

4 Myths about TBL-CBA

(Triple Bottom Line – Cost Benefit Analysis)



You may be hearing more about Triple Bottom Line (TBL)-Cost Benefit Analysis (CBA) as it relates to building and infrastructure projects. What exactly is it? In simplest terms, it calculates monetary values for social and environmental design outcomes, which, together with financial results, are analyzed in a Cost Benefit Analysis framework to provide a common basis for evaluating the entire impact of a project, not simply the financial costs.

For example, a municipality undergoing a stormwater infrastructure upgrade may be facing a difficult budget approval process while, at the same time, feeling pressure to justify the project to officials and residents concerned more with long-term property values and quality of life. In this example, TBL-CBA would quantify the trade-offs between grey stormwater designs, green stormwater designs and hybrids of the two, making the choices easier to compare and then justify for all interested parties.

But, as with many new concepts, misconceptions and myths arise. Here are four of the most common.

Myth #1: TBL-CBA is new, untested, and non-standard.



Truth: Cost Benefit Analysis has been around for over a hundred years. It was standardized over 70 years ago, and has been formalized by governments around the world since. The most recent non-cash goods to be included are ecosystem goods and services (for example clean air, fresh water, habitat protection) but even those have been researched for over 20 years (see the compilation of data in the [Ecosystem Services Value Database](#)).

CBA is the primary valuation analysis methodology behind TBL-CBA, and there are many ways of summarizing the results. The best criterion for deciding whether a project can be justified using CBA is a positive Net Present Value (NPV). The NPV is the discounted monetized value of expected net benefits (i.e., benefits minus costs). Other metrics (such as the return on investment, internal rate of return, benefit cost ratio, simple payback period, or discounted payback period) can also be used to summarize the CBA results. Cost Benefit Analysis has long incorporated soft dollar measures like the value of reduced air pollution or enhanced transit accessibility, but practitioners have differed on which metrics they chose to quantify.

Enter the “triple bottom line”, first coined in 1994 by John Elkington, whose consultancy led the charge in helping Fortune1000 companies expand their definition of bottom line, thereby launching the private sector sustainability movement.

By adding the TBL qualifier to CBA, it becomes absolutely clear that all of the relevant social and environmental factors must be rigorously quantified in dollars and included in the analysis. The social (or people) impacts are the effects of a project on the broader community, quality of life, or society. The environmental (or planet) impacts are the effects of a project on the surrounding environment, habitat or climate. Combined with the financial impacts (the investment costs and returns for the project owner), these three values form the TBL valuation.

When CBA is married with TBL in Triple Bottom Line-Cost Benefit Analysis, it becomes a systematic, evidence-based economic business case framework that uses best practice Life Cycle Cost Analysis (LCCA) and Cost Benefit Analysis techniques to quantify and attribute monetary values to the Triple Bottom Line impacts resulting from an investment.

Myth #2: Life Cycle Cost Analysis (LCCA) is sufficient because it evaluates all of the relevant dollar costs related to a project's full life.



Truth: Life Cycle Cost Analysis (LCCA) quantifies all the financial costs of a project alternative. The financial costs in LCCA include upfront capital expenditures, ongoing operations and maintenance costs, replacement costs, and the residual value of assets at the end of the life cycle. The financial costs of each alternative are discounted into present value terms to account for different timing of costs.

But LCCA only quantifies financial costs and fails to include the environmental and social costs that are also part of design alternatives. Therefore, it misses numerous real dollar costs while also ignoring soft dollar costs that affect a project's stakeholders.

Three trends have pushed economic valuation beyond the limits of LCCA.

- The first is the growing scale of buildings, infrastructure projects, companies and their impacts. It is not possible to execute a project in isolation from the rest of the world anymore.
- Second, improvements in sensors that measure these impacts are becoming ubiquitous. The accumulating data that points to the larger ramifications of the built environment is hard to ignore.
- And third, there is a trend towards heightened sensibilities of stakeholders who will increasingly demand responsible behavior and therefore place governors on projects that can't provide justification on a triple bottom line basis.

An externalities framework such as TBL-CBA allows project owners to respond economically, ecologically and in ways that are defensible to all stakeholders. **Looking beyond the life cycle cost to the investment's broader footprint is just good business.**

Myth #3: Human-centered and green design is all the rage. LEED, Envision, and others provide the checklist for how to achieve it. So, there's no need to quantify the benefits.



Truth: Put simply, checklists and Triple Bottom Line Analysis are expansive but still insufficient. TBL evaluates a project or policy based on its combined financial, social, and environmental *impacts*, but it doesn't allow for value-based comparisons of the accounts and doesn't necessarily include risk analysis or Life Cycle Cost Analysis (LCCA) (e.g., capital expenditures, operations and maintenance, replacement costs, residual value of assets).

Unfortunately, plenty of people still believe that greener projects cost more. This has been debunked by numerous studies on buildings but remains true in some infrastructure types (e.g. green infrastructure) if the full benefits from all sectors aren't quantified. In addition, accreditation systems like LEED, offer different levels of certification — what guides the decision to choose Platinum over Gold or Silver? So TBL-CBA remains critical to cost-justifying green projects — LEED, Envision, or otherwise.

Myth #4: The time and cost of legions of economists needed to run TBL-CBA makes it cost-prohibitive.



Truth: With the standardization of inputs, methodology, and outputs, automation of TBL-CBA is possible. While there will be people who will feel better paying \$50,000-250,000 for a bespoke TBL-CBA study, don't let anyone talk you into a custom study until they have told you what they will be adding to a well-established, transparent process that is the productized result of years of consulting engagements.

Can you afford the time and money to hire economists to help with a TBL-CBA? If not, can you DIY? As an engineer, architect, or designer, you probably don't have the time to sift through arcane CBA manuals to find the right value for property value uplift, recreational value, or the social cost of using an acre-foot of water.

A more productive approach would be to find a team that does this for a living and has developed a standardized methodology that reduces the cost to everyone.

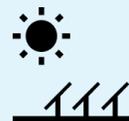
The future sustainability of the built environment depends on removing barriers. Making TBL-CBA as ubiquitous as other tools, like computer-aided design, will go a long way toward that goal.

Autocase

from Impact Infrastructure, Inc.

Autocase for Buildings is a cloud-based software tool that automates the manual process of calculating and documenting the economic, social, and environmental value of LEED design strategies using empirical evidence to inform the design process. By measuring the triple bottom line (financial, social, and environmental) impacts of design alternatives in dollars, you can reveal the short and long term values of sustainable buildings and encourage energy-efficient, resource-efficient, healthy, and high-performing buildings. Autocase for Buildings facilitates your LEED submission by automating the calculations required for the LEED Pilot Credit — Informing Design Using Triple Bottom Line Analysis.

Autocase for Sites provides TBL-CBA decision support by comparing over 25 design features and quantifies and monetizes the reduction in flooding, avoided gray infrastructure, water and air quality, recreation, reduced carbon emissions, and the property value benefits of LID/GI. Autocase for Sites allows ranges of all input variables (over 400 inputs with regional defaults) and provides risk-adjusted results for Return on Investment (ROI), Net Present Value (NPV) and Sustainable Net Present Value (S-NPV).



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