



How Big are Your Shoes?: The Ecological Footprint of Suburban Development

As Mark Twain said, the trouble with land is they stopped making it some time ago. The amount of land on this planet is finite, and no concept illustrates that fact better than the Ecological Footprint. An Ecological Footprint is defined as the amount of biologically productive land and water area needed to provide the resources that are consumed by an entity, and to assimilate the wastes that are produced by that entity¹. Ecological Footprints have been calculated for countries, individuals, businesses, and schools. Your personal Ecological Footprint would include the land needed to grow your food and the cotton for your clothing, the land that grew the trees that built your house and absorb the carbon dioxide you produce through fossil fuel use, and the land taken up by the landfill where your garbage goes.

We live on a finite planet. The surface area of the Earth is about 51 billion hectares (a hectare is a square 100 metres a side). Most of this is covered with the oceans, leaving less than 14.5 billion hectares of land. However, only 8.9 billion hectares of that land is biologically productive (the rest is deserts, ice caps, and barren rock)¹. The human population of our planet is over 6.5 billion. If we set aside just 12% of this productive land for the other 30 million species that inhabit our planet – many of which are in decline - then the amount of available land per person is 1.9 hectares. In contrast, the Ecological Footprint of the average Canadian is 7.2 hectares. The Ecological Footprint of the average resident of India, on the other hand, is only 1.0 hectares, and the footprint of the average Bangladeshi is only 0.6 hectares. If everyone on Earth lived like the average Canadian, we would need at least four planet Earths to sustain current consumption levels².

In addition, there are many countries that are currently running “ecological deficits” – they are consuming more land than their country actually has. How is this possible? These countries typically rely on imports to sustain their consumption – these imports come from countries that are running an ecological surplus. Imports have a high environmental cost – planes, trains and trucks all produce waste, pollutants, and carbon dioxide, which contribute to global climate change and increase the Ecological Footprint for imports.

The Earth can be thought of as a bank account – we have capital (for example, a natural groundwater resource) and interest (the amount by which that water resource is replenished through rain each year). If we consume more than the interest, we deplete the capital. Running an ecological deficit is temporarily possible because of the availability of natural capital, but by depleting natural capital, we are undermining the ability of the planet to sustain our children and grandchildren. Some of the countries that are currently running an ecological deficit are the United States, Japan, South Korea, Great Britain, Denmark, and Belgium. In fact, most of the world’s industrialized countries are experiencing large ecological deficits. This means that the future availability of land – to grow food and provide resources – will be decreased.

Arable land – land that can be used to grow crops – is the most productive on Earth. It is 2.8 times more productive than the world average. In comparison, pasture land (primarily used for grazing cattle) is 40 percent as productive as the world average. Forested land is about 20 percent more productive than the world average³. Historically, cities tend to grow up in the areas where agricultural settlements used to be – on arable land. This is certainly true of Southern Ontario – some of the best agricultural land in the world is located here. However, as we continue to grow, much of this land is being consumed by low-density suburban development, consuming the land we use to grow our food, and adding to our personal and national Ecological Footprints.

Urban and suburban development comes with an Ecological Footprint of its own. Housing type and location are two main determinants of the size of one's housing footprint. Those living in spread-out, low-density developments tend to have high footprints because of the amount of land taken up by the house itself, the amount of land used for the roads that they drive on, the amount of carbon spewed into the atmosphere by their car, and by the energy and materials used to maintain their homes.

Let's compare two people. One lives in a house in the city of Mississauga, and travels to her office on Bay St. by automobile. The other lives in an apartment on Lansdowne Ave. in Toronto, and travels to her office on Bay St. by public transit (bus or subway). When we look at their Ecological Footprints for commuting and electricity use alone, the city-dweller has a footprint of 0.815 hectares, while the suburbanite has a footprint of 2.17 hectares! A study by Wackernagel and Rees found that living in an apartment or condominium rather than a free-standing house of the same value, and using a small car rather than a standard-sized one, can reduce housing and transportation footprints by a factor of three¹. This choice may also lead to a greater quality of life – the condo resident may be closer to family and friends, able to walk to work, and able to take advantage of shops and services nearby. It is possible to lower Ecological Footprints while improving quality of life.

If you would like to calculate your own ecological footprint, there are online calculators available that can do the job for you. The calculator at <http://www.myfootprint.org/> is multiple-choice and takes about 5 minutes to complete. For a more in-depth analysis of your Ecological Footprint, an Excel-based calculator is available from Redefining Progress at <http://www.redefiningprogress.org/newprojects/ecolFoot/faq/index.shtml#accuracy3>. This calculator is based on figures for the US, but it still gives a good idea of the size of your footprint.

References:

1. Wackernagel, M. and W. Rees. Our Ecological Footprint: Reducing Human Impact on the Earth. New Society Publishers, 1996.
2. Chambers, N., C. Simmons, and M. Wackernagel. Sharing Nature's Interest: Ecological Footprints as an Indicator of Sustainability. Earthscan Publications, 2000.

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