

Community-based Cost Benefit Analysis (CBCBA) Tool

Part I: Introduction



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Report Summary

The present document constitutes Part I of a three-part tool on conducting community-based cost benefit analysis (CBCBA).¹

Part I introduces CBCBA. It includes the principles behind it, its strengths and weaknesses, and how it can be used to examine and learn from interventions that aim to build resilience to climatic and disaster shocks in developing countries. It also provides a rapid overview of the CBCBA process.

Part II is a step-by-step guide to preparing for and collecting data for CBCBA. It provides practical, user-friendly guidance for analysts and practitioners who undertake CBCBA. It also includes sample worksheets and template documents for use during data collection.

Part III is a step-by-step guide to analysing data and reporting for CBCBA. It provides practical, user-friendly guidance for analysts and practitioners who undertake CBCBA. It also includes sample worksheets and template documents for use during data analysis.

¹ While this tool was informed by various sources, a particularly important source was the *Introduction to Community-Based Cost Benefit Analysis for Disaster Risk Reduction* developed for Oxfam America by Courtenay Cabot Venton in 2009.

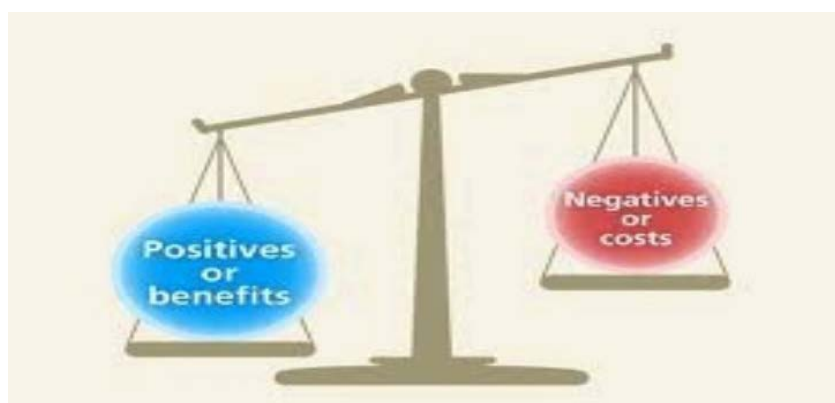
SECTION 1

Overview of CBCBCA

1.1 What is CBA, and what is CBCBCA?

Cost-benefit analysis (CBA) is a procedure to inform decision making that involves tabulating the various costs and benefits of a given investment or intervention, then weighing them up. The image of weighing scales illustrates the essence of CBA. The key justification for using CBA as opposed to other types of analysis is that it can generate numeric performance measures that are both readily understandable and compelling to diverse audiences. Its power stems from the fact that weighing up costs and benefits is an intuitive concept that captures the way various entities (individuals, firms, governments) make decisions.

Figure 1 Image of weighing scales illustrates the essence of CBA



CBA produces simple measures to gauge the attractiveness of an investment decision, notably the benefit-cost ratio (BCR). Such measures lead to simple decision rules for whether or not to proceed with an investment or intervention, based on whether or not it delivers net benefits. Using this criterion, the basic decision rule for whether or not to proceed is $BCR > 1$. Critically, however, these measures can be used to compare competing investment options based on which promises to deliver the greatest benefits for the lowest costs.

Historically, CBA has primarily been used as a tool to help governments and businesses make decisions regarding major investments, such as infrastructure or manufacturing plans. Examples include whether or not a government should build a new bridge over a river, or whether or not a fizzy drinks producer should build a new bottling plant. In such applications, the data used in CBA tend to be either readily available from existing documentation or tangible and easily measured. These data typically involve either concrete measures of observable phenomena or rigorous estimates of future costs and benefits.

