and environmental groups, public sector agencies and the media.

Sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their needs. Progress measured in social or economic terms is accomplished without irreversible environmental degradation or social disruption.

Trend analysis

A technique of collecting information and attempting to identify a pattern, or trend, among the results.

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6

SECTION 6 Annexes



Organization	Method/framework	Purpose of method/framework	Method and type of analysis	Specific thematic focus area	Details
International Finance Corporation	Development Outcome Tracking System (DOTS)	To measure and monitor development results and development effectiveness of company investments and advisory services	<ul style="list-style-type: none"> Quantitative and qualitative Monitoring 	Productive development	The framework is based on a systematic indicator methodology that is framed by the logic model. The evaluation framework includes an overall development outcome rating and industry-specific standard indicators. These indicators are grouped into three categories: corporate standard indicators, department standard indicators and custom indicators.
International Finance Corporation	Comprehensive strategic planning framework for community investment	Assist IFC client companies to think more strategically by aligning business aims and competencies with key development goals of local communities	<ul style="list-style-type: none"> Quantitative and qualitative Monitoring 	Community investments	The handbook (International Finance Corporation 2010) provides guidance on strategic community investment programs with the aim of assisting companies in emerging markets to create "shared value". The handbook outlines seven steps for developing a community investment strategy: assess the business context, assess the local context, engage communities, invest in capacity building, set the parameters, select implementation models, and measure and communicate results.
UK Department for International Development	Sustainable livelihoods framework	Assist stakeholders to engage debate about the factors affecting livelihoods, their relative importance and the way in which they interrelate	<ul style="list-style-type: none"> Qualitative <i>Ex-ante</i> analysis 	Livelihoods and poverty reduction	The framework argues that the starting point of livelihoods should begin with examination of people's assets, their objectives (the livelihood outcomes people are seeking) and the livelihood strategies they intend to adopt to attain these objectives.
Organisation for Economic Co-operation and Development	Managing for Development Results (MfDR)	Aim to focus all resources (human, financial, technological and natural) to achieve measurable results	<ul style="list-style-type: none"> Quantitative and qualitative <i>Ex-ante</i> analysis, monitoring and evaluation 	Productive development	(MfDR) is a results-based management strategy that uses performance information to improve decision making. The MfDR involves five core components: setting goals and agreeing on targets and strategies, allocating the available resources to activities that will contribute to the achievement of the desired results, monitoring and evaluation of whether resources allocated are making the intended difference, reporting on performance to the public and feedback information for decision making.
World Bank	Difference-in-differences	Evaluate the impact of an intervention (ie development of rural roads)	<ul style="list-style-type: none"> Primarily quantitative experimental design <i>Ex-post</i> analysis, evaluation 	Poverty	Difference-in-differences (double differencing; DD) is an impact evaluation methodology designed for estimating causal effects. The impact evaluation process is based on baseline and follow-up survey data collected for a sample project and comparison-group communities identified through matched-comparison techniques. A range of statistical methods is used, including propensity score matching techniques and logit function.

Organization	Method/framework	Purpose of method/framework	Method and type of analysis	Specific thematic focus area	Details
World Bank	Poverty and social impact analysis (PSIA)	Analysis of the distributional impact of policy reforms on the well-being or welfare of different stakeholder groups	<ul style="list-style-type: none"> • Dependent – quantitative and/or qualitative • <i>Ex-ante</i> and <i>ex-post</i> analysis 	Poverty	PSIA analyzes the distributional impacts of public policies, with particular emphasis on the poor and vulnerable. PSIA includes <i>ex-ante</i> analysis of the likely impacts of specific reforms, analysis during reform implementation and <i>ex-post</i> analysis.
Clear Horizon	Most Significant Change (MSC)	MSC is a form of participatory monitoring and evaluation	<ul style="list-style-type: none"> • Qualitative • Monitoring and evaluation 	Project or program performance	The MSC methodology is a form of participatory monitoring and evaluation. It involves the collection of significant change stories from the field, and the methodological selection of the “most significant” of these stories by a panel of preselected stakeholders or staff.
World Vision	Community Based Performance Monitoring (CBPM) approach	Help improve governance and enhance development outcomes through social accountability	<ul style="list-style-type: none"> • Semi-quantitative and qualitative • Monitoring and evaluation 	Performance of services	CBPM is a participatory process where a series of “community gatherings” in the field are used to generate information. This includes individual voting on standard indicators, the group deciding and voting on group indicators, identifying key local reforms and summarising results on the score card.
Overseas Development Institute	RAPID Outcome Mapping Approach (ROMA)	ROMA is a series of steps designed to help those wishing to influence policy and practice to take a systematic approach	<ul style="list-style-type: none"> • Qualitative • <i>Ex-ante</i> analysis 	Policy	ROMA is an eight-step process that aims to assist policymakers to maximize the role and impact of research on future policy. The approach may be utilized in a range of policy situations to help policymakers reflect about the political context, resources, organizations, aims, tools and tactics and how they are being used and why.
Gates Foundation	Overview of measuring and/or estimating social value creation methodologies	Guide to measuring and/or estimating social value creation methodologies	<ul style="list-style-type: none"> • Quantitative • <i>Ex-post</i> analysis 	Social value creation	Overview of measuring and/or estimating social value creation methodologies that are used within organizations (eg cost-effectiveness analysis, cost-benefit analysis, REDF social return on Investments, etc).
Gates Foundation	Actionable measurement	Monitoring, evaluation, as well as long-term impact tracking to improve the use and quality of all the foundation's activities	<ul style="list-style-type: none"> • Quantitative and qualitative • Monitoring and evaluation 	Grant and social performance	The actionable measurement framework is based on the log frame model and takes the form of a matrix based on two hierarchies: one of strategy and one of results. Three areas are highlighted within the matrix: at the strategy, initiative and grant levels.

