Pragmatic Decision-Making with the Triple Bottom Line

by

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UNIVERSITY OF OREGON | SCI Sustainable Cities Initiative

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ABOUT THIS GUIDE

This pragmatic guide is intended to be an informal and practical introduction to the triple bottom line of sustainability.

Decision-makers, stakeholders and the general public can read the first few sections to learn what the triple bottom line is and isn't, to understand why you might want to use it, and to have a general idea of what to expect from triple-bottom-line methods.

Technical staff can read the later sections to learn how to use the triple bottom line to make decisions, gain some general principles for doing so successfully, and find out how to get started. References at the end of the guide include links to all of the triple bottom line frameworks and tools mentioned in the body of the guide.

This guide represents the final report for Task 5.1 ("Triple Bottom Line Assessment Tools and Methods") of the Lane Livability Consortium's work plan, with funding from a Smart Communities Regional Planning Grant from the U.S. Department of Housing and Urban Development (HUD). The research portions of this work were largely funded by a matching grant from the Oregon Transportation Research and Education Consortium (OTREC), and resulted in a longer research report titled "Sustainable Transportation Decision-Making." The applied portions of this work were largely funding by the HUD grant and included several case studies and trainings. The "Related Documents" section towards the end of this guide summarizes other products from this work.

ACKNOWLEDGEMENTS

DISCLAIMER

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Excellence is never an accident. It is always the result of high intention, sincere effort, and intelligent execution; it represents the wise choice of many alternatives—choice, not chance, determines your destiny.

—Aristotle, 350 BCE

Sustainability is our capacity as a community to grow and change, to more deeply understand the inter-relationships of our human, economic, and natural systems, and to make the decisions today that ensure our viability and resilience for tomorrow.

—Lane Livability Consortium, 2011

1. Why use the triple bottom line to make decisions?

We live in an era of shrinking public resources—and shrinking trust in public institutions. *Citizens want limited public funds to be used wisely*. Citizens want their government to do more with less: promote economic vitality, support healthy communities, and protect our natural environment. Moreover, citizens want to understand what public agencies are doing with their money and why.

The **triple bottom line** (TBL) is an approach to *making decisions better*. TBL strives to look broadly at the costs and benefits of different choices, focus on the most significant ones, quantify them when possible, and ultimately make sound decisions: ones that are efficient and fair.

TBL is also an approach to *explaining more transparently the costs and benefits of decisions* to the general public to promote greater understanding, trust, and support.

A key feature of TBL is to remind decision-makers and the public that better decisions will result from considering all important impacts of a decision—costs and benefits, short-term and long-term—and how those impacts are distributed.

2.   What is—and isn't—the triple bottom line?

The term "triple bottom line" comes from the private sector, where the (single) "bottom line" of company profit has typically reigned supreme. As consumers and shareholders increased their interest in the social and environmental effects that accompanied the production of goods and services, some businesses acknowledged a need to look beyond profit as they evaluated their performance. TBL recognizes that decisions affect not only a company's profit, but also the broader economy, society, and the natural environment. TBL is often referred to as the "**three P's**" of Profit, People, and Planet, or as the "**three E's**" of Economy, (Social) Equity, and Environment. See **Error! Reference source not found.**.
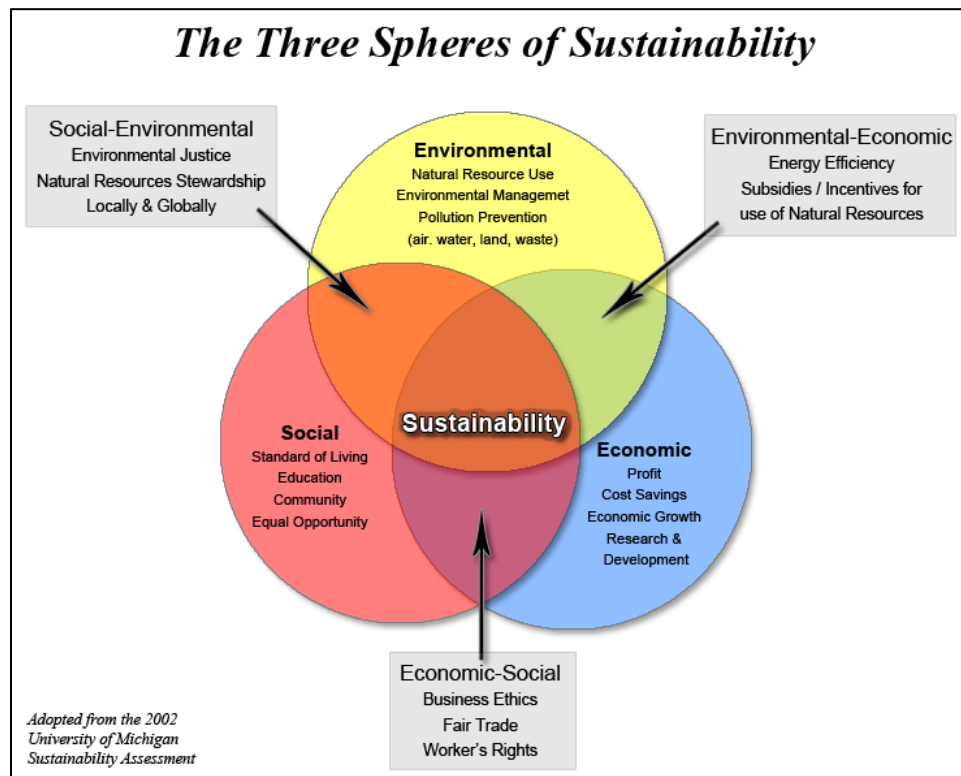
Figure 2.1. The three spheres of sustainability. (Vanderbilt Univeristy)

Evaluating "Profit" or "Economy" requires going beyond the profit enjoyed by shareholders (which is nevertheless an important quantity to measure) to consider the net economic benefit to society. "People" or "(Social) Equity" relates to the health and wellbeing of people impacted by the activities of an organization: labor, the surrounding community, and the larger region. "Planet" or "Environment" refers to the wellbeing of the natural environment and takes into account carrying capacity, habitat protection, ecological footprint, and cradle-to-grave accounting.

