

PART ONE OF A FOUR-PART SERIES ON SUSTAINABILITY: COMMUNITIES • TECHNOLOGIES • BUSINESS • POPULATIONS

Sustainable communities

With a host of changing social and economic dynamics profoundly affecting the ways people and communities relate to one another, experts concerned with sustainability are exploring ways to achieve the long-term viability of the world's urban and rural neighbourhoods.

The United Nations estimates that for the first time in human history more than half of the world's population now lives in urban areas. That fact, says David Graham, provost and vice-president, Academic, at Montreal's Concordia University, underlines the urgency of developing new ways for people to relate to one another – ways that take into account the increasing size, complexity and diversity of the cities in which most of us now live.

Work now underway at Concordia is helping break new ground in defining how communities of all sorts and sizes function and interconnect in new and sustainable ways.

While often used to describe "green" or environmentally sound practices, sustainability is more than that, says Dr. Graham. "It's about creating processes that can be maintained without having an adverse impact on the future."

That concept can be applied to just about any field, from the economy to the environment.

And that is just what Concordia is doing – starting with its work on sustainable communities, which Dr. Graham says are at the core of any sustainable lifestyle.

Take for example the worldwide issue of urban growth.

As cities grow, says Dr. Graham, they become increasingly difficult to live in because social cohesion diminishes and diversity increases. And that, he says, can lead to more adversarial relations. "Sustainability is about abating that," says Dr. Graham.

Concordia's University of the Streets Café initiative is making a unique contribution in this regard. This innovative program involves moderated, public conversations held in cafés and other locations around Montreal. The purpose: to foster dialogue and build social cohesion through constructive debate about contentious issues.

"We've held about 45 of these every year since 2003," said Lance Evoy, director of Concordia's Institute for Com-



The sustainability of urban centres is challenged, in part, by the complexities arising as more people of diverse backgrounds live among one another in densely populated cities. Concordia's University of the Streets Café initiative, pictured above, is helping address this issue by fostering open dialogue and communication through moderated, public conversations held in locations around Montreal. This effort is just one example of Concordia's work to advance understanding and education related to the sustainability of urban and rural communities. PHOTO: SUPPLIED

munity Development, which itself is a division of the School of Extended Learning.

Mr. Evoy said one of the advantages of holding moderated conversations is they bring together people of diverse backgrounds who might not otherwise cross paths.

In such a process the participants gain a deeper awareness of issues being explored that helps them to influence what can change, what can be improved, rather than simply accepting what is already in place.

"People tell me, 'I've never been to a public event with a group that's so diverse,'" he said, adding he's watched as those cafés "light a fuse" of excited discussion about an issue – for example, how to celebrate diversity instead of fear it. "People tell us this is

exactly the type of thing a university should be doing. If we're going to talk about sustainable communities, we have to break down silos."

Fostering sustainable communities isn't an issue limited to promoting understanding among diverse people living in cities, however. It also speaks to the need to encourage the interrelated economic well-being of all communities – large and small, rural and urban.

Too often, for example, small communities are threatened by resource depletion. In Canada, this is well illustrated by the impacts of the declining cod fishery in the Atlantic region and the challenges facing the forestry sector in rural Quebec and B.C. In developing nations, rural areas are suffering as populations migrate

to urban centres in search of employment and opportunity.

The challenge is that to achieve sustainability, says Professor Bill Reimer, head of The New Rural Economy Project, cities need the surrounding countryside as a source of raw materials, food and natural amenities. Conversely, rural areas need the markets cities provide.

To help address this issue, The New Rural Economy Project – a multi-year, cross-Canada research project headquartered at Concordia and involving more than a dozen universities – aims to find ways of increasing the viability and sustainability of rural communities, whether they are threatened by a flood of new residents or suffering because of the departure of industry.

Prof. Reimer says the proj-

ect is studying 32 small communities across the country with a view to building their capacity to handle change. Equally important, he says, this initiative is creating a body of research on rural issues, and making that information available to people in rural areas.

It is important for people in rural communities to have champions, says Prof. Reimer, adding that it's not about telling them what to do, but about working collaboratively with them so they can move forward. The approach is gaining traction. According to Prof. Reimer, the initiative has attracted attention from Japan to South America.

Concordia's John Molson School of Business (JMSB) is also helping drive community sustainability, in part through a new outreach component of

its MBA program. Through this effort, MBA students will expand their work with business organizations at home and abroad to improve the economic prospects and welfare of communities.