Nowadays, there is growing interest in using CBA to inform decision making in the international development space, though such work remains in its infancy. Notably, it has been used to inform resilience building or development interventions targeting vulnerable communities such as small-scale farmers. Application of CBA in these contexts differs

sharply from the traditional uses of CBA. Notably, these contexts are characterised by major data gaps, even vis-à-vis basics like income, assets and expenditures. As such, demonstrating the benefits of an intervention in ways that are compelling to decision makers can be difficult, even when it is clearly highly beneficial to target communities.

CBA conducted in communities of small-scale farmers or pastoralists may be termed “community-based cost benefit analysis”, or CBCBA. The rationale for applying CBA in this context is that the governments, donors or NGOs seeking to help these communities must decide between competing programming options, and hence need ways to inform such decisions. CBCBA can help by learning from the experience of existing or completed interventions and generating quantitative measures of their impact. Potentially, it is a useful way to impose rigour and objectivity on investment and programming decisions.

CBCBA can be applied to different types of interventions targeting vulnerable communities in developing countries, including classical development, climate change adaptation and disaster risk reduction (DRR). Yet given the large and growing threat of climatic and disaster shocks to these communities, a key focus of CBCBA is assessing the efficacy of interventions that aim to build community resilience to these shocks.

1.2 Benefits of CBCBA

One benefit of applying CBA in this context is that it can generate rigorous data in places characterised by major data gaps. Moreover, it can do so in ways that resonate with decision makers. Notably, CBCBA findings offer potentially powerful arguments either to inform decision making or for communications and advocacy, since they combine hard numeric measures with textured and nuanced qualitative data. And, as noted above, diverse actors tend to make decisions based largely on the perceived net benefits promised by the different options available to them.

One feature of interventions in climate adaptation or disaster risk reduction is the fact that they require resources to be spent before anticipated shocks occur. That is, such investments are largely preventative (i.e., geared to minimising dislocations associated with future shocks), though some also deliver direct economic benefits. Preventative investments are recognized to be preferable in diverse ways to relief operations following climatic or disaster shocks. For instance, they minimise human suffering while also averting distress sales of assets. Investing in prevention can also be far cheaper than spending on disaster response. Yet decision makers may nonetheless hesitate to make these investments, particularly where the benefits of doing so are not sufficiently clear to them. CBCBA can help address this gap by quantifying the diverse benefits of such investments relative to their costs, thus powerfully demonstrating their value. Notably, it can provide evidence on how these investments can be both economically prudent and effective at fostering sustainable development. Simply put, CBCBA can be used to generate an economic argument for preventative investments in building resilience to climatic and disaster shocks. This approach can be contrasted with simply reacting to shocks once they occur, for instance in response to images of hungry children or dead livestock.

Still another benefit of applying CBA in this context is that it can serve as an effective learning mechanism for diverse stakeholders. Notably, it can help organisations understand which activities are most – and least – effective at helping their target beneficiaries, thus informing future project, programme and policy design. Specifically, it can help organisations that aim to help vulnerable communities better appreciate the costs and benefits of different activities and approaches. It can thus help these organisations understand how best to target their resources to achieve desired outcomes for target communities, rather than simply delivering outputs that may or may not create lasting benefits for communities. Given

its use of participatory processes to examine the impacts of interventions, CBCBA can also help target communities better appreciate the merits of different activities and approaches. Clearly, there are good reasons for interest in using CBCBA to foster and inform resilience building for vulnerable rural communities in the developing world. However, there are also various challenges and limits to applying CBA in this context.

1.3 Challenges of CBCBA

Despite its promise, applying CBA in vulnerable rural communities in developing countries also presents major challenges. CBCBA is designed to address these challenges by finding solutions that are both sufficiently rigorous to be credible and sufficiently streamlined to be practicable.

