

Sustainability and Livability

Summary of Definitions, Goals, Objectives and Performance Indicators

11 March 2011

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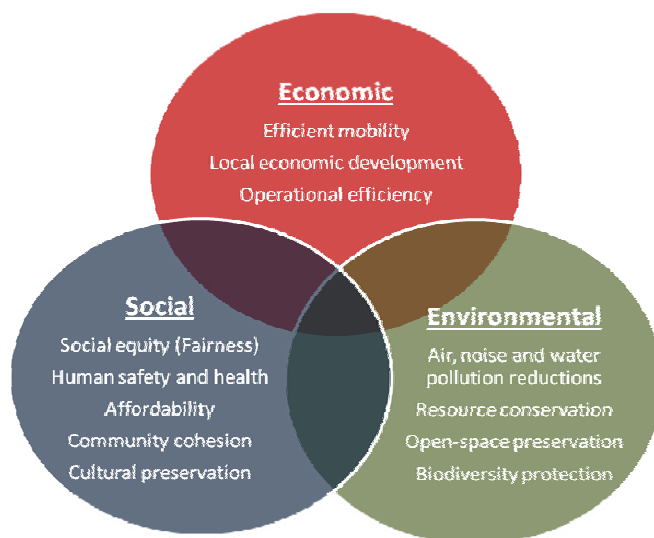
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Written in cooperation of The Transportation Research Board
 Sustainable Transportation Indicators Subcommittee (ADD40 [1])

Sustainability is a condition in which economic, social and environmental factors are optimized, taking into account indirect and long-term impacts. This is the ultimate goal or endpoint of planning activities. *Sustainable development* is progress toward this condition of sustainability. Many people and organizations have sustainability goals and objectives. (*Goals* are general, ultimate desired outcomes. *Objectives* are specific ways to achieve goals.) *Livability* refers to the subset of sustainability impacts that directly affect people in a community, such as economic development, affordability, public health, social equity and pollution exposure.

Various policy and planning objectives can help achieve both sustainability and livability goals, although with somewhat different emphasis. For example, reducing local pollutants such as particulates and noise tend to increase livability, while reducing global emissions such as carbon dioxide and CFCs tend to support sustainability. Some objectives conflict, such as inequitable or unhealthy climate change emission reduction strategies.

Figure 1 Sustainable Transport Goals



Sustainability emphasizes the integrated nature of human activities and therefore the need for coordinated planning among different sectors, groups and jurisdictions. It expands the objectives, impacts and options considered in a planning process. This helps insure that individual, short-term decisions are consistent with strategic, long-term goals.

Sustainable transport planning recognizes that transport decisions affect people in many ways, so a variety of objectives and impacts should be considered in the planning process.

Figure 1 indicates sustainability goals. Table 1 lists these goals and identifies those that have direct, local impacts and so can also be considered livability goals.

Table 1 Sustainable Transport Goals

Goal	Definition
Economic	
Efficient mobility	Fast and affordable transport of people and goods
<i>Local economic development</i>	Progress toward local economic goals, such as increased productivity, employment, business activity, income, property values and tax revenues
Operational efficiency	Maximize efficiency of providing transport facilities and services
Social	
<i>Human safety and health</i>	Increased travel safety, public fitness and health
<i>Affordability</i>	Ability of households to afford basic transport
<i>Social equity</i>	Supports equity objectives including fair distribution of impacts (benefits and costs), progressivity with respect to income, and basic mobility
<i>Community cohesion</i>	Increased quantity and quality of interactions among community members
<i>Cultural preservation</i>	Preservation of artifacts and activities valued by a community
Environmental	
<i>Pollution reductions</i>	Reduced air, noise and water pollution
Resource conservation	Reduced and more efficient use of scarce resources such as petroleum and land
<i>Open-space preservation</i>	Preservation of farmlands, parks, and natural habitats

This table summarizes sustainable transport goals. Those that also support livability are italicized.

Various planning objectives can help achieve these goals:

- *Comprehensive and inclusive planning.* Planning is comprehensive (considers all significant objectives, impacts and options) and inclusive (all affected people are able to participate).
- *Transport system diversity.* Travelers can choose from various modes, location and pricing options, particularly those that are resource efficient, affordable, healthy, and accommodate non-drivers.
- *System integration.* The various components of the transport system are well integrated, such as pedestrian and cycling access to transit, and integrated transport and land use planning.
- *Resource conservation.* Encourage the efficient use and preservation of natural resources, including land, energy, air and water (sometimes called a *conservation ethic*).
- *Affordability.* Transport services provide affordable options so lower-income households spend less than 20% of their budgets for access to basic goods, services and activities.
- *Efficient pricing and prioritization.* Road, parking, insurance and fuel are priced to encourage efficiency, and facilities are managed to favor higher value trips and more efficient modes.
- *Land use accessibility (smart growth).* Policies support compact, mixed, connected, multi-modal land use development in order to improve land use accessibility and transport options.

Table 2 indicates which planning objectives tend to help achieve various goals.