But TBL is not a substitute for decision-makers weighing priorities and making decisions.

At a minimum, TBL is a reminder that decisions typically have multiple costs and benefits. Identifying significant economic, social, and environmental impacts helps ensure that decisions are well informed. TBL is an approach to better inform decision-makers—and the public they serve.

3. Case study: A couple buying a car

As a case study, consider a couple looking to buy a new car. He wants a sporty car with good performance that doesn't cost too much; she wants a car that is less polluting with a sunroof. Given their budget, they agree to limit their search to small cars. They consult a commonly used **tool** for buying cars: ratings from *Consumer Reports*. But neither of them is sure the top-rated models really match their needs. See Figure 3.1.
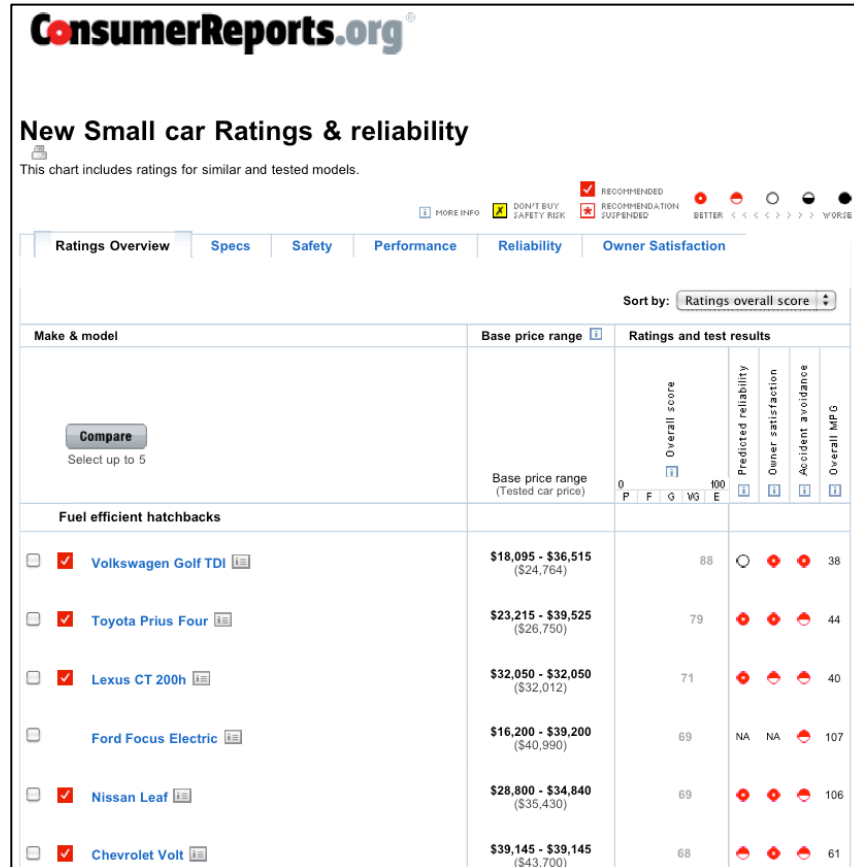
Figure 3.1. Ratings of small cars. (Consumer Reports)

Eventually, they limit their search to just two models. One gets 25 miles per gallon; the other gets 40 miles per gallon but costs $6,000 more. Estimating that they drive 10,000 miles per year and that gasoline costs, on average, $4 per gallon, they calculate that the annual fuel costs for the first car will be $1,600 but for the second only $1,000. Thus at a savings of $600 per year in fuel costs, it would take 10 year to recoup their investment in the more efficient model. They decide to go with the less fuel-efficient model. See Table 3.1.

Table 3.1. New car case study: Less or more fuel efficient?

	Model A	Model B
Sticker Price	—	+ $6,000
Fuel Efficiency	25 mpg	40 mpg
Fuel Costs	$1,600 / year	$1,000 / year

Adding a sunroof would cost an additional $1,000. They discuss how often they would use a sunroof, and what else they might do with $1,000, such as take a trip to Florida. They note that a trip to Florida would happen only once, but that they would use the sunroof many times, perhaps 50 times a year. Thus over 5 years, it would cost just $4 per use to have the sunroof: about the cost of a latte. They also acknowledge that they decided against the more fuel-efficient and less polluting model she wanted. They decide to get the sunroof. See Table 3.2.

Table 3.2. New car case study: Sunroof?

	Basic	w/ Sunroof
Sticker Price	—	+ $1,000
Price per Use	—	$4 / use

Some lessons from this case study:

- There is no single "right" choice.
- Different decision-makers have different priorities.
- The recommendations of an outside authority, while suggestive, don't always match the specific values of the decision-makers.
- Although there may be dozens or even hundreds of criteria to consider, in the end just a handful are significant enough to sway the decision one way or the other.
- Some costs and benefits can be quantified, even monetized, to help make a decision.
- Converting costs and benefits into tangible and comparable units helps makes it easier to evaluate their relative importance.
- Other costs and benefits are less tangible, but can be evaluated in terms of opportunities costs: What might be done instead?
- Focusing on the key tradeoffs helps decision-makers reach agreement.
- Reaching a decision sometimes involves give and take.

4. TBL frameworks and tools

In practice, TBL is typically applied using a general-purpose **framework** or a special-purpose **tool**.

4.1. General-purpose frameworks

General-purpose TBL **frameworks** are intended as guides for officials, staff and other stakeholders for identifying the key costs and benefits of a particular proposed action, or set of alternative actions. A framework may also include information about why thinking in terms of a comprehensive accounting of benefits and costs leads to decisions that are more efficient and fair.

Unlike a *Consumer Reports* rating, a general-purpose TBL framework does not include specific evaluation measures. Instead, a framework is typically a structured checklist of general questions intended to help identify and organize key information for making all kinds of decisions.

A framework won't automatically tell decision-makers the "right" decision, but it will help decision-makers work towards a decision they ultimately make themselves.

4.1.1. Olympia: Sustainable Action Map (SAM)

A simple TBL framework, developed by students at Evergreen College for the City of Olympia, Washington, is the Sustainable Action Map (SAM). See Figure 4.1.