JMSB lecturer Janis Riven says in developing countries, for example, dynamic but untrained entrepreneurs often just need one small piece of the puzzle to make their ventures work. "They start these wonderful projects that flounder – and they don't know why," says Ms. Riven, explaining that Concordia MBA students help local entrepreneurs by bringing the know-how that will put local business people back on their feet. "It's usually just simple nuts and bolts stuff like creating an accounting system, or setting up a website that allows them to do proper marketing and fundraising."

Those changes, she says, give the businesses – and the communities they support – a better chance at survival.

Louise Dandurand, Concordia's vice-president, Research and Graduate Studies, says, "Sustainability is about rethinking our relations with one another, our social structures, our relationship with nature, as well as human relations and the way we develop public policies."

For their parts, Concordia students and faculty members have their ears to the ground, says Dr. Dandurand, and are working together to bring about new sustainability initiatives. "That ability to work together is part of what sustainable communities are all about," she says.

With nearly 40,000 students, Concordia is one of Canada's largest universities. Founded in 1974 as a result of a merger between Sir George Williams University and Loyola College, Concordia has developed leadership in fields ranging from business and engineering to the sciences, humanities and the fine arts. Concordia is now combining these strengths to advance research and education in the complex arena of social, economic and environmental sustainability.

Case study

Innovative caterer uses cuisine to connect community

Montreal's Santropol Roulant is the perfect example of sustainable practices at work. As Quebec's largest independent meals-on-wheels organization, Santropol Roulant serves 90 meals a day to seniors and people losing their functional independence. And it does so in innovative ways that serve both the environment and the community.

"Our mission is to break barriers between the genera-

"Our mission is to break barriers between the generations, using food as a vehicle."

tions, using food as a vehicle," says Jane Rabinowicz, the organization's executive director.

Santropol Roulant was founded in 1995 by two young waiters from the Café Santropol, a restaurant with a social conscience on St. Urbain Street, near author Mordecai Richler's old haunts. The idea was to give young people meaningful work experience while meeting the needs of local seniors. Inter-generational interaction would

also help break down stereotypes while building bonds that would create a stronger local community.

Volunteers deliver most meals on bicycle or on foot.

The organization was a success and it grew; but Ms. Rabinowicz said that they quickly found that if they took on more than 100 meal deliveries, the project lost its personal touch, and the quality of the service suffered.

So, instead of delivering

more meals, they focused on lessening their environmental impact and expanding how the organization approaches its mission to use food as a vehicle for community building. Every summer, she said, volunteers grow one tonne of fruits and vegetables on urban rooftop gardens; the food is used for the meals, while waste is fed into a vermicomposting operation whose results are used as fertilizer.

A volunteer-run bike shop

maintains the bikes used for delivery, while teaching bike repair to community members.

Throughout, Santropol Roulant has been able to count on Concordia University as a resource; the university has helped with staff, volunteer training and using a student-run club to deliver meals.

"Santropol Roulant," said Ms. Rabinowicz, "is a good example of the community building Concordia wants to promote."

This report was produced by RandallAnthony Communications Inc. (www.randallanthony.com) in conjunction with the advertising department of The Globe and Mail. Richard Deacon, National Business Development Manager, rdeacon@globeandmail.com.



Someone has to consider the ramifications of new technologies on our world. At Concordia University, we think about the big picture while creating sustainable technologies for use in hundreds of areas, including micro-nano systems, interactive clothing, and the development of biochemicals and biofuels.

Be part of the thinking.

Open House 01 • 24 • 2009 • 10 a.m. to 4 p.m.

www.concordia.ca



Sustainable technologies

Researchers at the forefront of the sustainability movement are not only helping develop technologies with enormous environmental and economic potential, they are also tackling related questions, such as the need for ethical frameworks in which to employ these revolutionary systems.

Technologies are not only spurring interest in mitigating humankind's impact on the planet, they will also play a vital role in making the future sustainable, says David Graham, provost and vice president, Academic, at Montreal's Concordia University.

Dr. Graham says interest in sustainability – a movement concerned with creating processes that can be maintained without having an adverse impact on the future – has been helped along by the arrival of new technologies, starting with the Internet. "Suddenly, we are all connected and we realize that resources are finite – and vulnerable. We watch TV images of a hurricane, and days later we see our gas prices rise. There is no longer any doubt about how the dots are connected," says Dr. Graham.

