

# SUSTAINABLE COMMUNITY DESIGN



Sustainable Community Design seeks to establish a community whose goals and vision revolve around efficient and effective ways in which to live and grow.<sup>[1]</sup> While being economically, environmentally, and socially resilient, a sustainable community will manage its resources to provide solutions to current problems while leaving sufficient resources for future generations.<sup>[2]</sup> Sustainability must be met in all aspects of the community including insightful planning and development, water conservation, effective waste disposal, and efficient transportation.

## History

The concept of sustainability surfaced during the postwar development period in the 1980's.<sup>[3]</sup> By 1987, sustainability was a global concern as demands for resources and current population growth were on the rise. During this year, Sustainable Development was defined in the Brundtland Report, *Our Common Future*, laying the groundwork for the 1992 Earth Summit.<sup>[4]</sup> This UN conference held in Rio de Janeiro was groundbreaking. The size and environmental scope of the 1992 Earth Summit had surpassed all conferences before.<sup>[5]</sup>

The overall theme of the conference was the necessity of change in attitude and behavior relating to the current environmental problems. The major concern was the harmful strain that excessive consumption of resources by prosperous populations placed upon the environment.<sup>[6]</sup> Global sustainability starts with the smallest atom that structures society: the community. Today, sustainable community design initiatives are being rigorously researched and funded. In June 2013, the US Senate voted to allot over \$600 million dollars to the development of sustainable community programs.<sup>[7]</sup>



1992 Earth Summit

## Sustainability Components

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### Planning and Development

When a community development is first conceived, consideration of the amount of humans and their interaction with the environment is often not adequate and leads to unnecessary stress upon the environment. Wise planning can lead to less natural resource demand and provide a safer, more enjoyable atmosphere within the community.<sup>[8]</sup> A common sustainable planning and development technique is Smart Growth. This technique focuses on the efficient use of land, compact development, and ease of public transportation while still providing an appealing and livable community.<sup>[9]</sup> The main goal is to eliminate urban sprawl land waste and still provide a feasible living environment.

### Water Conservation



Permeable Pavement

Water, being essential to life, is one of our most valued resources. Water waste can occur in communities in many forms from excess storm runoff to imprudent irrigation use. Runoff ends up in oceans, rivers, lakes and ground water. It is often a source of water contamination since the runoff picks up oils and other contaminants that often exist on pavements. Permeable pavements are expensive but can collect most runoff and even provide a natural filtration system.<sup>[10]</sup> For non-drinking water uses such as irrigation and toilets, recycled water is a sustainable solution. Irrigation conservation management and public education of such can significantly reduce irrigation water demand.

### Waste Disposal

On average, Americans produce four pounds of waste individually per day. Rather than being sent to a landfill, most of this material could be put to better use.<sup>[11]</sup> Composting organic material, that otherwise teems our landfills, could reduce the environmental strain of disposal and provide a useful byproduct.<sup>[12]</sup> Recycling certain materials can also alleviate the heavy burden placed upon these landfills. Recycling creates more jobs, produces raw materials that can be used in the industry, and can even be less expensive than typical land fill disposal.<sup>[13]</sup>

## Transportation



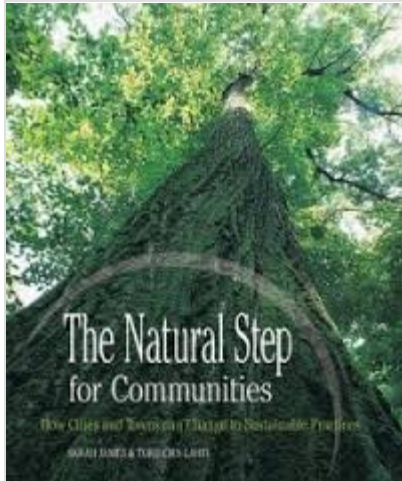
Central Train Station in Hamburg, Germany

In 2009, the average American household had nearly two cars.<sup>[14]</sup> Exhaust pollution from vast numbers of cars is harmful to the atmosphere.<sup>[15]</sup> In order to provide more sustainable communities, there should be fewer miles traveled in more efficient vehicles. Travel networks need to be developed to reduce the need for private transportation and increase the use of environmentally friendly public transportation. Integrated transit systems can often eliminate the use of private vehicles. A common approach is a subway system for inner-city transportation that is connected to a rail system to reach outlying communities.<sup>[16]</sup> Bus systems with dedicated lanes and use of high occupancy lanes on highways can also provide an efficient form of public transportation. Meanwhile, electric cars for neighborhood or limited, residential travel can help reduce pollution yet still provide private transportation.

## Sustainable Frameworks

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The increasingly popular consideration of community sustainability is often met with controversial themes or approaches. Definitions of sustainability differ from community to community which can cause problems with agreeing upon a standard approach.<sup>[17]</sup> The sustainability components listed above are a common theme, however, achieving sustainability in each area can be difficult without a standard process to follow. This is where established frameworks are necessary. Many organizations have created frameworks to help communities take meaningful steps toward sustainability. The Natural Step (TNS), an international nonprofit organization devoted to sustainability, provides an iconic framework and approach that is currently being applied to communities around the world.<sup>[18]</sup> The TNS approach is organized into five interrelated levels:

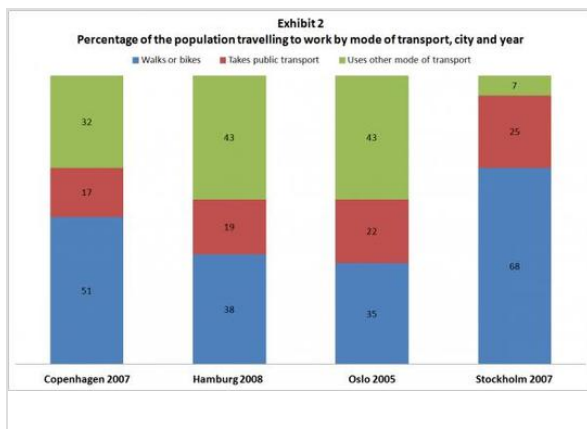


The Natural Step Framework  
Guide

1. *System* - principles in defining the functioning of the community
2. *Success* - sustainable principles relating to a favorable outcome
3. *Strategic* - the step-by-step plan to reach the favorable outcome
4. *Actions* - every step and action implemented during the transition to sustainability
5. *Tools* - used to systematically monitor the actions that follow the strategic plan to the arrive at the success of the system<sup>[19]</sup>

Despite its popularity, TNS is not the only sustainable framework. The US Environmental Protection Agency's (EPA) Green Communities Plan provides a systematic approach that assesses the condition of the community, analyzes trends, defines a goal, and creates and implements an action plan.<sup>[20]</sup> This framework is readily available and can be accessed by communities via the US EPA's website.

## Sustainable Communities Today



## Transportation Data from the Green City Index

Germany, Denmark, and Sweden, have developed a reputation in the past decade for leading the world in community sustainability.<sup>[21]</sup> Green buildings, integrated bike paths, pedestrian-only streets, and maintained parks and recreation have been implemented by these countries to help sustain the environment. Multimodal, mobility systems is the most pronounced sustainability organism in Germany and Scandinavia. This system includes high speed rails from city to city, trains connecting major hubs within cities, and well planned bike paths.<sup>[22]</sup> This allows an individual to bicycle to the nearest train station where he can essentially travel anywhere. On average, 48 percent of the working population in Copenhagen, Hamburg, Oslo and Stockholm walks or bikes to work. An additional 21 percent utilizes public transportation.<sup>[23]</sup>

Source : <http://letu-cefs.wikispaces.com/Sustainable+Community+Design>