Figure 4.1. Sustainable Action Map. (City of Olympia)

SAM has three key dimensions that work together:

1. **NICE:** There are four key components of sustainability: *Natural* (= Planet / Environment), *Individual* & *Community* (= People / Social), and *Economy* (= Profit). All four components must be in balance to achieve a sustainable solution.
2. **SWOT:** *Strengths*, *Weaknesses*, *Opportunities*, and *Threats* are described for each action (policy/decision) being considered and factored into the final decision.
3. **Stoplight:** This element provides an indicator for how well a particular action achieves the individual components (NICE) of sustainability:
   - *Green:* The action provides value to that component (more strengths and opportunities).
   - *Yellow:* There are risks, but they are manageable.
   - *Red:* There may be a fatal flaw (many weaknesses and threats). You should consider innovative solutions to overcome these risks before moving forward.

Note that the triple bottom line does not always need to be expressed in terms of exactly three categories of impacts. SAM uses four categories. Some other frameworks and tools use five or more categories. What is important is to take into account economic, social and environmental impacts—not necessarily to explicitly shoehorn different kinds of impacts into just one of these three broad categories.

For example, the City of Olympia used SAM to decide whether to increase its boot allowance to purchase quality U.S.-made work boots. See Figure 4.2.
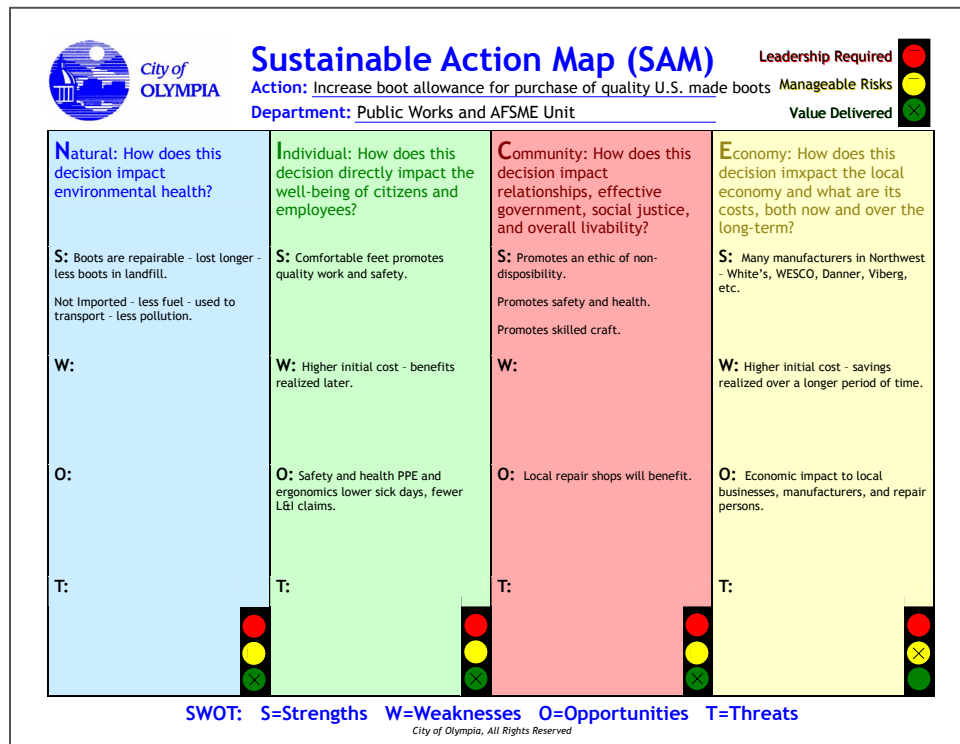
Figure 4.2. SAM example: Increasing boot allowance. (City of Olympia)

For example, the City of Olympia used SAM to decide on parking fines, citations and rates. See Figure 4.3.
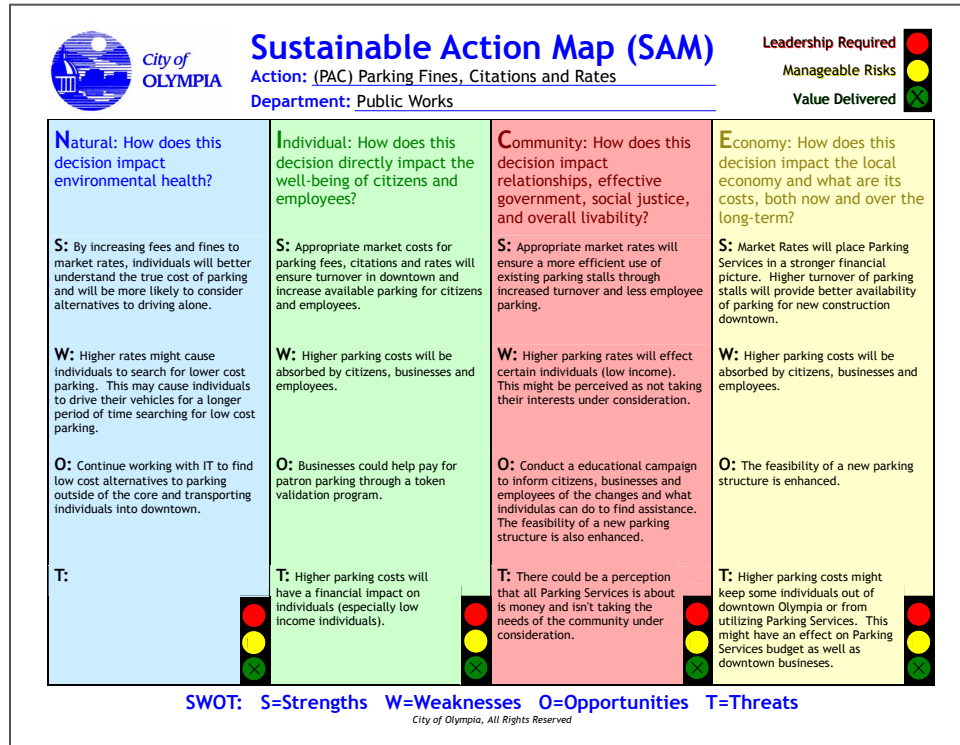
Figure 4.3. SAM example: Parking fines, citations and rates. (City of Olympia)