Key challenges

- (1) Costs: Conducting statistically relevant data collection for CBCBA requires travel to visit target communities, often in remote locations. Such visits can be expensive, due to being time-consuming and involving significant transportation costs.
- (2) Limited scope: The costs of data collection will often impose constraints on the scope of data collection efforts. Specifically, they tend to limit the number of communities that can be visited and the time that can be spent in each community. The number of communities (i.e., villages) that can be visited will vary based on the funds available for CBCBA, but must include a bare minimum of three. Also, a resource-constrained CBCBA may have just one day per community, so the analyst must often generate data quickly. This is also true because communities are likely to be willing to engage in participatory consultations for several hours at most, given their myriad other commitments, so analysts must use this time wisely and ‘get to the point’.
- (3) Not readily quantifiable: Many benefits of such interventions are not readily quantifiable, so any quantitative findings of benefits delivered will at best give a partial picture. This poses a danger, namely that by seeking to capture quantitative data in difficult contexts, CBCBA could generate poor data that misrepresents the actual situation. Findings of this analysis could therefore prove ineffective or worse, namely they could potentially (1) misinform or mislead future action to help these communities, or (2) fail to convince and therefore not be taken seriously.
- (4) Approximate data: The data generated via participatory discussions with communities are necessarily approximate. Reasons for this include (1) small-scale farmers and pastoralists often have only a rough sense of their production of key products such as crops or milk due to their limited education and lack of record keeping, (2) the context being examined is evolving in various ways (e.g., climate change, environmental degradation/rehabilitation, population growth, technological change), (3) study ‘controls’ may offer only a rough approximation of the “without intervention” (i.e., business as usual) scenario, (4) different target communities as well as different strata within them will experience different costs and benefits.
- (5) Strategic argumentation: Some community members may engage in strategic argumentation, or bending the truth in ways they believe likely to forward some local agenda, such as attracting donor or government funding to support their community. Analysts must be vigilant vis-à-vis this danger and take measures to minimise it, as discussed in Part II of the CBCBA Tool.
- (6) Limited existing data: In principle, triangulation can be used to provide independent verification of the data generated for the CBCBA via FGDs. This would involve consulting relevant data from different sources, such as existing documents and key informant interviews. Yet using documents for triangulation may be difficult. One reason is that available data on remote communities may be limited, given the difficulty of obtaining these data. Another reason is that even where such data are

available, they may focus on unrelated issues or variables. By contrast, conferring with the staff from the implementing organisation and key informants can provide valuable evidence that allows for triangulation.

1.4 Rules of thumb to address these challenges

CBCBA addresses these challenges via its design, as encapsulated in five rules of thumb.

- (1) Gathering diverse evidence: CBCBA gathers evidence from diverse sources in order to maximise the chances of obtaining an accurate picture via triangulation. This also allows the analyst to ‘stand on the shoulders’ of others by benefiting from their differing perspectives and insights. The different sources consulted are: Focus group discussions, implementing partners, key informant interviews, existing documentation and direct observation.
- (2) Fostering buy-in: CBCBA follows best practice approaches to field research in an effort to foster buy-in and maximise the chances that the data collected are sound. This includes being participatory, transparent, and stressing to counterparts and interviewees the importance of generating accurate data as a basis for informing future actions.
- (3) Being conservative: CBCBA ensures that its quantitative analysis remains conservative by erring on the low side when estimating benefits while not doing so vis-à-vis costs. Notably, it makes sure that all relevant costs are included in the quantitative analysis, while only quantifying a subset of the intervention’s observed benefits. It treats benefits as quantitative only if their impact is clear-cut and numeric measures are readily discernible. It treats other benefits as qualitative, thus excluding them from the quantitative analysis. Another way CBCBA can be conservative is by selecting conservative values of key costs and benefits. For instance, where a range of benefit values are found, the smallest values can be selected to avoid overstating benefits. Similarly, where a range of cost values are found, a larger value can be selected to avoid understating costs. The net effect is to make it highly unlikely that any quantitative statistics generated will exaggerate the actual net benefits of the intervention being examined. This is important, since it means that the estimates generated should be trustworthy, and should inspire confidence in those who learn about its findings.
- (4) Contextualising: Couch quantitative findings firmly in their qualitative context to convey a complete picture while also providing textured, compelling detail. Given the challenges involved in making quantitative estimates, it is important that such estimates are coupled with qualitative data. This ensures that quantitative estimates are set in their wider context, and that any costs or benefits of the intervention which are not quantified are nonetheless incorporated into the analysis. For instance, it ensures that important but necessarily qualitative benefits such as improved governance or empowerment of women are taken into account. It therefore helps ensure that the analysis provides a realistic picture of the intervention’s overall impact.
- (5) Recognising limitations: Recognise the limitations of CBCBA, notably that its quantitative measures are best suited to characterising the impact of an intervention as a whole or a specific intervention activity, rather than providing disaggregated findings. For instance, it is ill-suited to estimating the benefits enjoyed by distinct subsets of the community (e.g., women, youths). This follows because the quantitative estimates are necessarily approximate and hence do not lend themselves to disaggregation. CBCBA can nonetheless shed light on such questions in its narrative analysis, based on the various types of quantitative and qualitative data gathered.