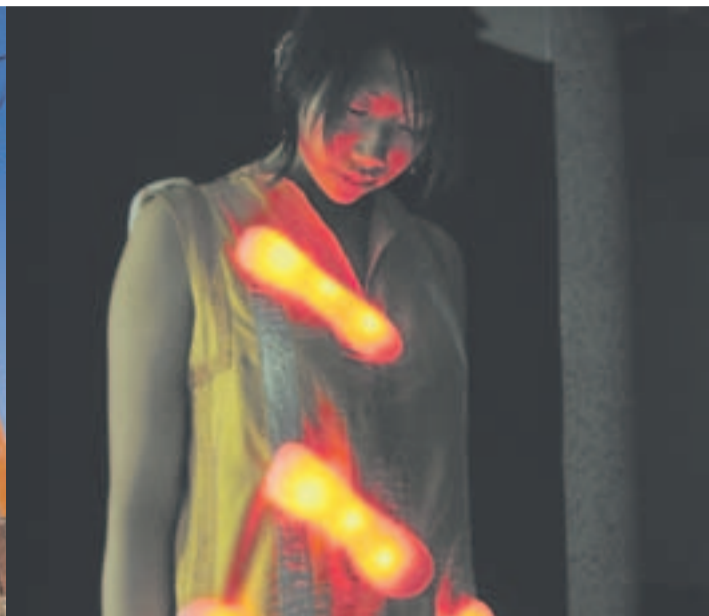
Yet, while global warming and the environmental movement in general are prompting people to rethink how we live, sustainability isn't just about being green, says Dr. Graham. He notes that globalization and other issues are also motivating us to think about our behaviour in ways we never have before.

At Concordia, a keen interest in sustainability is helping propel research into new technologies. For example, Canada's Solar Buildings Research Network – a multidisciplinary effort headquartered at Concordia, which involves 11 universities, as well as industry and government partners – aims to develop solar buildings that, over the course of a year, are capable of producing as much energy as they consume.

Andreas Athienitis, the network's scientific director and a professor and research chair at Concordia's Department of Building, Civil and Environmental Engineering, says Concordia has developed a "building-integrated photovoltaic/thermal system" that simultaneously generates solar electricity and heat. Among its novel attributes, this system is



Concordia University is developing and demonstrating some of the technologies expected to lead the way towards a sustainable future. Among them are integrated solar arrays that provide power for the new 15-storey tower housing the John Molson School of Business in Montreal (left). As well, Concordia's XS Labs is developing wearable technologies that harness and conduct energy. This prototype dress (right), for example, is made with a fabric that conducts energy that powers the dress's illuminated accessories. While it's a stylish and intriguing proposition, researchers are also exploring the long-term implications of wearable technologies, such as ethics surrounding their eventual disposal. PHOTOS: SUPPLIED



part of a building's structure rather than an add-on, says Prof. Athienitis.

At Concordia, this innovative system has already made the leap from the drawing board into a full-scale working application.

While its integrated solar electricity and thermal system may not be obvious to most passersby, this novel system is among the features that earned the new 15-storey tower that houses the John Molson School of Business its LEED (Leadership in Energy and Environmental Design) certification.

"This system is esthetically, architecturally and functionally integrated into the building," says Prof. Athienitis, adding that it can generate up to 25 kilowatts of electricity and provide much of the heat needed for the building during cooler months.

"It is the largest photovoltaic system in Quebec and probably the most innovative full-scale solar system in a Canadian university," adds Prof. Athienitis.

In another intriguing example of the potential of sustainable technologies, Con-

cordia researchers have also developed innovative algorithms to automate the control of motorized blinds in commercial buildings. By automatically regulating how much light enters a building, the systems have the potential to generate cost savings related to lighting and heating and cooling.

The motorized blind system developed at Concordia has already been successfully demonstrated at Montreal-Trudeau International Airport where it not only reduced energy consumption, but also reportedly increased the comfort of occupants.

"Since roughly 30 per cent of Canada's greenhouse gas emissions are traceable to building energy consumption, there are obvious benefits in helping Canada meet its climate change commitments," says Prof. Athienitis, adding that lower energy demand also means fewer power plants need to be built.

Beyond energy conservation, Dr. Graham says answering the world's need for renewable and less polluting fuel sources is another important

driver of sustainable technology development.

Concordia biology professor Adrian Tsang, the director of the university's Centre for Structural and Functional Genomics, says much of his work centres on finding carbon-neutral transportation fuels – essentially, alternatives to petroleum products.

"Transportation accounts for about 19 per cent of all energy consumption in Canada," he said. "But it accounts for 33 per cent of all greenhouse gas emissions."

