Environmental Benefits of Heritage Conservation

"...heritage conservation makes good environmental sense"

- ***Reduced Energy and Resource Consumption***
- ***Reduced Greenhouse Gas Emissions***
- ***Reduced Waste and Pollution***
- ***Reduced Urban Sprawl***

Heritage

Heritage Conservation & Sustainability

The collections of buildings that make up our farms, towns and cities are humankind's largest creations. Responsible stewardship of this resource is an important element in ensuring a sustainable future for generations to come.

Building Demolition

A recent study of demolished buildings found that only four percent were torn down because of structural problems. Most of the rest were demolished due to neighbourhood redevelopment, or because they were considered unsuitable for future use. (Athena Institute 2004)

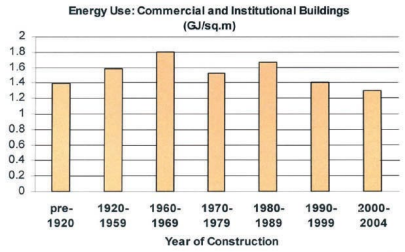
Adaptive Reuse

Although it is sometimes necessary to demolish a building, new uses can often be found for buildings that have outlived their original purpose. For example, historic buildings can be adapted for a new use, while retaining their heritage character.

Finding new uses for historic buildings helps preserve our cultural heritage and reduces our "ecological footprint."

Conservation

Heritage buildings are often perceived as energy hogs. In reality, the energy efficiency of pre-1960 buildings is better than many built afterward.



Natural Resources Canada, 2007

Traditional builders knew how a building's materials and design would affect its energy performance. For example, high ceilings, shutters and operable windows optimize natural light and ventilation. Awnings, porches and thick walls moderate building temperatures. Landscaping and building orientation control sun, shade and wind exposure.

How do buildings impact the environment?

The energy it takes to heat, cool and light a building ("operating energy") is only part of the picture. To calculate a building's full environmental cost it is necessary to consider all impacts related to its construction, operation, maintenance and demolition.

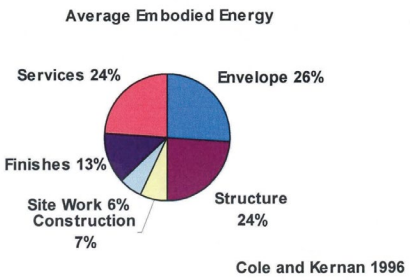
An analysis of a building's impact over its entire lifetime (a life-cycle analysis) will often show that it is more environmentally sound to reuse a building than to demolish it and build new, even if the new building would use less operating energy.

Heritage conservation reduces energy use and greenhouse gas emissions

The energy used to extract, manufacture, transport and install the materials needed to construct and maintain a building is called "embodied energy." The embodied energy in an average commercial building is equivalent to 1.0 to 4.0 litres of gasoline/ m^2. (Cole and Kernan 1996; Jackson 2005)

When a building is demolished, its embodied energy is lost. Even if a replacement building is energy efficient, it will be decades before savings in operating energy outweigh the embodied energy of the old building, the energy used in the demolition and the energy needed for the new construction. (Jackson 2008)

If the structure and envelope of a building is reused, half of its embodied energy is conserved.



Reusing buildings also limits carbon dioxide (CO_2) emissions. Even when a house is replaced with a new, energy-efficient one, it can take 35-50 years of efficient operation to compensate for the CO_2 that was emitted during the new construction. (Empty Homes Agency 2008)

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Reusing buildings conserves natural resources and reduces pollution

The adaptive reuse of a building prolongs the service-life and usefulness of the materials that were used in its construction and maintenance. As a result, demand on natural resources is lessened and there are fewer environmental impacts from extracting and processing raw materials that are used in the manufacture of building products.

Landfills are filling up

A significant amount of material in landfills is construction, demolition and renovation debris. An American study found that waste from building demolitions made up 19 per cent of material going to landfills in 1996. (Franklin Associates 1998)

In Canada, it is estimated that between one and two million tonnes of demolition waste were sent to landfills in 1996. (Statistics Canada 1999)

Government of Saskatchewan, Flaman, 2006

Construction, renovation and demolition generate large amounts of waste.

Heritage conservation promotes environment-friendly development

Heritage conservation supports the revitalization of historic neighbourhoods where roads, utilities and public services have already been developed.

Kenneth Sponsler © Image from BigStockPhoto.com

Between 1971 and 2001, urbanization consumed 15,200 km^2 of Canada's rural land.

Many historic neighbourhoods are also pedestrian oriented and have good access to existing transit systems. As a result, less pollution is emitted from vehicles in older, central neighbourhoods than in low-density suburbs. (CMHC 2007)

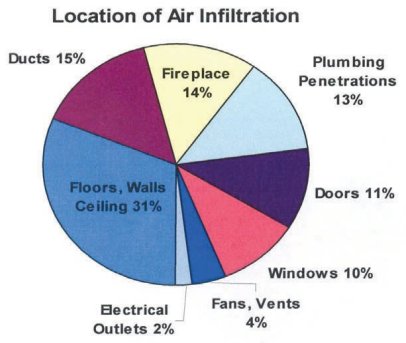
Don't demolish - retrofit!

If a heritage building needs an energy upgrade, there are many ways this can be done without sacrificing its heritage character.

Significant energy savings can be achieved with simple measures such as storm windows and insulation. Advanced heating, cooling and lighting systems work as well in old buildings as in new and can usually be installed in a heritage sensitive manner.

Conserving historic windows makes sense, environmentally and economically

Windows account for only about 10 per cent of air infiltration in an average home, and most of that is through openings in and around the sash.



U.S. Department of Energy, 2008

Well-maintained historic windows perform nearly as well as new windows. The small energy savings from replacement windows generally do not justify their expense since their 40 to 100 year payback period often exceeds their service life. (Sims 2006)

Replacement windows also have some environmental costs. Manufacturing aluminum or vinyl windows is energy intensive and polluting. Sold as "maintenance-free," most replacement windows are actually not repairable. When one component fails, the whole window is usually discarded and sent to a landfill.

With proper maintenance, historic windows can last for generations. Retaining historic windows preserves a building's heritage character. It also conserves embodied energy and extends the life of high quality window frames made from old-growth wood. (Sedovic and Gotthelf 2005)

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Conserving the Past, Protecting the Future

Conserving historic places preserves an irreplaceable legacy and can help secure a healthy future. Everyone can take part in, and benefit from, this process.

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