

Canada blazes a trail in green building

Environmentally friendly construction is not just a fad perpetrated by eco activists; it saves money, creates jobs and improves the quality of life for residents who live in green buildings, as well as slashing greenhouse gas emissions. Green building offers a viable solution to help combat climate change because projects do not only focus on using renewable energy, but they also aim to reduce the amount of energy used in the home and during construction. By **Sarah Marks.**

Evidence from a Green Building Awareness poll conducted by Harrison Interactive in the US shows that buildings are the cause of more CO₂ emissions than cars, yet not even building professionals know this. The World Business Council for Sustainable Development conducted interviews with 1,423 building professionals in eight countries (developed and developing), from late 2006 until early 2007, as part of their Energy Efficiency in Buildings project. Participants were quizzed regarding the percentage of CO₂ emissions they believed came from buildings. The average response was 19 percent, which is actually less than half the correct answer of 40 percent. In the US, building professionals believed on average that buildings were responsible for just 12 percent of emissions.

Fortunately, their North American cousins seem far more aware of the impact of buildings on the carbon footprint. "In Canada 35 percent of greenhouse gas emissions come from buildings," says Thomas Mueller, President of the Canada Green Building Council. "People are so concerned with how much gas the car uses, but they should look at how much energy it costs to heat your home."

The Council, formed in 2002, has played a vital role in advising designers, builders and developers on how to make buildings more energy efficient, and in particular, on how to adapt the US Leadership in Energy and Environmental Design (LEED) rating system for Canada.

The system is now being taken up voluntarily as a standard by all tiers of the Canadian construction industry (see box). The Council aims to improve 100,000 buildings and one million homes across Canada by 2015, with a verified 50 percent reduction in energy and water use from a 2005 baseline. A report released in September 2008 by the Canadian Urban Institute claims that Canada is now leading the green building movement worldwide.

The Council is working towards its goal in two ways: they have three pilot projects aimed at improving the energy performance of existing groups of buildings (the Green Building Performance Initiative) and they use the LEED building standards to assess and certify buildings that have meet the green standards. "The only thing that we're not targeting right now is existing homes," says Mr. Mueller.

New green projects and financial viability

The realisation that cars and industry are not solely to blame for our carbon footprints has led urban planners in Canada to undertake impressive new green building projects. The Dockside Green development in the city of Victoria, capital of Vancouver Island on the Pacific west coast, is a new eco-community, whose first phase, Synergy, has set a world record for the most points achieved under the new rating system.

The developers, Vancity Credit Union and Windmill West, led by visionary director Joe Van Belleghem (who is also a founding member of the Green Building Council) are aiming to achieve a LEED Platinum rating for every building in the development, which would be a first for North America. So confident are they of their project's success that they have backed up their promise with a USD one million guarantee, to be paid to the city of Victoria should they fail to meet the target.

Dockside Green, situated on 15 acres of harbourfront industrial land, is being developed for residential, retail, office and commercial buildings. Belleghem admitted that the economic crisis has affected Dockside Green.

"From October 2007 to March 2008 the market started to slow but our sales actually went up 215 percent," says Belleghem. "The observation from that was to ask if the market has got more selective in what they are buying? They really started to do their research." Belleghem adds citing a shift in values. "I think this is the time when people are going to start to say they want to be involved in projects that are addressing climate change."

Government figures show that the cost of constructing a LEED-certified building is typically between two and four percent more than a conventional construction.

Dockside Green homes have sold to a wide range of people from countless social backgrounds, affirming Belleghem's belief that green building is a growth industry. But the key to knowing if green building can really take off, is knowing who your buyers are – are they a solitary section of society with green interests, or is there a increasing supply of buyers ready to snap up eco-friendly homes?

Belleghem says: "A third are buying because of the attributes and a third are buying because it makes a difference when they compare our product to somebody else's. And

there's a third that couldn't care less – I find them the most intriguing – they get in there and they become environmental braggarts!"

The fact that green building remains a growth area despite the current economic climate, signifies that Dockside developers have hit upon a truly sustainable template for future growth.