1.5 Ex-post vs ex-ante CBCBA

Potentially, CBCBA can be conducted in two distinct ways. One option is to conduct it before an investment is made, in order to facilitate the choice between alternative project, programme or policy options (ex-ante, or “forward-looking” CBCBA). Another option is to conduct CBCBA after an intervention has been undertaken, in order to demonstrate the economic value it generated for its target beneficiaries (ex-post, or “backward-looking” CBCBA).

The present guidance recommends that CBCBA focus on ex-post assessments, when applied to the context of interventions targeting small-scale farming and pastoral communities in developing countries. This follows because ex-post assessments of such interventions are deemed to be complex but manageable, whereas ex-ante assessments are deemed excessively complex. For further details, see discussion in Annex 1.

1.6 Other relevant issues

Several other issues must also be flagged, given their relevance to CBCBA. These issues are listed below, and then discussed in Annex 1.

- Rigour: The need for CBCBA analysts to be rigorous and principled, given the ‘messiness’ of the data being collected and analysed, and hence the potential for it to be manipulated.
- Subsets of the community: The need for focus group discussions to gather data from different subsets of the target communities, e.g., women and men, rich and poor, old and young.
- Ownership: Securing ownership in the CBCBA process and findings at all levels insofar as possible is a priority, i.e., the implementing organisation, government, donors, communities.
- Avoided loss of life: CBCBA studies sometimes include avoided loss of life as a project benefit, but this is not recommended by the present tool due to the danger of possible misunderstandings about the meaning of such measures.

SECTION 2

The CBCBA process

This section gives an overview of the CBCBA process. It includes (1) a recap of what conducting CBCBA involves, (2) an overview of the methodology, and (3) guidance on how to use this tool.

2.1 CBCBA basics: A quick recap

To ensure the prospect of conducting CBCBA is clear, let us reiterate its key aspects, namely: who, what, when, where, why, and how.