Organization	Method/framework	Purpose of method/framework	Method and type of analysis	Specific thematic focus area	Details
World Business Council for Sustainable Development	Measuring Impact Framework (MIF) methodology	To assess the contribution of business to the economic and broader development goals in the societies where that business operates	<ul style="list-style-type: none"> Quantitative and qualitative <i>Ex-ante</i> and <i>ex-post</i> analysis, monitoring and evaluation 	Company impacts on society	The MIF aims to assist companies to understand their contribution to development and utilise this knowledge to inform their operational and long-term investment strategies and decisions. The framework assists in designing, tracking and analyzing development outcomes. It is based on a four-step methodology: setting the boundaries, measuring direct and indirect impacts, assessing contribution to development and prioritizing the management response.
World Business Council for Sustainable Development	Guide to measuring socioeconomic impact	Assist companies to understand the complex landscape of socioeconomic impact measurement resources	<ul style="list-style-type: none"> Quantitative and qualitative Monitoring and evaluation, analysis 	Company impacts on society	The guide was developed by the WBCSD to help companies better understand the complex landscape of socioeconomic impact measurement resources and to identify those that best meet their specific needs. The guide presents an overview of existing socioeconomic impact measurement tools and resources and identifies the benefits and limitations of the tools to help companies identify which tools would best meet their specific needs.
Big Society Capital	Mapping outcomes for social investment	Seeks to assist social investors to measure the impacts of their work	<ul style="list-style-type: none"> Quantitative and qualitative Monitoring and evaluation 	Impacts of social investments	The tools presented in the mapping for social investment approach are outcomes matrix, outcomes maps and guidance on investor best practice.
Anglo American	Socio-Economic Assessment Toolbox	Measure and manage the local impacts of site-level operations	<ul style="list-style-type: none"> Quantitative and qualitative <i>Ex-ante</i> and <i>ex-post</i> analysis, monitoring and evaluation 	Social impacts of development and evaluation of community investments	Specifically, Tool 1C. Evaluating existing corporate social investment (CSI) initiatives aims to assess appropriateness and effectiveness of existing CSI initiatives against defined criteria and output key performance indicators.
London Benchmarking Group	LBG model	The LBG model is a framework used to help companies measure, assess and report on the value and achievements of community investment	<ul style="list-style-type: none"> Quantitative and qualitative Monitoring and evaluation. 	Community investment	The LBG model takes the form of a matrix that enables companies to quantify and summarize their community activities and achievements. The LBG model is framed on a logic model to capture company investment inputs, outputs and impacts achieved as a result of community investment contributions. In particular, it breaks down the elements of an activity, outlining the different inputs, establishing outputs and eventually the impacts achieved.

Organization	Method/framework	Purpose of method/framework	Method and type of analysis	Specific thematic focus area	Details
Calvert-Henderson	Calvert-Henderson Quality of Life Indicators	The indicators measure which areas a country is improving (or getting worse) against stated policy reforms/goals	<ul style="list-style-type: none"> Quantitative <i>Ex-post</i> analysis 	Policy reforms – quality of life	The Calvert-Henderson Quality of Life Indicators use a systems approach, whereby 12 dimensions of quality of life (education, employment, energy, environment, health, human rights, income, infrastructure, national security, public security, re-creation and shelter) are integrated in an iterative fashion at the national level.
New Economics Foundation	Happy Planet Index (HPI)	HPI is a measure of sustainable well-being	<ul style="list-style-type: none"> Quantitative <i>Ex-post</i> analysis 	Global measure – quality of life	The HPI measures the extent to which countries provide long, happy and sustainable lives with reference to environmental inputs. The index is calculated based on global data for life expectancy, well-being and ecological footprint.
Canadian International Development Agency	Results-based management (RBM)	The tool is used to ensure better management and decision-making processes for international development programs	<ul style="list-style-type: none"> Quantitative and qualitative <i>Ex-ante</i> and <i>ex-post</i> analysis, monitoring and evaluation. 	Development	RBM is a life cycle approach to management that incorporates people, resources, strategies and measurements to improve accountability, transparency and overall decision making. The approach is based on three tools: the logic model, performance measurement framework and risk register.
Dow Jones	Dow Jones Sustainability Index (DJSI)	The DJSI is used to help benchmark investors who incorporate sustainability investments into their portfolios.	<ul style="list-style-type: none"> Semi-quantitative <i>Ex-post</i> analysis 	Sustainable development	The process involves an integrated assessment of environmental, social and economic criteria with a focus on long-term shareholder value. The index is used to benchmark the sustainability performance of investments in companies and provides an engagement platform for companies who want to adopt sustainable practices.