Convinced the only real potential replacement for fossil fuels is biomass, Prof. Tsang and his group are working on ways of turning such things as straw, a byproduct of food production, into fuel.

"Cellulose is the most abundant biomass we have on the globe," he says, explaining that a challenge, however, resides in how to best break down cellulose into products humans can use.

In nature, micro-organisms do that job, so Prof. Tsang is working on mimicking their action.

"We have developed the

tools and the expertise to work on this," says Prof. Tsang.

"Some of the things we're working on are already being tested by our industrial partners."

In fact, potential commercial applications of an array of technologies reflects yet another compelling aspect of sustainability: economic opportunity.

In the solar energy field alone, for example, Canadian companies are exploring the potential to build and export prefabricated solar homes, window systems and advanced solar thermal systems.

Meanwhile, newly developed "wearable technologies" incorporated into textiles offer further potential to reshape how we live in ways that are both positive and potentially negative.

Joanna Berzowska, an associate professor of Concordia's Department of Design and Computation Arts, is also the research director of XS Labs. She says, "We live in a world where power consumption needs are constantly increasing, particularly for mobile devices."

Responding to this issue,

XS Labs is developing electronic garments that harness kinetic energy created by the movement of the human body. "You could use this power to recharge your iPod or other portable electronics," says Ms. Berzowska.

As promising as they may be, however, Ms. Berzowska is concerned with how the sophisticated composite-based materials used to create wearable technologies may be disposed of or recycled.

"Electronic textiles are becoming a reality. It's potentially dangerous because they are made with composite fibres less than a millimeter in diameter that integrate both organic and inorganic materials such as polymers with a metal core. These can be so small they are impossible to separate.

"We have to consider how we would deal with the waste should today's prototypes become commercialized at a large scale."

Louise Dandurand, Concordia's vice-president, Research and Graduate Studies, says developing sustainable technologies inherently requires the consideration and development of ethical frameworks in which these new processes and devices function.

"At Concordia, academics and students are not only creating and demonstrating new technologies for a sustainable future, they are helping frame the important questions to ask about them, and the decisions to make about technologies coming online nearly every day," she says.

With nearly 40,000 students, Concordia is one of Canada's largest universities. Founded in 1974 as a result of a merger between Sir George Williams University and Loyola College, Concordia has developed leadership in fields ranging from business and engineering to the sciences, humanities and the fine arts. Concordia is now combining these strengths to advance research and education in the complex arena of social, economic and environmental sustainability.

Case study

Enter the net-zero energy house

Next spring or summer, in the residential community of Hudson, Que., just west of Montreal, a house that produces as much energy as it consumes will open for the public to visit.

Conceived by Montreal architect Sevag Pogharian, the house was developed in response to EQuilibrium, a competition for sustainable housing designs sponsored by Canada Mortgage and Housing Corporation (CMHC).

Mr. Pogharian says he couldn't have created the innovative design, which combines



It may look like your average cozy cottage, but this eco-friendly home is a showcase of building technologies that are helping advance the potential for a sustainable future. PHOTO: SUPPLIED

photovoltaic cells with thermal capturing, without help from Concordia University and the financial contribution from the

federal Photovoltaic Program at the CanmetENERGY research centre of Natural Resources Canada, located in

Varenes, Quebec.

Mr. Pogharian became intrigued after CMHC launched a nationwide competition for 12 eco-friendly and energy-efficient housing models. The idea was to create a house that, on an annual basis, produced as much energy as it consumed.

The competition required the creation of a team.

Mr. Pogharian knew Concordia had a building technology group. He approached the university – and in particular Andreas Athienitis, the scientific director of Solar Buildings

Research Network and a professor and research chair in the university's Department of Building, Civil and Environmental Engineering – to join his group, Team Montréal Zero. Prof. Athienitis did, along with several of his PhD students.

Mr. Pogharian says they brought with them invaluable knowledge about the latest in research findings, including closely held cutting-edge developments.

"The technical know-how they brought this project doesn't exist in private sector consulting firms," said Mr. Pogharian. "Even if I had wanted to hire a firm to give me this expertise, they wouldn't have

been able to. Yet this expertise exists in abundance in Canada – in universities."

The resulting house is now being built to minimize energy consumption. Among its innovations, the experimental home relies on a well-insulated building envelope and passive heating and cooling techniques, such as south-facing windows and natural shade. In winter, solar panels are used to heat water, which is pumped through the house via an in-floor radiant system.

