



## Sustainable Development

- **Heritage conservation is an integral part of sustainable development**
- **The reuse of heritage buildings has environmental, social, and economic benefits - the three pillars of sustainable development**
- **The rehabilitation of heritage buildings reduces waste and conserves energy**
- **The social and cultural values of heritage buildings are non-renewable resources**

### Heritage conservation is an integral part of sustainable development

The first guideline of sustainability is – use what already exists. Likewise, heritage conservation promotes the use of existing resources. When a new building is built from scratch, it may achieve high environmental efficiency, but it is more sustainable to adapt existing buildings and how they are used.

Older buildings also aid sustainable development through the durability of their building materials. Historic windows, for example, can be maintained through repair and partial replacement. On the other hand, when a modern window deteriorates, the entire window unit is removed and thrown away.

*(APT, 2005 & Dwell, 2004)*

“Sustainable development requires that the rate of depletion of non-renewable resources should foreclose as few future options as possible.”

*(Our Common Future, 1987)*

### The reuse of heritage buildings has environmental, social, and economic benefits, fulfilling the three pillars of sustainable development

A study in Toronto compared the environmental, social, and economic costs and benefits of redeveloping old industrial and commercial sites (brownfields) and developing previously undeveloped land at the fringe of the city (greenfields). The results of the study showed that brownfield redevelopment had higher total annual benefits per hectare for Greater Toronto Area residents.

*(Environment and Planning B, 2002)*

### The rehabilitation of heritage buildings reduces waste and conserves energy

The energy used in the life-cycle of a building, called the *embodied energy*, includes all the non-renewable energy consumed:

- Initial energy – to acquire, process, manufacture, and transport building materials, and construct the building,
- Recurring energy – to maintain and repair the building,
- Operating energy – to heat, cool, ventilate, and light the building,
- Energy to demolish and dispose of the building.

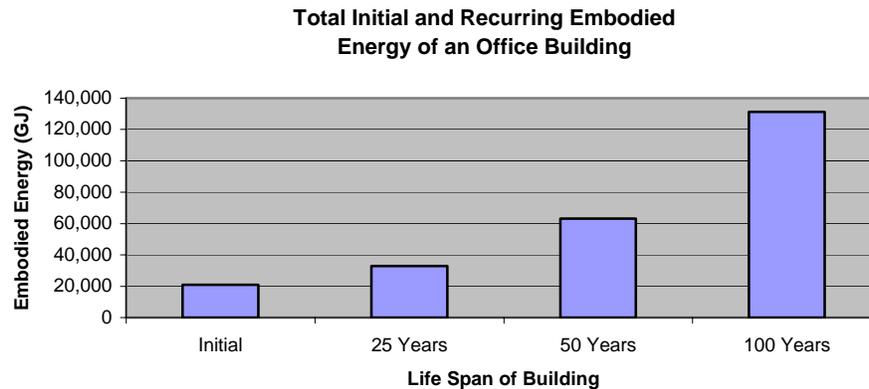
In 2000, 12% of Canada's waste disposal was from construction and demolition sources.

*(Statistics Canada, 2005)*



The total embodied energy of a 4,620m<sup>2</sup> (50,000 ft<sup>2</sup>) generic, 3-storey office building with underground parking increases by 56.5% when it is 25, 144% when it is 50, and 325% when it is 100 years old. When this building is demolished, the embodied energy goes to waste. Therefore, a frequent cycle of demolition and rebuilding does not fit with sustainable development practices.

*(Building and Environment, 1996)*



### **The social and cultural values of heritage buildings are non-renewable**

Just like many natural resources, the substitutability for cultural resources is close to zero. Although some of the functions of an historic building, such as the shelter and warmth it provides, could be substituted by another building, its cultural input could not be substituted, or replicated, by a building that has no similar content. The destruction of these resources, then, is not sustainable.

*(Journal of Cultural Economics, 1995)*

### Resources

Bruntland, G. (ed.). 1987. *Our Common Future*. World Commission on Environment and Development. Oxford, Oxford University Press.

Cole, R.J. and P.C. Kernan. 1996. *Life-Cycle Energy Use in Office Buildings*. *Building and Environment*. 31(4): 307-317.

De Sousa, C.A. 2002. *Measuring the Public Costs and Benefits of Brownfield Versus Greenfield Development in the Greater Toronto Area*. *Environment and Planning B: Planning and Design*. 29: 251-280.

Jegou, F. and E. Manzini. 2004. *Making a Habit of Sustainability*. *Dwell*. 5:1.

Powter, A. and S. Ross. 2005. *Integrating Environmental and Cultural Sustainability for Heritage Properties*. *APT Bulletin*. 36:4. 5-11.

Statistics Canada. 2005. *Disposal of Waste by Source, by Provinces and Territories*. Found at <http://www40.statcan.ca/>

Throsby, D. 1995. *Culture, Economics, and Sustainability*. *Journal of Cultural Economics*. 19(3): 199-206.