Who	CBCBA is conducted by analysts experienced in participatory approaches, in partnership with staff involved in implementing the intervention being assessed. As part of the CBCBA process, analysts must consult several key groups of stakeholders, namely staff from the implementing organisation, villagers from selected target communities, and selected key stakeholders (e.g., local government, NGOs and firms working in the area). National-level stakeholders may also be consulted, particularly if relevant national-level data leave important gaps or if national policy is key to the intervention in question.
What	CBCBA is a process for conducting a rapid analysis of an intervention that aims to support vulnerable small-scale farmers or pastoralists. It allows analysts to determine both whether a given intervention is cost effective and how its cost effectiveness compares with that of alternative investment options. This analysis generates both quantitative summary statistics and qualitative data to set these headline data in context and incorporate aspects that cannot be quantified. CBCBA is well suited to analysing interventions to build resilience to hazards, such as climate adaptation and DRR projects.
Where	CBCBA is designed to analyse interventions targeting small-scale farmers and pastoralists in developing countries, so it will be applied in these communities. Data collection involves visiting the area targeted by the intervention being assessed, while data analysis and reporting are desk-based.
When	Ex-post CBCBA can be conducted either during the intervention, immediately following its completion, or several years later. If it is conducted either during or immediately after the intervention, the outcomes of this intervention will be fresh in the minds of target communities, which will facilitate participatory consultations and improve data quality. However, this timing may mean that the intervention's full benefits are not yet apparent, since many adaptations or DRR interventions take time to bear fruit. By contrast, if CBCBA is conducted several years after the intervention was completed, it is more likely that the intervention's benefits will have borne fruit, but data collection may be more difficult. Conducting CBCBA shortly after an intervention is completed (e.g., 1 year later) is recommended, since this maximises the chances that the analysis is both accurate and conservative. Whenever it is conducted, the CBCBA will take 2-3 weeks. Data collection will require that analysts visit selected target communities, spending approximately one day in each, while data analysis and reporting will require some days of desk-based work.
Why	CBCBA may be a useful tool for assessing interventions targeting small-scale farmers and pastoralists. It can be used to rigorously evaluate an intervention's impacts and can provide useful lessons for future interventions. Its findings can also be used for advocacy, including persuading governments and donors that climate adaptation and DRR are promising, cost-effective investments.
How	Data collection under CBCBA relies strongly on participatory approaches, using methods such as focus group discussions and transect walks. It also seeks out existing data on the target communities with which to triangulate these findings, including from key informant interviews and documentation produced by relevant stakeholder organisations. Data analysis applies

	standard approaches from the literature. All aspects of CBCBA seek to keep the analysis as grounded and straightforward as possible, thus maximising intuitive understanding of its findings by both participants and its target audiences.
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Table 1 CBCBA basics: A quick recap

2.2 Overview of the methodology

CBCBA assesses the impact of a given intervention on its target communities, whether this intervention is framed as conventional development, climate adaptation or DRR. It is based on comparing two alternative scenarios for the target area:

- The situation “**with**” the intervention, which covers the economic performance and welfare of the target communities in the areas where the intervention has been implemented; and
- The situation “**without**” the intervention, which covers these same questions in areas not covered by the intervention, i.e., under the business as usual scenario.

CBCBA examines if the intervention being examined is cost-effective, i.e., whether its benefits significantly outweigh its costs. The essence of this process involves comparing the beneficial impacts of the intervention with its implementation costs and any adverse impacts it causes. Ideally, the “with” and “without” scenarios will also be compared for both hazard and non-hazard years, particularly if the intervention aims to build resilience to climatic shocks. Explicit attention to different types of ‘hazard years’ can help reveal how well the intervention helps communities cope with the hazards in question, as well as how it impacts them in other years. Depending on the local context, however, making this distinction may be difficult in practice, and hence is not obligatory to CBCBA.

When the intervention involves either climate adaptation or DRR, the presumption is that the hazard impacts will be reduced under the “with” scenario, while also perhaps delivering valuable benefits at other times. Moreover, it will also be hoped that the net effect was a worthwhile investment. CBCBA provides data to test whether this is valid. It also enables decision makers to compare the intervention in question with other possible investments, in order to identify the best use of available funds. It does so by providing decision makers with simple and intuitive summary statistics on the intervention’s impact, such as its benefit-cost ratio.

The present tool seeks to provide practitioners and analysts with the guidance, worksheets and template documents they need to be able to conduct CBCBA. The methodology described consists of three phases of work and eleven concrete steps, as summarised in the table below.

Phase I: Preparation	A. Reviewing core documents
	B. Defining study parameters
	C. Identifying complementary data
Phase II: Data collection	D. Holding consultations with implementing organisation
	E. Conducting focus group discussions and transect walks
	F. Conducting key informant interviews
	G. Gathering costs data from implementing organisation
	H. Addressing gaps in collected data
Phase III: Data analysis and reporting	I. Cleaning the field data
	J. Identifying and addressing any gaps in field data
	K. Generating cost-benefit analysis statistics
	L. Conducting sensitivity analysis
	M. Soliciting input from selected stakeholders
	M. Identifying lessons learnt

Table 2 Overview of the CBCBA methodology

2.3 How to use this tool

Before specifying the steps involved in applying CBCBA, several observations regarding this tool and its use bear mentioning.