4.1.2.   APWA: Framework for Sustainable Communities

The American Public Works Association (APWA) Center for Sustainability has developed a Framework for Sustainable Communities, adapted from the Olympia's SAM. See Figure 4.4.
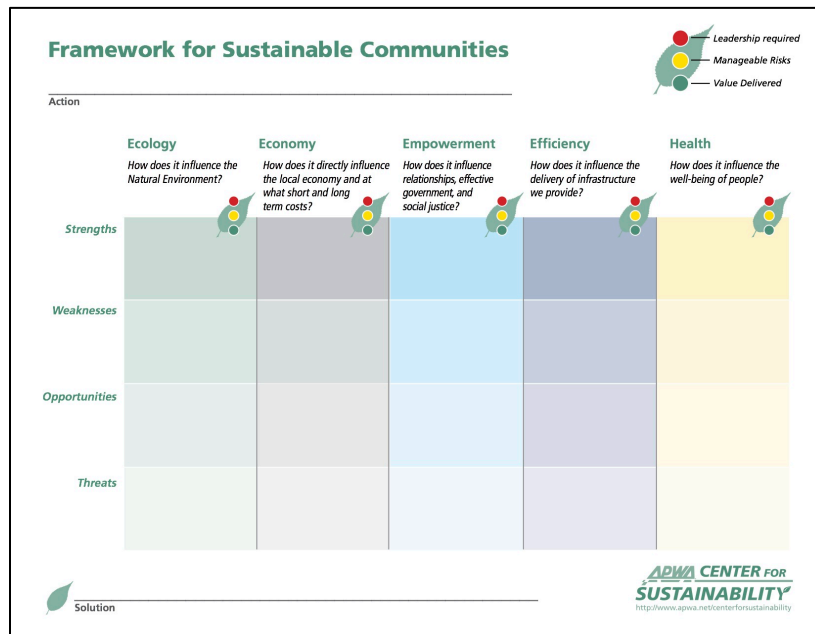
Figure 4.4. Framework for Sustainable Communities. (APWA)

The Framework for Sustainable Communities is a guide designed and produced to help decision-makers make economical and responsible decisions regarding public works infrastructure issues within the community. Like SAM, the APWA framework uses SWOT and the stoplight system. But the APWA framework goes beyond the standard triple bottom line to include five categories of impacts:

1. **Ecology:** How does it influence the natural environment?
2. **Economy:** How does it directly influence the local economy and at what short and long term costs?
3. **Empowerment:** How does it influence relationships, effective government, and social justice?
4. **Efficiency:** How does it influence the delivery of infrastructure we provide?
5. **Health:** How does it influence the well being of people?

4.1.3.   Other frameworks

The City of Fort Collins, Colorado, uses a framework called the Triple Bottom Line Analysis Map (TBLAM), which is very similar to Olympia's SAM.

There are other more developed frameworks that include additional questions or prompts, for example, those used by the City of Eugene, Oregon, and the Eugene Water & Electric Board (EWEB).

4.2. Special-purpose tools

Unlike general-purpose frameworks, special-purpose TBL **tools** are built around specific sets of evaluation measures and provide subtotals and/or a single total score. Each special-purpose tool applies to some class of decisions: for example, economic development projects, infrastructure investments, or transportation plans.

Similar to a *Consumer Reports* rating, a TBL tool is built around a fixed list of quantitative or qualitative **evaluation measures**, typically organized into three (or more) categories and sometimes into subcategories, along with some system for combining or otherwise summarizing the evaluation measures.

Some tools aim to determine the "right" decision: the choice with the highest **score**. Other tools report three or more scores, and leave it up to decision-makers to balance these. Still other tools allow decision-makers to specify different **weights** for combining evaluation measures or provide different methods for **aggregating** evaluation measures.

In all cases decision-makers choose and control the tools they use, not the other way around. If a tool doesn't give a desired answer (or at least an answer that makes sense), perhaps it's the wrong tool for the job!

4.2.1.   PSU: The Triple Bottom Line Tool (for Economic Development)

The Triple Bottom Line Tool, being developed by Dr. Janet Hammer at Portland State University (PSU) and others, is intended for economic development projects. The TBL Tool

is built around three goals divided into eight performance areas, which are further subdivided into 49 measures. See Table 4.1.

Table 4.1. The TBL Tool goals, performance areas and measures. (PSU)

ECONOMIC VITALITY—Investments promote regional economic strength and resilience, are fiscally sound, and provide access to good quality jobs:

1. Quality Jobs
- Relative Impact on Employment
- Direct Jobs
- Direct Jobs—Good Wages and Benefits
- Direct Jobs—Career Access and Advancement Opportunities
- Construction Jobs
- Construction Jobs—Good Wages and Benefits
- Construction Jobs—Pathways to Opportunity

2. Sound Investment
- Pro Forma Demonstrates Financial Viability of Project
- Fiscal Impact
- Consistency with Regional Economic Development Strategy
- Support for Local Business
- Ratio Public to Private Investment
- Leveraged Investment

NATURAL RESOURCE STEWARDSHIP—Investments make efficient use of natural capital and ecosystem health is maintained or restored:

3. Industry Eco-efficiency of Production (resources consumed and emissions produced per job)
- Fossil Fuel Energy Use
- Water Use
- Solid Waste
- Ozone Depletion
- Acidification
- Photochemical Smog
- Eutrophication
- Ecotoxicity
- Greenhouse Gases

4. Green Design and Construction
- Green Building/Construction
- Adaptive Reuse
- Sustainable Site Design
- Remediated or Restored Lands
- Avoidance of Sensitive Natural Resources

5. Green Operations
- Energy from Renewable Sources
- Energy Management
- Automobile Trip Reduction Strategies
- Tenant Environmental Incentives
- Water Use Lower Than Industry Norms
- Emissions Lower Than Industry Norms
- Industry Best Practices
- Green Products and Services

COMMUNITY WELL-BEING—Investments preserve or enhance unique culture, promote health and opportunity, and cultivate distinctive and well-functioning communities in which to work and live

6. Placemaking and Accessibility Cultural and Historic Resources
- Public Spaces
- Walkability of Project Location
- Transit Accessibility of Project Location
- Project Increases Walking, Biking, or Transit Options
- Location in High Need Areas
- No Net Loss of Affordable Housing
- Housing Affordability