"To get to the net-zero is no trivial matter," says Mr. Pogharian. "It's pretty hard. Concordia's participation is what made it possible for our project to achieve its target." ■

This report was produced by RandallAnthony Communications Inc. (www.randallanthony.com) in conjunction with the advertising department of The Globe and Mail. Richard Deacon, National Business Development Manager, rdeacon@globeandmail.com.



What do business ethics, pediatric behavioral medicine, theatre-and-development and peace-and-conflict resolution have in common? At Concordia University, we think that each of these areas of study contributes in a unique way to making a population truly sustainable.

Be part of the thinking.

www.concordia.ca



PART THREE OF A FOUR-PART SERIES ON SUSTAINABILITY: COMMUNITIES • TECHNOLOGIES • POPULATIONS • BUSINESS

Sustainable populations

As the number of people sharing the planet inches towards the 10 billion mark, experts concerned with the long-term sustainability of the Earth and the populations it supports are encouraging new ways of living premised on improved social structures and a heightened respect for the environment.

When he thinks of the future, David Graham, provost and vice-president, Academic Affairs, at Montreal's Concordia University, is struck by the fact that in 2050 – barely 40 years from now – the world's population is expected to reach 10 billion.

"That's five times what it was when I was born," muses Dr. Graham.

That's a lot of people competing for the planet's finite resources. How they will be able to do that – and do it sustainably – is a major challenge, one that is galvanizing thinkers, governments and NGOs worldwide.

Sustainability is not just about being green. It's about finding ways of doing things to minimize the consumption and destruction of resources, and mitigate the damage inflicted by human activities on the only planet we have.

"In the broadest sense, I think sustainability is the search for new knowledge, new ways of doing things, new ways of living," says Louise Dandurand, Concordia's vice-president, Research and Graduate Studies.

She says to live sustainably people must draw as much as possible on our traditions and on lessons from the past, while remaining acutely aware of the global impact of their actions.

"It's not just about saving the planet – though of course that's part of it – but also of rethinking our relationships with one another and with nature, our social structures, and how we develop public policies," she says.

For example, Dr. Dandurand says a stable, cohesive society is more capable of facing change than one that is unstable. Yet when depletion of resources destroys a local economy, she says it has disastrous effects on social cohesion.

Researchers are looking for ways to keep communities both economically viable and socially cohesive.

"In today's Information-Age economy, the most valu-



Theatre initiatives involving university-community partnerships such as Rights Here! (pictured above) offer a unique way to promote dialogue and understanding among people who live together in neighbourhoods, but who may otherwise rarely interact. Concordia professor Edward Little says, similar to sustainable populations, successful community-engaged theatre requires consensus building and conflict resolution. PHOTOS: ISABELLE FLEURELIEN, STUDIOIF

able commodity is information," says Reza Soleymani, a professor of electrical and computer engineering at Concordia whose work focuses on improving wireless and satellite communications.

He says if large amounts of data can be transmitted quickly, reliably and at low cost, it improves the viability of small communities while reducing the need for commuting in cities.

Here in Canada, that would do more than just allow a growing number of people to work from home. Dr. Soleymani says the development of new data transmission techniques could also allow us to make better use of our workforce – for example, by enabling women to remain in touch with their jobs while taking time away from work to have children without sacrificing their career and falling behind their male co-workers.

In a global context, the advanced satellite communication techniques could allow people in the developed world to teach in developing countries without having to travel there.

Ensuring stable, cohesive social structures is not as easy as it might seem, says Edward

Little, chair of Concordia's Department of Theatre. He says rather than interact with their neighbours, people living in cities, and those plugged into the Internet, tend to connect with others who share their interests no matter where they are located. That weaker geographic connection can undermine a population's social fabric.

Dr. Little works in community-engaged theatre, which he says is one way to help people reconnect with their neighbours – and tackle difficult issues.

"Traditional theatre has always looked for the universal," says Dr. Little. "Community-engaged theatre is usually motivated by local concerns – things like land development, homelessness, systematic discrimination or bullying."

He says community-engaged theatre is being used to help communities deal with pressures relating to shifting demographics. Rights Here! Theatre and Law for Human Rights, for example, was a 2007 initiative aimed at encouraging youth to become more active in raising awareness about human rights in a culturally diverse neighbourhood. The project involved an

inter-sectoral partnership between the Park Extension Youth Organization, the Department of Theatre at Concordia, Teesri Duniya Theatre, and members of the Quebec Bar Association.