As noted above, this tool was designed to help evaluate and inform projects and programmes that seek to assist vulnerable farmers or pastoralists in developing countries, whether these interventions are labelled as “development”, “adaptation” or “DRR”.

The tool is designed to be user-friendly and straightforward, despite the multi-faceted nature of the interventions being examined and the unavoidable nuances of the CBCBA process. It is suitable for use either by experts called in to assess an intervention or by practitioners working with vulnerable farming and pastoral communities in developing countries. Throughout its text, the Tool refers to the people who will use it to conduct CBCBA as “the analyst” or “the CBCBA analyst”.

This tool is primarily intended for use in conducting CBCBA of an intervention as a stand-alone analysis. Yet where possible it builds on existing data regarding the intervention being examined, notably data gathered via M&E systems and processes. Notably, where the implementing organisation has strong data on the benefits of the intervention being examined, it can integrate these data into its analysis. It can also use M&E data to cross check other aspects of data collection, such as local population trends or the local hazard profile.

While designed to guide CBCBA as a stand-alone exercise, this tool could also be used to inform revisions of existing M&E processes. The premise is that many activities already routinely undertaken as part of M&E could simply be extended to gather the data needed for CBCBA. This might require redesigning M&E processes so that they generate different types of data. Where this is done, it could significantly reduce the costs and staff resources needed to conduct CBCBA. It could also enable calculations of statistics such as the benefit-cost ratio over a wider range of intervention areas, due to these reduced costs. Integrating the data needs of CBCBA into existing M&E processes could additionally reduce the time demands placed on beneficiary communities.

The present tool has been designed to be applicable across a range of contexts, but it is not possible to foresee all eventualities. Notably, vulnerable communities and the challenges they face vary greatly, as do the interventions designed to support them. As such, those applying this tool will need to show flexibility and sound professional judgement to adapt to the realities they find. This is particularly true in cases where they encounter difficulties with applying the methodology, and hence need to adjust it. Wherever this occurs, it is critical that the analysts clearly describe these difficulties, as well as the reasoning behind their chosen way of dealing with them.

Inevitably, the intervention being examined will have impacts on areas beyond the target population, whether positive or negative. For instance, resilience building practices fostered by the intervention may spread to neighbouring communities via the personal or business contacts of community members. Similarly, intervention activities can have adverse effects on other communities, such as flood defences causing increased flooding downriver. It is important for the analysis to describe any such impacts insofar as possible, for instance based on the testimony of the staff from the implementing organisation or other key informants. Yet the quantitative analysis of CBCBA should focus on impacts on the target

population, since these are likely to far outweigh any outside impacts, and since integrating such factors into the analysis could render CBCBA unmanageable.

CBCBA can be used to estimate the returns on investment generated by an intervention from either of two distinct perspectives: (1) the direct benefits to target communities from the intervention, or its “private return”, and (2) the wider societal benefits of the intervention, or its “social return”. Benefit-cost ratios can provide measures of return from either or both of these two perspectives.

The present tool focuses on generating estimates of private returns. One reason is that the data being gathered and analysed are approximate, so focusing on more concrete benefits – such as observed local benefits – makes sense. A second reason is that quantifying only a subset of an intervention’s benefits offers another way for the analysis to be conservative. This follows because if only a subset of observed benefits are integrated into quantitative calculations of impact, then the resulting estimate is more likely to underestimate the *actual* value of this impact.

A final principle to bear in mind when applying CBCBA is that, ideally, data collection should ask the same questions to different key stakeholders, namely FGDs and implementing organisations. This will help triangulate the analysis, thus maximising the chances that it will successfully capture key impacts of the interventions and their net effect on the target population. The present tool follows this principle.