Upgrading existing buildings

Green building is not just about new constructions however. Canada is also undertaking retrofit programmes to improve energy usage in existing buildings. One example of this is the Emergency Medical Services (EMS) Headquarters and Fleet Centre, completed in 2004. It was the first building in the province of Ontario to attain LEED Gold, and its energy consumption is 57 percent less than that of similar buildings designed to building code energy standards. That translates into an annual saving of approximately

Applying LEED standards in Canada

The Leadership in Energy and Environmental Design (LEED) rating system is designed as a leadership system – it targets about 20-25 percent of the leading construction companies in the market with the idea that if those 20 percent adopt it, it will pull the rest of the market with them. Gaining a rating certification costs, on average CAD 50,000, but there are savings to be made once energy usage is cut. An optimum improvement of operational practices in existing buildings adopting the standards can bring 16 to 25 percent in performance improvement. The first phase of the pilot project has seen 500 buildings sign up covering seven million square metres. In the next phase, the Building Council will work with hospitals and universities. "When it comes to the private sector – 40 percent of our projects are private sector projects – the private sector will adopt it voluntarily if given the right incentives," says the Building Council's Mueller.



View from Dockside Green

PHOTO © THE TARTAN GROUP

CAD 21,800 (USD 16,895) in natural gas and electricity according to a statement by the region of Waterloo.

Despite the relative ease in obtaining funding and the consequent money saved in parallel to a reduction in energy usage, some of the problems encountered while planning and constructing the EMS headquarters indicate why green building is not more prolific. Yet the local government has formally adopted a LEED Silver standard for all new facilities it constructs.

Government backing

One of the reasons for Canada's success is that the private sector is receiving government support. The Canadian government established the Green Municipal Fund in its 2000 budget with the aim of stimulating investment in pioneering municipal environmental projects that move the progress of sustainable development forward in Canadian society.

The Federation of Canadian Municipalities (FCM) is the mouthpiece of municipal governments and they control the Green Municipal Fund.

Ray Sullivan, the FCM Communications Manager, says: "FCM's Green Municipal Fund can provide grants and loans to municipal governments and to their partners in the private and non-profit sectors. In each case, however, a municipal government has to be a partner in the initiative." And there is an added incentive: "Currently, we are able to make loans to municipal governments at about one percent interest," says Sullivan.

Once an application for funds is submitted, it usually takes four to five months for a decision. Taking the standards of Leadership in Energy and Environmental Design into account is a good way of increasing the chance of finding funding. "Currently, green building applications have to target at least LEED Silver and achieve a greater than 40 percent improvement in energy consumption compared to the Canadian Model National Energy Code for Buildings (which defines minimum requirements for energy efficiency). For applicants seeking grants and loans for retrofits, their project must reduce energy consumption by at least 30 percent. Although the Green Municipal Fund uses the LEED rating system as a standard, we also accept equivalents," says Sullivan.

A global perspective

The necessity to build sustainably has also been recognised by the International Organization for Standardization (ISO), which announced a new ISO standard in January this year. This will help the building sector to contribute to energy saving by providing it with specific design guidelines.

"Today's worldwide increase in efforts toward rational use of natural resources is increasing the markets for energy-efficient buildings and building equipment," says Stephen Turner, leader of the ISO group. "The building sector holds great prospects for energy saving through the design of buildings

with improved thermal performance and increased efficiency of mechanical equipment, as well of course through the entire range of buildings' lifecycles."

This raises the question why other countries are not forging ahead with green building projects at the same rate as Canada. The answer could be ignorance. As the World Business Council for Sustainable Development indicated in its report, even building professionals are unaware that buildings are responsible for a significant proportion of CO₂ emissions. This ignorance may well be due to unfamiliarity: only 13 percent of survey participants had ever been involved in a green building project.

Cost plays an important role in how green a developer chooses to make a construction. Less energy efficient heating and air conditioning for example, are generally cheaper to install, so a developer can then sell houses at a lower price.

Developers will always be motivated to answer market demands, so, until consumer demand is for energy efficient housing, the developers will keep on building less energy efficient, but cheaper housing. Fortunately in Canada, both consumer demand and standards such as LEED are tipping the balance in favour of green construction. And the fact that the government is openly supporting green building initiatives is spurring on the process through advanced education and training, development of supportive regulations, advanced research and development, and a commitment to build communities that are energy efficient, cost effective and ecologically sensitive.

To make a real impact green building has to happen on a global level. A 2007 report on buildings and climate change from the United Nations Environment Programme (UNEP) Sustainable Construction and Building Initiative (SBCI) recognizes that developing countries do not always possess the funding or tools to build greener buildings. Achim Steiner, UN Under-Secretary General and UNEP Executive Director, says: "By some conservative estimates, the building sector worldwide could deliver emission reductions of 1.8 billion tonnes of CO₂. A more aggressive energy efficiency policy might deliver over two billion tonnes or close to three times the amount scheduled to be reduced under the Kyoto Protocol." ♦