Like sustainable populations, successful theatre depends on people being able to resolve their conflicts and find ways of working together. Dr. Little says, "Getting people to participate is a challenge of the work. You have to be engaged in consensus building and conflict resolution to maintain participation."

Raymond Paquin, who teaches sustainable business strategies at Concordia's John Molson School of Business, says business leaders with vision can help communities remain viable.

For example, adopting environmentally friendly practices can not only help reduce waste, it can also spell business opportunity.

Dr. Paquin cites an example of a french fry factory in England that was producing 5,000 tonnes of potato starch a year as a byproduct. After the company found it could sell the starch to oil drilling companies that use it to form part of their drilling pipes, it turned

this former landfill waste into a new revenue stream.

Dr. Paquin says consumers and increasingly stringent environmental regulations are helping change business culture, and suggests companies would be wise to use the current downturn as a chance to innovate. The potential winners are both sustainability-focused enterprises and the populations they serve.

Health and well-being is another key aspect of sustainable populations, says Jennifer McGrath, whose work at Concordia's Department of Psychology focuses on child health, and risk factors such as obesity, which are eventual determinants of chronic disease.

Dr. McGrath says while it is known that many of the reasons for chronic disease and ill health are due to everyday lifestyle behaviours, such as smoking, physical inactivity and poor eating habits, the biggest challenge is getting people to do something about them.

She says it's easy, for example, to get people to name things they can do to improve health. The difficulty, however, is how to get them to change their behaviour – for example by quitting smoking,

exercising more, or adopting healthier diets.

Yet, individual action is only part of the equation.

Dr. McGrath says such preventive medicine requires the participation not only by individuals, but also their families, their communities – and their governments. She says a multi-level approach to disease prevention that includes public policy initiatives is needed.

Concern over sustainable populations isn't just confined to North America – it's a global issue affecting both the developed world and developing nations.

Dr. Graham says people in developed nations have an interest in encouraging economic development everywhere, partly because people tend to reduce family size as their economic situation improves. Theoretically, as living standards improve worldwide, one of the results would be reduced population growth and thus a reduced burden on the planet.

But that's no easy task, partly because resources are not evenly distributed, says Dr. Graham. And the need for vital resources, from water to oil, has the potential to lead to conflict – yet another factor influencing population sustainability.

Dr. Graham says he believes that when the economy, the environment and communities are sustainable, the population will be as well. "The real trick," he says, "is to see population sustainability as the natural outcome of other sustainabilities."

With nearly 40,000 students, Concordia is one of Canada's largest universities. Founded in 1974 as a result of a merger between Sir George Williams University and Loyola College, Concordia has developed leadership in fields ranging from business and engineering to the sciences, humanities and the fine arts. Concordia is now combining these strengths to advance research and education in the complex arena of social, economic and environmental sustainability.

Case study

Northerners offer valuable lessons to sustainability experts

As the people of Inuvik, Northwest Territories would attest: Canada's natural resources wealth can be both a blessing and, at times, a curse. Fewer populations more acutely feel the impacts of the boom-bust nature of resource economics, and other complex challenges that affect the sustainability of rural Canadian life.

"Northern communities were probably more sustainable in the past when there was less of a lifeline to the south," says Peter Clarkson, the senior territorial public servant in the Northwest Territories' Beaufort Delta and Sahtu region.



The people of Inuvik took the recent boom cycle as an opportunity to build social capital, such as their transformation of an arena into a community garden. The investment not only yields produce, it is also a boon to community pride. PHOTO: SUPPLIED

Fortunately, community leaders like Mr. Clarkson are committed to making Canada's northern communities more sustainable, whether the markets are up or down.

To contribute to and learn from these efforts, the Concordia University-linked Canadian Rural Revitalization Foundation (CRRF) and the National Rural Research Network (NRRN) brought their annual policy conference and about 200 experts to Inuvik in 2008.

CRRF research director and Concordia professor Bill Reimer says holding the event in Inuvik was remarkably useful

for researchers and policy-makers from the south. "It causes you to rethink the challenges they are facing, and makes you reflect on where you are in your local community."

Mr. Clarkson notes, for example, that land claims settlements with Aboriginal peoples have assisted in making those populations sustainable, "because they are now responsible for their own future and their own destiny."

"If people aren't responsible for themselves and the resources around them, they will never connect the dots as to what sustainability is about."

Dr. Reimer says the importance of social capital/infrastructure was also striking. "Building social relations is as important as physical infrastructure, especially for boom-bust economies. If people are happy to be in a community and are committed to it, they will work to enhance it during the boom period."