7. Environmental Health
- Toxic Exposure—Cancer
- Toxic Exposure—Non-cancer toxins
- Toxic Exposure—Criteria pollutants

8. Governance
- Stakeholder Engagement
- Key Infrastructure Capacity
- Accountability
- Prevention and Mitigation of Business and/or Resident Relocation
- Prevention and Mitigation of Business and/or Resident Displacement
- Anti-poaching

The TBL Tool applies a technique called multi-criterion decision analysis (MCDA) to assess how well an investment aligns with triple bottom line goals. MCDA allows items of interest that are measured in different ways to be considered together. In the case of The TBL Tool, each measure is normalized to scale from 0 to 100. The score for each of the three goals (economic vitality, natural resource stewardship, and community vitality) is calculated by taking the average of the goal's performance area scores, and each performance area score is calculated by taking the average of its measure scores. Inapplicable measures are typically ignored. Results are reported for each goal, performance area, and measure.

4.2.2. ODOT: Mosaic

Mosaic is a tool for transportation planning, developed by the Oregon Department of Transportation (ODOT) in collaboration with stakeholders representing the federal government; metropolitan planning organizations (MPOs); area commissions on transportation (ACTs); and the public transit, environmental, and business communities. It is designed to compare different bundles of state, regional, or local transportation system planning actions: projects and programs. A version of Mosaic to compare project alternatives is contemplated. Mosaic is built around nine categories of costs and benefits. Because it is a tool for transportation planning, these categories are related back to categories of transportation system performance, which are taken from the Oregon Transportation Plan. The categories are divided into 29 general indicators, which are further subdivided into 40 specific indicators. See Table 4.2.

Oregon's 2009 Jobs and Transportation Act (House Bill 2001) called for ODOT to develop a least-cost-planning tool to help inform transportation decision-making. The term "least cost planning" is defined as "a process of comparing direct and indirect costs of demand and supply options to meet transportation goals, policies or both, where the intent of the process is to identify the most cost effective mix of options." In fact, Mosaic is a benefit-cost analysis (BCA) tool, a triple-bottom-line (TBL) tool, and a return-on-investment (ROI) tool. Mosaic is distributed as an extensive Excel spreadsheet with numerous options and parameters, so it can be used in many different ways.

Mosaic's process for comparing bundles incorporates monetized, non-monetized but quantitative, and qualitative indicators. It offers two approaches to making decisions: (1) benefit-cost analysis (BCA) and (2) multi-objective decision analysis (MODA).

BCA is used to monetize those benefits and costs that can be expressed reasonably and credibly in dollars. Mosaic offers three key metrics:

1. Benefit-cost ratio: the dollar value of benefits generated for each dollar spent.
2. Net present value (NPV): the dollar benefits (after subtracting costs).
3. Internal rate of return (IRR): the percentage return on the investment (cost).

Table 4.2. Mosaic categories, general indicators, and specific indicators. (ODOT)

MOBILITY

Travel Time
- MO.1: Travel Time
- MO.2: Hours of Congestion

Quality of Service
- MO.3: Reliability—Recurring congestion
- MO.4: Reliability–Non-recurring congestion

Out of Pocket Costs
- MO.5: User Costs

Travel Characteristics
- MO.6: Mode Split
- MO.7: VMT / Capita

ECONOMIC VITALITY

Economic Impacts of Spending for Construction
- EV.1: Number of jobs associated with plan or bundle of actions, and associated income metrics

Economic Impacts of more Efficient Transportation Services
- EV.2: Changes in transportation costs by industry (business travel and freight)
- EV.3: Changes in employment by industry, and associated income metrics

Structural Economic Effects of Transportation System Improvements
- EV.5: Changes in the total value of exports and imports

SAFETY & SECURITY

System Safety
- SA.1: Fatal, Injury A, and Injury B Crashes

System Security
- SA.2: Emergency Management Systems (EMS) Response Times
- SA.3: Resiliency of the Network

LAND USE & GROWTH MANAGEMENT

Population and employment density
- LU.1: Population and employment change and distribution

Land Value
- LU.2: Relative land value change compared to base case or no action

ENVIRONMENTAL STEWARDSHIP

Air
- ES.1: Criteria Air Contaminants
- ES.2: Mobile Source Air Toxics
- ES.3: Non-Mobile Source Air Toxics

GHG
- ES.4: Life-cycle CO_2e

Resources at Risk
- ES.5: Natural, built, and cultural resources at risk

ACCESSIBILITY

Proximity
- AC.1: Transportation Cost Index
- AC.2: Population within X minutes between work and home

Connectivity/Ease of Connections
- AC.3: Location of industrial jobs in relation to the regional freight network

Modal Availability
- AC.4: Population and employment within ¼ mile of a transit stop served by at least 30 vehicles per day
- AC.5: Amount of multi-use paths and bike boulevards
- AC.6: Sidewalk coverage

FUNDING THE TRANSPORTATION SYSTEM / FINANCE

Capital Costs
- FT.1: Capital Costs

Lifecycle Costs
- FT.2: Other Lifecycle Costs

Operating Revenues
- FT.3: Total Revenue

Leveraging Funds from Private Sector and Other Agencies
- FT.4: Share of lifecycle funds that are "new" or "recycled"

Net Impact on State and Local Fiscal Balance and Debt
- FT.5: Net impact of program on State and Local fiscal balance

QUALITY OF LIFE & LIVABILITY

Physical Activity
- QL.1: Lives saved due to active transportation
- QL.2: Reduced incidence of diseases due to active transportation

Journey Ambience
- QL.3: Quality of the travel environment

Noise
- QL.4: Noise Impacts

EQUITY

Equity Analysis of Accessibility
- EQ.1: Transportation Cost Index, in different geographic areas (e.g., urban vs. rural) and/or for different population groups

Equity Analysis of Environmental Stewardship
- EQ.2: Distribution of PM and PM Diesel emissions across population groups

Equity Analysis of Quality of Life
- EQ.3: Reduced incidence of disease due to active transportation

Equity Analysis of Safety
- EQ.4: Distribution of accident rates (fatalities and injuries) across population groups

For impacts that cannot be monetized reasonably or credibly, a MODA process is applied to assign value. MODA is a theoretically sound and proven quantitative technique for making decisions that involve multiple objectives. The technique is based on the principles of multi-attribute utility analysis (MUA), which have been successfully applied to public and private decision processes for several decades.