Table 2 Sustainable Transport Goals and Objectives

Sustainability Goals	Transport Planning Objectives						
	Comprehensive Analysis	Transport Diversity	System Integration	Resource Conservation	Affordability	Efficient pricing & Prioritization	Land Use Accessibility
Economic productivity	✓	✓	✓	✓	✓	✓	✓
Economic development	✓	✓	✓	✓	✓	✓	✓
Affordability	✓	✓	✓	✓	✓	✓	✓
Operational efficiency	✓					✓	
Social equity	✓	✓	✓		✓	✓	✓
Safety and health	✓	✓	✓	✓		✓	✓
Community cohesion	✓	✓	✓	✓	✓	✓	✓
Cultural preservation	✓	✓		✓		✓	✓
Pollution reduction	✓	✓	✓	✓		✓	✓
Openspace preservation	✓	✓	✓	✓		✓	✓

This table indicates the transport planning objectives that support various sustainability goals.

Sustainable development indicators are specific, measurable outcomes used to evaluate progress toward sustainability. A *performance index* is a set of performance indicators in a framework designed to facilitate analysis. These can be used to evaluate trends (such as in what ways a particular community is becoming more or less sustainable) and specific policy and planning decisions (such as which of several possible transport improvement options helps achieve sustainability goals). Similarly, *livable community indicators* measure progress toward community livability objectives.

Sustainable development indicators must be carefully selected to accurately reflect various goals and identify problems. Inappropriate or incomplete indicators can misdiagnose problems and misdirect decision-makers. For example, an index that only considers environmental impacts can encourage planning decisions that are economically inefficient, while an index that only considers economic impacts can encourage planning decisions that are environmentally harmful.

Table 3 summarizes sustainable transport goals, objectives and performance indicators.

Table 3 Key Sustainable Transport Goals, Objectives and Indicators

Goals	Objectives	Performance Indicators
I. Economic		
Economic productivity	Transport system efficiency. Transport system integration. Maximize accessibility. Efficient pricing and incentives.	<ul style="list-style-type: none"> • Per capita GDP • Portion of budgets devoted to transport. • Per capita congestion delay. • Efficient pricing (road, parking, insurance, fuel, etc). • Efficient prioritization of facilities
Economic development	More and better employment and business activity	<ul style="list-style-type: none"> • Access to education and employment opportunities. • Support for local industries.
Energy efficiency	Minimize energy costs, particularly petroleum imports.	<ul style="list-style-type: none"> • Per capita transport energy consumption • Per capita use of imported fuels.
Affordability	All residents can afford access to basic (essential) services and activities.	<ul style="list-style-type: none"> • Availability and quality of affordable modes (walking, cycling, ridesharing and public transport). • Portion of low-income households that spend more than 20% of budgets on transport.
Efficient transport operations	Efficient operations and asset management maximizes cost efficiency.	<ul style="list-style-type: none"> • Performance audit results. • Service delivery unit costs compared with peers. • Service quality.
II. Social		
Equity / fairness	Transport system accommodates all users, including those with disabilities, low incomes, and other constraints.	<ul style="list-style-type: none"> • Transport system diversity. • Portion of destinations accessible by people with disabilities and low incomes.
Safety, security and health	Minimize risk of crashes and assaults, and support physical fitness.	<ul style="list-style-type: none"> • Per capita traffic casualty (injury and death) rates. • Traveler assault (crime) rates. • Human exposure to harmful pollutants. • Portion of travel by walking and cycling.
Community development	Help create inclusive and attractive communities. Support community cohesion.	<ul style="list-style-type: none"> • Land use mix. • Walkability and bikability • Quality of road and street environments.
Cultural heritage preservation	Respect and protect cultural heritage. Support cultural activities.	<ul style="list-style-type: none"> • Preservation of cultural resources and traditions. • Responsiveness to traditional communities.
III. Environmental		
Climate stability	Reduce global warming emissions Mitigate climate change impacts	<ul style="list-style-type: none"> • Per capita emissions of global air pollutants (CO₂, CFCs, CH₄, etc.).
Prevent air pollution	Reduce air pollution emissions Reduce exposure to harmful pollutants.	<ul style="list-style-type: none"> • Per capita emissions of local air pollutants (PM, VOCs, NO_x, CO, etc.). • Air quality standards and management plans.
Prevent noise pollution	Minimize traffic noise exposure	<ul style="list-style-type: none"> • Traffic noise levels
Protect water quality and minimize hydrological damages.	Minimize water pollution. Minimize impervious surface area.	<ul style="list-style-type: none"> • Per capita fuel consumption. • Management of used oil, leaks and stormwater. • Per capita impervious surface area.
Openspace and biodiversity protection	Minimize transport facility land use. Encourage more compact development. Preserve high quality habitat.	<ul style="list-style-type: none"> • Per capita land devoted to transport facilities. • Support for smart growth development. • Policies to protect high value farmlands and habitat.
IV. Good Governance and Planning		
Integrated, comprehensive and inclusive planning	Clearly defined planning process. Integrated and comprehensive analysis. Strong citizen engagement. Least-cost planning and funding (the most overall beneficial solutions are selected and funded).	<ul style="list-style-type: none"> • Clearly defined goals, objectives and indicators. • Availability of planning information and documents. • Portion of population engaged in planning decisions. • Range of objectives, impacts and options considered. • Transport funds can be spent on alternative modes and demand management if most beneficial overall.

This table summarizes sustainability goals, objectives and performance indicators.

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