Barro-Lee Dataset

Data on educational attainment from 1950 to 2010.
<http://www.barrolee.com>

Carbon Dioxide Information Analysis Center

Data on carbon dioxide emissions.
<http://cdiac.esd.ornl.gov/>

Center for International Comparisons

Data on purchasing power parity and national income accounts (Penn World Table).
http://pwt.econ.upenn.edu/php_site/pwt_index.php

Centre for Research on the Epidemiology of Disasters

Data on emergency events.
<http://www.emdat.be>

Demographic and Health Surveys

Data on population, health, HIV, nutrition and inequalities in access to basic services.
<http://www.measuredhs.com/pubs/>

Development Research Centre on Migration, Globalisation and Poverty

Data on migration, livelihoods, rights and levels of social protection.
<http://www.migrationdrc.org>

Food and Agriculture Organization of the United Nations

Data and information on food insecurity.
<http://www.fao.org/>

Gallup

Data on thoughts and behaviours in more than 150 countries (Gallup World Poll).
<http://www.gallup.com/>

Global Footprint Network

Data for the calculation of Ecological Footprint.
<http://www.footprintnetwork.org>

ICF Macro Demographic and Health Surveys

Distributional data for computation of the Multidimensional Poverty Index and Inequality-Adjusted HDI.
<http://www.measuredhs.com>

Internal Displacement Monitoring Centre

Data on conflict-induced displacement.
<http://www.internal-displacement.org>

International Energy Agency

Data on energy production and consumption.
<http://data.iea.org>

International Institute for Strategic Studies

Data on armed forces.
<http://www.iiss.org/>

International Labour Organization

Data on wages, employment, occupations and status of labour rights conventions.
<http://www.ilo.org/>

International Monetary Fund

A wide array of financial data
<http://www.imf.org/>

International Telecommunication Union

Data on trends in telecommunications.
<http://www.itu.int/ITU-D/ict/publications/index.htm>

International Union for Conservation of Nature and Natural Resources

Data on listed threatened species.
<http://www.iucnredlist.org>

Inter-Parliamentary Union

Data on political participation, structures of democracy and women's political representation.
<http://www.ipu.org/>

Joint United Nations Programme on HIV/AIDS

Data on HIV/AIDS.
<http://www.unaids.org>

LIS

Data on income poverty estimates for OECD countries.
<http://www.lisdatacenter.org>

National Bureau of Economic Research

Data on educational attainment from 1950 to 2010.
<http://www.nber.org/papers/w15902>

Organisation for Economic Co-operation and Development

Data on aid, energy, employment and education.
<http://www.oecd.org>

Stockholm International Peace Research Institute

Data on military expenditure and arms transfers.
<http://www.sipri.org>

United Nations Children's Fund

Data on childhood well-being.
<http://www.unicef.org>

United Nations Conference on Trade and Development

Trade and economic statistics, including investment flows.
<http://www.unctad.org/>

United Nations Educational, Scientific and Cultural Organization

Data on education.
<http://www.uis.unesco.org/>

United Nations High Commissioner for Refugees

Data on refugees and their movement.
<http://www.unhcr.org/>

United Nations Multilateral Treaties Deposited with the Secretary-General

Data on the status of major international human rights instruments and environmental treaties.
<http://treaties.un.org/Pages/ParticipationStatus.aspx>

United Nations Office on Drugs and Crime

Data on crime victims and human trafficking.
<http://www.unodc.org/>

United Nations Population Division

Data on population trends, demographic estimates and projections.
<http://www.un.org>

United Nations Statistics Division

National accounts data and Millennium Development Goals Indicators.

<http://unstats.un.org/unsd>

<http://mdgs.un.org>

World Bank

Data on a broad array of economic trends, such as GDP and remittances.

<http://www.worldbank.org/data>

World Health Organization

A large array of data series on health issues.

<http://www.who.int/>

World Intellectual Property Organization

Data relating to patents.

<http://www.wipo.int/>

Yale Center for Environmental Law and Policy

Environmental Performance Index covering environmental public health and ecosystem vitality.

<http://www.epi.yale.edu>

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