In addition, Mosaic can be used simply to display raw indicators for each bundle of actions, some of which are not otherwise used for BCA or MODA decision-making, for example, because some indicators essentially duplicate others.

Although Mosaic shows much promise, it is still in the beta testing phase (as of late 2013). Thus it is unknown how well it performs in practice.

4.2.3.   Other tools

Other special-purpose tools include:

- **STAR** (Sustainability Tools for Assessing & Rating) **Communities**;
- **STARS** (Sustainability Tracking, Assessment & Rating System™), a transparent, self-reporting framework for colleges and universities to measure their sustainability performance developed by the Association for the Advancement of Sustainability in Higher Education (AASHE);
- **Envision™** from the Institute for Sustainable Infrastructure (ISI);
- **INVEST** (Infrastructure Voluntary Evaluation Sustainability Tool) from the Federal Highway Administration (FHWA);
- **GreenLITES** (Green Leadership In Transportation Environmental Sustainability) from the New York State Department of Transportation (NYSDOT);
- **STARS** (Sustainable Transportation Analysis & Rating System) from the North American Sustainable Transportation Council (STC); and
- **Greenroads Rating System** from the Greenroads Foundation.

Many other TBL tools have been developed for various special purposes. Again, if decision-makers want to use a detailed tool, they should choose the right tool for *their* job.

5. Guiding principles

When making a decision with the TBL, use these guiding principles:

1. **Serve the needs of decision-makers, stakeholders, and the general public:** A successful TBL approach should provide decision-makers with information that will help them make decisions—and help them explain and justify these decisions to stakeholders and the general public. A TBL should keep their needs in mind throughout the process.

2. **Reflect values, goals and objectives:** Start with the community's values, goals and objectives. Identify these in relevant plans and policies. For example, the Eugene-Springfield Metropolitan Area General Plan (Metro Plan) and the Central Lane Regional Transportation Plan (RTP) articulate values, goals and objectives related to economic development, housing, transportation, and environmental protection. Then consider whether other values, goals and objectives apply to the specific decision at hand. Consider using values laddering to determine what people care most about—and how to talk about it. Identified goals can be arranged as sub-goals of the "three P's/E's" of the triple bottom line.

3. **Quantify direct costs and benefits:** At a minimum, try to quantify the direct public costs and primary benefits for a proposed action to determine a narrow "single bottom line." For example, if the purpose of a proposed action is to reduce traffic congestion or improve traffic safety, quantify (and ideally monetize) the expected benefits to traffic flow and safety to get a sense of the *return on investment* (i.e., a return on the direct monetary outlay of the public sector).

4. **Identify other major costs and benefits:** Identify and, when possible, quantify other *major* direct and indirect costs and benefits: ones that could sway decision-makers one way or another. Although there could be dozens or even hundreds of potential costs and benefits to measure, focus attention on just a handful of the most significant ones that the professional literature or local opinion deems most significant, with at least one addressing each of the three elements of the triple bottom line. Special-purpose TBL tools, even if fully used, can still suggest important costs and benefits to look at.

5. **Who benefits and who pays?** For TBL and all good evaluation of public policy, showing that an investment has a positive TBL in the aggregate is not enough: decision-makers want and have a right to want to know how those benefits and costs are distributed among different interest groups. Make explicit who benefits and who pays. Analysts can provide information about the *distribution* of impacts (across TBL categories and sub-categories, and by location or group). They cannot (and should not) make the final normative judgment about the value of different distributions: that is a task for decision-makers.

6. **Develop rough estimates, but highlight uncertainties:** Because the future is uncertain, it may be difficult and expensive—and ultimately not worthwhile—to try to develop precise estimates of costs and benefits. Rough ("back of the envelope")

estimates may be sufficient for making decisions. This point is consistent with points 3 and 4 above: focus on identifying the big costs and benefits and getting their estimates approximately right. But it is important to highlight uncertainties and risks. For example, the Sustainable Action Map from the City of Olympia, and its variants, explicitly call for a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis aimed at highlighting the upside and downside risks.

7. **Express costs and benefits in meaningful units:** When possible, quantify costs and benefits using tangible and comparable units: for example, not total costs and benefits, but costs per payer or user (per unit of time). To get a handle on less tangible costs and benefits, look at opportunities costs: What might be done instead?

8. **Help decision-makers balance priorities:** Often no one option will be clearly superior to all others. Rather one option will be better in one respect and a different option will be better in another. Which is the better option overall is ultimately a policy (value) judgment. A TBL approach should provide decision-makers with solid information for making choices, but not dictate the "right" answer. Just as people can balance the price, taste, convenience, and nutritional values of different food choices to decide what to have to eat, so too can (and must) decision-makers balance multiple measures of public investments. Staff would do well to provide a *Consumer Reports*-style summary of the *key* pros and cons of different alternatives. Those needing more information should be referred to more detailed data. The *key* pros and cons—those coming out of points 3 and 4 above —will likely be determined, in part, *a priori* based on ideas of what are key values, goals and objectives. But the list of key pros and cons should be revised *a posteriori* as analysis shows little difference between alternatives for some evaluation measures. Typically, only a handful of 50 or more evaluation measures will be "heavy lifters," i.e., ones that clearly distinguish between different alternatives.

9. **Integrate TBL methods into all phases of decision-making:** Applying a TBL analysis should not be some kind of optional effort, applied separately at the end of the regular process. Rather TBL methods should be incorporated into all phases of decision-making: identifying values, determining goals and objectives, selecting evaluation measures, making plans, setting policies, allocating funding to projects, and developing projects. That is what it means for TBL to be a *framework for decision-making*. In general, TBL methods are more helpful when applied earlier.

10. **Monitor outcomes:** After a decision is made, the outcomes of an action should be monitored to ensure these are in line with what was expected—and to inform and improve future decision-making efforts.

Most of these guiding principles are ones that would be prudent for anyone responsible for managing and investing someone else's assets.

