



## Becoming a Sustainable Urban Area

Municipalities and land developers strive to label their official plans and development projects as environmentally 'sustainable', 'green', or environmental friendly one way or another.

But when do we know if an urban area or community has reached 'sustainable' status? A single 'new urbanist' housing development, an energy-efficient group of buildings here and there, a pair of high towers with a mix of uses, or a row of live/work buildings may all have positive effects, but do they build true environmental sustainability?

Sustainability is normally associated with the quality and health of the natural environment, although planners recognize that it also means social and economic sustainability. Fortunately, environmental sustainability also contributes positively to these two as well.

Environmental sustainability is important for our well-being. For example, toxins we emit into the environment affect personal health. Climate change affects agricultural productivity and the balance of natural systems of life that sustain us. Over-consumption of natural resources that the environment is unable to replace (such as petroleum, forests, minerals) produces wastes that the environment is unable to absorb, and creates economic and geopolitical pressures.

It has been estimated through 'ecological footprint' analysis that if the average standard of living for the earth's population were to rise to Canadian levels, we would require four Planet Earths to sustain us all without degrading the natural environment (Wackernagel and Rees, 1996). This would indicate that very substantial reductions in consumption levels are necessary to ensure a stable and healthy environment for our children, grandchildren and their descendents. Moreover, these reductions will have to continue as human populations keep growing. Scientists also say that, in order stabilize climate in the face of global economic growth, North Americans will need to reduce greenhouse gas emissions by over 80% (e.g. - <http://www.reuters.com/article/topNews/idUSL194440620070419>). This cannot be accomplished without direct and dramatic action by individuals, commerce and government.

Because of ongoing and rapid population growth in Southern Ontario, it is highly unlikely that true environmental sustainability can be achieved in the near future. However, continuing to damage the environment at current rates will hasten negative consequences that will affect our well-being.

But what are the measures of sustainability? How do we know we have reached sustainability in our communities? An overall definition is that has been achieved when resource consumption and waste production are in balance with the ability of the natural environment to replace and absorb them, respectively. More specifically, environmental sustainability in Southern Ontario requires per capita and absolute reductions in

- The use of non-renewable energy resources
- Emissions of greenhouse gases from fossil fuels and other sources
- The destruction and/or degradation of rural and natural lands
- Emissions of toxins and wastes into the air, soil and water

For growing urban areas, the report card of all of these measures of sustainability is that the situation is worsening in absolute terms. There are a few areas where progress is being made, such as increases in energy efficiencies of

appliances, some new homes with better thermal insulation, and some industrial processes, but overall, sustainable urban areas or even sustainable neighbourhoods in the industrialized world are virtually impossible to find.

What would have to happen to create sustainable urban areas? First and foremost, sustainability requires a change from traditional assumptions about how cities grow and develop. It requires an acceptance that personal and economic well-being can go hand in hand with the preservation of natural systems, and with dramatic reductions in the consumption of material resources and the production of waste products. Sustainability and sustainable urban development means going beyond efficient development of individual properties, and towards a systemic understanding and approach to how the individual pieces of an urban area work together.

Because it is unsustainable to reduce rural and agricultural lands as populations dependent on them increase, almost all urban population and economic growth should be accommodated in existing built-up areas through infill and intensification, largely through apartment-style accommodation and more intensive use of land for non-residential purposes. Urbanization of rural lands should be limited to poor-soil lands, and be at high density, with few detached homes and much higher floor space ratios for commercial properties. This kind of urbanization can be achieved, and through careful design, be pleasant and highly desirable. Unfortunately, few apartment-style buildings of a size and design today to accommodate households of more than two or three people.

Energy use for all purposes, and in all sectors, will need to be less than it is today, per capita and in total, not only as an environmental imperative, but because global petroleum and natural gas resources are fast becoming scarce and expensive. Alternative fuels will not be able to replace the amount of fossil fuels used today (for example, hydrogen and ethanol fuels require about as much energy to produce as they provide). Many opportunities to reduce total energy consumption exist; the most effective implementation tool is to increase energy prices, either from scarcity or by public policy. This would spur efficiencies in transportation, water consumption, residential and non-residential heating and cooling, and other energy uses. Public policies that promote increases in energy supplies from fossil fuels are economically unsustainable and damaging to the environment.

Urban and interurban transportation systems are a particular area where dramatic change is possible, and necessary. The approaching crisis in energy, and environmental sustainability, mean that modal shares of daily passenger trips by automobile and by transit should be almost reversed, goods movement systems become much more efficient, and vehicles become far more efficient to build and to operate. Very high levels of mass transit services are far less expensive than the personal costs of travel by automobile, and need not be less convenient for most travelers. Beyond improvements to transit, sustainable urban areas are focused on walking as the primary travel mode, which requires city-building that is mixed use and compact.

Achieving success will require recognition that our current consumptive habits are not essential for a good life. Experts in the field of human psychology will attest that happiness is not dependent on the amount of energy or land consumed for urban living, or the amount of consumer goods consumed; once personal security and basic material needs are met, happiness becomes a matter of achieving goals that involve intangibles such as personal growth, satisfying work, and positive relationships with others (for example--  
<http://www.biopsychiatry.com/happiness/>).

**Prepared by SUDA staff**

**For further information, please e-mail SUDA at [contact@SUDA.ca](mailto:contact@SUDA.ca), or call 416-400-0553.**

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