Conversely, he says, "During the bust, when everyone is cutting back, these people will find ways for their communities to survive. The same argument can be made for larger communities, cities or the nation itself."

"The people of Inuvik are on the right track," says Dr. Reimer.

This report was produced by RandallAnthony Communications Inc. (www.randallanthony.com) in conjunction with the advertising department of The Globe and Mail. Richard Deacon, National Business Development Manager, rdeacon@globeandmail.com.



A truly sustainable business looks at more than the bottom line. At Concordia University, students and faculty members are exploring accounting from a social and environmental perspective, analyzing the influence of land cover on climate change, and promoting community leadership rooted in social justice.

Be part of the thinking.

www.concordia.ca

PART FOUR OF A FOUR-PART SERIES ON SUSTAINABILITY: COMMUNITIES • TECHNOLOGIES • POPULATIONS • BUSINESS

Sustainable business

As myriad factors spur companies to explore a new way of doing business, one that assigns value to social and environmental responsibility, sustainability experts are helping companies realize the profit in this shift.

The current economic crisis only drives home the need for the development of sustainable business practices, says Louise Dandurand, vice-president, Research and Graduate studies at Montreal's Concordia University.

"There's no better time to talk about that very issue," she says.

Sustainability is a philosophy that focuses on the long-term viability of the structures that govern all aspects of our lives, including the economy. "It's fulfilling the needs of the present generation without detracting from the ability to support the needs of future generations," says Professor Fariborz Haghighat, Concordia Research Chair in Energy and Environment.

David Graham, Concordia's provost and vice-president, Academic Affairs, says, "It's widely held that business has not much cared for sustainability – that business has been interested in the results for the current quarter and little beyond that. So, encouraging business to think about anything beyond the quarter and the annual report is very challenging."

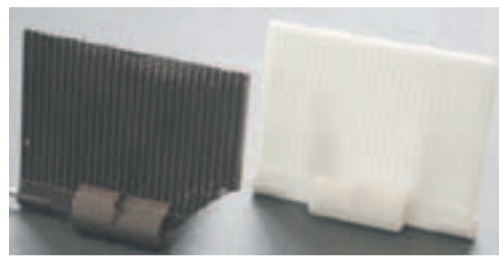
Yet, sustainability is an important business consideration for a variety of reasons.

In a world of limited resources, for example, it is increasingly difficult to follow what Dr. Graham calls the "traditional business model" – using resources and then moving on. Meanwhile, consumers, as they become more imbued with concepts of sustainability in their own lives, are demanding that businesses follow suit. And shareholders and governments are demanding greater accountability – and more action.

"We have become hyper-conscious of things that were always there but were perhaps at a low enough level not to be perceived as irritants," says Dr. Graham, pointing to the declining use of plastic bags as



A growing number of businesses are discovering that a pursuit of sustainability – which can span activities ranging from the adoption of energy saving measures to the exploitation of new markets – spells opportunity. For example, when fully developed Concordia University professor Martin Racine's rapid prototyping machine (left) will make replacement parts for household items as easily as keys are cut today, significantly reducing waste. Pictured at right a replacement part for a broken food chopper was created using the rapid prototyping machine. PHOTOS: SUPPLIED



an example. People are now ready to give them up, and businesses need to respond. Fortunately, many appear eager to do so.

"More and more businesses are interested in having a brand that shows awareness of environmental issues," says Martin Racine, an associate professor in Concordia's design program. "We want to give them strategies that will let them reduce their impact on the environment."

Those strategies can be applied in many areas, from accounting practices and construction techniques to the development of new products and processes.

For example, Dr. Racine says there's tremendous business potential in repairing or recycling consumer goods rather than throwing them out.

Dr. Racine's area of expertise is called rapid prototyping – a technology which, once fully developed, would allow hardware stores to make replacement parts for virtually hundreds of everyday household items as easily as retailers cut keys today (see www.precocan.com

and www.metacycle.ca).

Along with his research collaborator Philippe Lalande, Dr. Racine envisions a system where customers could bring in broken small appliances to a local hardware store for repair, for example. Using the Internet, the retailer would access a data bank inventory of virtual spare parts. From there, the retailer would determine the needed part, press a button, and a machine would create a custom-made replacement instantly using a template downloaded from the web.

"Eighty per cent of the people we interviewed have things like a broken blender at home," says Mr. Racine, adding that this underscores the potential of the concept.

