

## SFU identifies opportunities in failing infrastructure

*by Sean Connelly, MA*

"Near collapse," "crumbling," "looming crisis" — from tragic events such as the collapse of bridges and contamination of drinking water, to the negative impacts on overall quality of life, Canada's infrastructure deficit has made headlines. While this deficit represents an enormous challenge, it also provides an historic opportunity to replace our existing infrastructure and to reshape our communities in more sustainable ways.

Understanding how to capitalize on this opportunity was the focus of a recent research project undertaken by the Centre for Sustainable Community Development at Simon Fraser University(SFU). Findings indicate that addressing our infrastructure deficit in a sustainable manner is not so much a technical issue as it is a challenge of awareness about viable solutions, and our capacities as decision-makers to make strategic choices and then act.

The bulk of our existing municipal infrastructure investments were made at a time, and in a context, when there was little understanding of the impacts that humans can have on the environment (e.g., climate change). In many cases, those investments locked communities and residents into ways of living that we now recognize as being unsustainable. Recent studies by the Federation of Canadian Municipalities (FCM) indicate that Canadian municipalities are facing the dual problem of declining infrastructure investments and aging infrastructure.

In BC, public infrastructure investments have grown by up to two percent per year between 1961 and 2005, clearly not keeping up to inflation or population growth. As a result, we have rapidly growing communities struggling to provide infrastructure services for their communities, while at the same time trying to limit property tax increases.

## Infrastructure Investments



In addition to the passive solar design, ground source heat exchange, and water and waste treatment, the Eco-centre in Craik, Saskatchewan was built with recycled local materials such as straw bales, reclaimed timbers from demolition of one of the town's grain elevators, and field stones that have done thousands of dollars of damage to the equipment of local farmers.



Solar panels, a trigeneration plant, a hydrogen-fueled fleet, and building retrofits are some of the innovations Toronto's Exhibition Place has introduced to move toward its goal of being energy self-sufficient.



Higher densities, smaller lot sizes, a traditional grid-pattern, rear lanes, mixed-use units, and green infrastructure make the East Clayton Neighbourhood in Surrey different from conventional subdivisions.

But given the scale of the infrastructure challenge — and the complexity inherent in sustainable community planning — our infrastructure planning and investment decisions must be made with the utmost attention to viability and benefit. As municipalities across the country make significant infrastructure investments in the near future, they'll be asking, "How can we be strategic with those investments?" And, "How can we assess our priorities, identify our resources, and implement infrastructure projects that will serve as catalysts for broader movement toward community sustainability?" These and other questions guided SFU's research and informed the case studies of award-winning sustainability initiatives that addressed these infrastructure issues. Snapshots of the cases are as follow:

**PLACE: Toronto, Ontario (population 2,480,000)**

**CHALLENGE:** Buildings as the key contributor to greenhouse gas emissions and energy consumption.

**SOLUTION:** Toronto's Better Building Partnership program worked with strategic partners for building retrofits that created the equivalent of 4800 year-long fulltime jobs, generated yearly savings of \$19M for building owners, and reduced GHG emissions by 194,500 tonnes per year as well as reducing the demand on energy infrastructure.

**PLACE: Surrey, BC (population 400,000)**

**CHALLENGE:** Stormwater management and the creation of a model residential community.

**SOLUTION:** The Neighbourhood Concept Plan (NCP) for East Clayton was developed through a charrette and integrated design process. The NCP used sustainability principles such as increased density, mixed-uses, pedestrian orientation, and natural stormwater infiltration systems, all designed to decrease the footprint of the development and the related community infrastructure.

**PLACE: Craik, Saskatchewan (population 400)**

**CHALLENGE:** Revitalization of the town and modeling sustainable living for other rural communities.

**SOLUTION:** The Town of Craik and the Rural Municipality of Craik joined forces to help establish a community-based sustainability project that would bring attention to the town. The Eco-centre in Craik served as the original focal point to demonstrate the viability of energy-efficient and alternative building approaches (e.g., straw bale construction, alternative energy sources, and integrated environmental design) in the Saskatchewan context. The goal was to reduce the pressure on existing municipal infrastructure and reduce the costs of servicing the planned eco-village, a new residential neighbourhood of 15 homes that are being sold for \$1, provided the owner commits to construction and occupation that is self-sufficient in terms of energy and waste.

**PLACE: Rolling River First Nation, Manitoba (population 400)**

**CHALLENGE:** Create employment within the community, generate revenue for the community and reduce reliance on the Indian and Northern Affairs Canada for funding.

**SOLUTION:** Rolling River's comprehensive community plan reflects the goal of economic self-sufficiency for the community by using the land base and renewable resources to drive economic development initiatives. By using reserve land strategically, a new health centre, gas bar, restaurant, VLT centre, and new farms have contributed to the improvement of the physical infrastructure in the community. Ongoing projects include a modular home plant to address housing issues, a community sawmill, and a local wind-energy project.

These case studies, and many more like them, are good news. They illustrate that we know enough about sustainability planning and implementation, and that there are proven solutions and tangible alternatives to business as usual - for all types of communities. Each community used the opportunity of infrastructure investment to address immediate priorities in a way that supported sustainability principles over the longer term.

**Now it's your turn...**

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