6. How to get started with TBL?

Keep the #1 guiding principle in mind: Serve the needs of decision-makers, stakeholders, and the general public.

If there is a special-purpose TBL tool that can be applied to a decision at hand, and if decision-makers understand and trust this tool (as do stakeholders and the general public, when it is explained), use it.

Otherwise, a general-purpose TBL framework probably makes more sense. If an organization has already refined its own TBL framework for the kinds of decisions it typically makes, and if decision-makers (and stakeholders and the general public) are satisfied with it, use it.

Otherwise, a basic TBL framework such as the City of Olympia's SAM or the APWA's Framework for Sustainable Communities is a good place to start.

The 3-page *Facilitator's Guide* for APWA's Framework for Sustainable Communities, based on a guide for SAM, includes helpful steps and tips for assisting a group of decision-makers (or their staff) apply a TBL framework to a decision. For some decisions, a group meeting of a few hours is all that is needed to identify the key values, goals, and objectives; to evaluate the key costs and benefits of different choices; to highlight risks; and to reach agreement on key tradeoffs and the preferred choice.

7. Related work

This pragmatic guide is part of a larger research and training effort. Related documents detailed below are available by request.

7.1. Research report

This pragmatic guide is an abridged version of a longer research report completed with funding from the Oregon Transportation Research and Education Consortium (OTREC). Although focused on transportation decision-making, it is relevant to other applications and includes more details and references:

- Moore, Terry; & Zako, Robert. *Sustainable Transportation Decision-Making*. Oregon Transportation Research and Education Consortium, Aug. 2013.

7.2. Officials summit

On December 9, 2011, at the Eugene Public Library, with funding from OTREC, Robert Liberty and Terry Moore of SCI organized a summit for local officials to learn more about triple bottom line methods, specifically for making transportation decisions:

- Liberty, Robert. "Transportation Investment Workshop: Triple Bottom Line Analysis" (agenda). 12/ 9/2011.
- Liberty, Robert. "Transportation Investment Workshop: Triple Bottom Line Analysis" (PowerPoint presentation). 12/ 9/2011.
- Moore, Terry; & Goodman, Beth. "Summary of Transportation Investment Workshop" (memo). 12/ 30/2011.

7.3. Case study: Brownfields Assessment Coalition

As a case study, SCI worked with the Brownfields Assessment Coalition to prioritize sites to receive Phase I and Phase II environmental site assessments, and for redevelopment:

- Sullivan, Mike. "LLC Task 5.1 Assistance with Brownfield Coalition Assessment Project." 3/6/2013.
- Zako, Rob. "List of relevant plans and policies." 5/6/2013.
- Zako, Rob. "Application of Triple-Bottom-Line Principles to Brownfield Evaluation" (PowerPoint presentation). 6/14/2013.
- Moore, Terry; & Zako, Rob. "Applying a Triple-Bottom-Line Evaluation Framework to Decisions Related to Public Investment in Brownfield Cleanup." 6/14/2013.

7.4. Case study: Lane Transit District

As a case study, SCI worked with Lane Transit District to develop a TBL tool for transit investment decisions, in particular, the "appropriate level of (transit) service":

- Liberty, Robert "Opportunity for LTD to Test Triple Bottom Line Analysis for Long-Range Transit Investments." 7/25/2012.

- Kilcoyne, Ron. "TBL analyses of LTD's long-range transit investments." 8/23/2012.
- Liberty, Robert. Record of conversation with Tom Schwetz. 8/29/2012.
- CLUTAC. "Triple Bottom Line Analysis of the West Eugene EmX Corridor Proposal" (cover memo & analysis). 9/24/2012.
- Liberty, Robert; & Zako, Rob. "Finding the appropriate level of transit service" (PowerPoint presentation). Oct./Nov. 2012.
- Zako, Rob. Notes from debrief with CLUTAC re TBL analysis of WEEE project. 12/15/2012.
- Liberty, Robert; Zako, Robert. "Community Discussion about Appropriate Level of Transit Service." 11/29/2012.
- Moore, Terry. Memo commenting on TBL PowerPoint presentation. 12/11/2012.
- Zako, Rob. "Specific Recommendations for Using a Triple-Bottom-Line Framework to Determine LTD's "Appropriate Level of Service." 10/10/2013.
- Zako, Rob. "Summary of October 22 brainstorming ideas." 10/23/2013.
- Zako, Rob. "Revised Draft Transit Impacts Framework." 11/8/2013.
- Zako, Rob. "Revised Draft Transit Impacts Framework—more on who benefits & who pays." 11/12/2013.

7.5. Case study: City of Eugene

As a case study, SCI worked with the City of Eugene to develop TBL methods for transportation investments generally and for the Eugene TSP specifically:

- Ruiz, Jon. "Assistance with Eugene's triple bottom line analysis." 11/5/2012.
- Zako, Rob; Liberty, Robert; & Moore, Terry. "Initial Work Plan for Eugene's Transportation Triple Bottom Line Analysis." 12/14/2012.
- Zako, Rob. Presentation to Eugene Sustainability Commission. 1/16/2013.
- Liberty, Robert. (Draft) Recommendations Regarding Triple Bottom Line Evaluations of Eugene Transportation Projects. 3/13/2013.
- Zako, Rob; Liberty, Robert; & Moore, Terry. "Update on Developing Triple Bottom Line Methods" (presentation to Eugene Sustainability Commission). 3/20/2013.
- Zako, Rob. Presentation to Eugene Sustainability Commission. 4/17/2013.
- Moore, Terry. Comment on the Eugene's Transportation System Plan in the Context of Triple-Bottom-Line Evaluation Methods. 12/27/2013.

7.6. Trainings

SCI has provided several trainings on using the triple bottom line:

- Zako, Rob. PowerPoint presentation to UO Campus Planning & Real Estate. October 28, 2013.
- Zako, Rob. PowerPoint presentation to ASUO Senate. November 22, 2013.
- Zako, Rob. PowerPoint presentation to UO Purchasing & Contracting Services (available online). December 9, 2013.
- Zako, Rob; & Moore, Terry. PowerPoint presentation to Lane Livability Consortium. December 17, 2013.

8. Other resources

8.1. Sustainability

- Vanderbilt University. 2013. "What is Sustainability?" (web page). www.vanderbilt.edu/sustainvu/who-we-are/what-is-sustainability
- ICLEI: Local Governments for Sustainability. Presentation on sustainability. actrees.org/files/Research/sgrowth137c.pdf

8.2. Values laddering

A TBL approach to decision-making should reflect the values of the decision-makers and those they serve. **Values laddering** is a technique commonly used in marketing to understand what is important to potential customers.

- Envision Utah. "Charting a Course for Utah's Future: A Summary of the Wirthlin Worldwide Values Research for Envision Utah." www.envisionutah.org/Wirthlin Worldwide Values Research Summary.pdf
- Hawley, Michael. 2009. "Laddering: A Research Interview Technique for Uncovering Core Values." *UXmatters*. www.uxmatters.com/mt/archives/2009/07/laddering-a-research-interview-technique-for-uncovering-core-values.php
- Saaka, Abrafi; Sidon, Chris; & Blake, Brian F. 2004. *Laddering: A "How to Do It" Manual–with a Note of Caution*. Consumer-Industrial Research Program at Cleveland State University. academic.csuohio.edu/cbresearch/papers/Good PDFs/Laddering_A How to do it manual.pdf

8.3. TBL frameworks

8.3.1. Olympia: Sustainable Action Map (SAM)

- City of Olympia, WA. 2008. "Sustainable Action Map (SAM)" (fillable PDF form). olympiawa.gov/community/sustainability/~/media/Files/PublicWorks/Sustainability/SAM2.ashx
- Buckler, Amy. 2008. "Red light, green light: Decision making with SAM, the Sustainable Action Map." *CitiesGoGreen*, October: 10–11. www.nxtbook.com/nxtbooks/verde/citiesgogreen_200810/index.php?startid=10
- Couch, Julianne. 2012. "Leading change toward sustainability: Learning from one leader's successes and failures." *Sustainable City Network*, October 17. www.sustainablecitynetwork.com/topic_channels/policy/article_15b7cf6c-1891-11e2-9f6f-001a4bcf6878.html
- Mucha, Michael. 2009. "Finding everything in balance: Diary of a public works director." *APWA Reporter*, May: 32–36. www.apwa.net/Resources/Reporter/Articles/2009/5/Finding-balance-in-everything

- Mucha, Michael. 2011. "Using the Sustainable Action Map." Presentation at the 4th Annual Growing Sustainable Communities Conference, Dubuque, IA, October 12. www.gscdubuque.com/Presentations/SustainableActionMap_2011GSCC.pdf

8.3.2. APWA: Framework for Sustainable Communities

- American Public Works Association. 2011. "Framework for Sustainable Communities" (fillable & nonfillable PDF forms, facilitator's guide). www.apwa.net/centerforsustainability/Process/-Framework-for-Sustainable-Communities
- American Public Works Association. 2011. "The Principles of Sustainability." www.apwa.net/centerforsustainability/Process/Principles-of-Sustainability

8.3.3. Fort Collins: Triple Bottom Line Analysis Map (TBLAM)

- City of Fort Collins, CO. 2013. "Triple Bottom Line Analysis Map (TBLAM)" (fillable PDF form). tlgconference.org/modules/showdocument.aspx?documentid=242
- City of Fort Collins. 2013. "Optimizing the triple bottom line, a unique management structure for environmental, economic, and social sustainability." Presentation at the Transforming Local Government Conference, Atlanta, GA, April 10–12. www.tlgconference.org/index.aspx?page=6

8.3.4. Eugene: Triple Bottom Line

- City of Eugene, OR. 2013. "Triple Bottom Line" (fillable long & short PDF forms). www.eugene-or.gov/index.aspx?NID=512

8.3.5. EWEB: Triple Bottom Line

- Eugene Water & Electric Board, OR. "Sustainability Triple Bottom Line Analysis Framework." Contact Felicity Fahy, felicity.fahy@eweb.org.

8.4. TBL tools

8.4.1. STAR (Sustainability Tools for Assessing & Rating) Communities

- STAR Communities. 2013. "STAR Communities" (downloadable forms, documentation). www.starcommunities.org

8.4.2. AASHE: STARS (Sustainability Tracking, Assessment & Rating System™)

- Association for the Advancement of Sustainability in Higher Education. Tracking, Assessment & Rating System™ (STARS). stars.aashe.org
- AASHA. Campus Sustainability Assessment Tools. www.aashe.org/resources/campus-sustainability-assessment-tools
- AASHA. Resources on Campus Sustainability Coordination & Planning. www.aashe.org/resources/resources-sustainability-coordination-planning
- AASHA. Campus Sustainability Case Studies. www.aashe.org/resources/case-studies/keyword/162

8.4.3. PSU: The Triple Bottom Line Tool (for Economic Development)

- Portland State University. 2012. "The Triple Bottom Line" (online tool, documentation, case studies, etc.) www.tbltool.org

8.4.4. ISI: Envision™

- Institute for Sustainable Infrastructure (ISI). 2012. "Envision™ Sustainable Infrastructure Rating System" (online tool, documentation, verification, credentialing). www.sustainableinfrastructure.org/rating

8.4.5. FHWA: INVEST (Infrastructure Voluntary Evaluation Sustainability Tool)

- Federal Highway Administration (FHWA). 2012. "Welcome to INVEST Version 1.0!" (online tool, documentation). www.sustainablehighways.org

8.4.6. ODOT: Mosaic

- Oregon Dept. of Transportation (ODOT). 2013. "Mosaic" (downloadable Excel spreadsheet tool, documentation). www.oregonmosaic.org

8.4.7. NYSDOT: GreenLITES (Green Leadership In Transportation Environmental Sustainability)

- New York State Department of Transportation (NYSDOT). 2013. "GreenLITES" (downloadable forms, documentation). www.dot.ny.gov/programs/greenlites

8.4.8. STS: STARS (Sustainable Transportation Analysis & Rating System)

- (North American) Sustainable Transportation Council (STC). 2013. "STARS" (fact sheet, partial documentation). www.transportationcouncil.org

8.4.9. Greenroads Rating System

- Greenroads Foundation. 2013. "Greenroads Rating System" (documentation). www.greenroads.org