Dr. Racine says the business world itself is transitioning toward embracing sustainability as the public embraces the concept. What's in it for business? The potential for a long-term relationship with the client, he says, and a reputation as a good corporate citizen.

Beyond creating new products, changing behaviours can lead to substantial cost savings.

Dr. Haghighat says the development of sustainable techniques for constructing, heating, cooling and ventilating buildings has the potential for tremendous payoffs. These include lower energy costs to run buildings, reduced air pollution and other emissions, and less solid waste sent to landfills.

The construction industry, he says, accounts for about 10 per cent of the Gross Domestic Product, but consumes a disproportionate amount of Canada's energy and generates around one-quarter of the country's solid waste. Even small changes to building design have the potential to generate significant savings. This indicates that sustainable investments can have positive benefits for the construction industry.

Dr. Haghighat says there is growing pressure for the use of sustainable building techniques. He argues that initiative should be started and/or supported by government.

"When there are incentives, businesses will act," he says.

Dr. Graham says that in a

business context, sustainability inevitably means thinking about more than the bottom line. "I would talk about sustainability as collaboration and agreement to forego some immediate gain," he says.

New practices in accounting are trying to show the impact of business decisions across all sectors of society.

Charles Cho, an assistant professor in Concordia's Department of Accountancy, teaches social and environmental accounting at Concordia's John Molson School of Business. The discipline accounts for the costs, benefits and disclosures of an organization's social and environmental activities, and looks at how they affect others – from suppliers to the public.

"Everything companies were doing was narrowly focused on the shareholder view," says Dr. Cho. "Social accounting is broadening the scope – showing businesspeople that the organization they lead is part of society, and that they are one stakeholder among many."

"Moving from a shareholder view to a stakeholder view drives companies to realize that instead of just looking at the next quarter's earnings, they should be asking whether their business is going to be sustainable without having adverse consequences in the next 10 or 15 years."

Dr. Cho sees the economic downturn as an opportunity to drive change. "When something really bad happens to you, you start to look for alternative ways of doing things," he says.

Dr. Dandurand wonders whether the development of sustainable business practices might not signal the end of the era of Reaganomics and Thatcherism, and the emergence of a new, more collectivist economic model.

"A new way of positioning ourselves in relation to the planet is emerging – one that departs from the old philosophy that held that all our relations with each other and with the environment were based on the individual," she says, citing as an example how French President Nicolas Sarkozy has moved away from being "a champion of liberalism at any price" to orchestrating a concerted intergovernmental response to the economic crisis.

We now put the accent on groups and their well-being, she says, adding that business, too, needs to consider the common good as well as a company's financial profitability. ■

With nearly 40,000 students, Concordia is one of Canada's largest universities. Founded in 1974 as a result of a merger between Sir George Williams University and Loyola College, Concordia has developed leadership in fields ranging from business and engineering to the sciences, humanities and the fine arts. Concordia is now combining these strengths to advance research and education in the complex arena of social, economic and environmental sustainability.

Case study

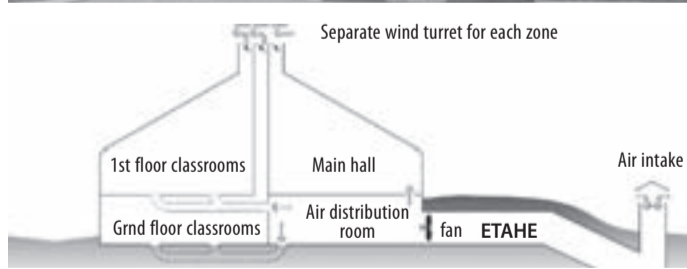
Energy saving systems offer upside for business and Mother Earth

Edward Morofsky may work for the federal government, but like other experts advancing a new wave of technologies that promote energy efficiency, he sees not only environmental upside in them, but also business opportunities.

A Public Works and Government Services Canada research engineer, Dr. Morofsky's work involves exploring ways to increase energy efficiency in both new and existing buildings – and making those techniques known to Canadians.

"We have to cut energy use in buildings dramatically if we're going to control carbon dioxide emissions," he says.

Beyond the environmental



Data from the design of the Jaer School in Norway (pictured above) was used by Concordia University and Public Works Canada to validate their collaborative development of "Earth Tubes," an energy-saving geothermal exchange system with the potential to generate both economic and environmental returns. PHOTOS: SUPPLIED

benefits of reducing the output of CO₂, a greenhouse gas, there are also bottom-line reasons for businesses to consider the value of energy efficiency.

Among the technologies Dr. Morofsky is helping advance are "Earth Tubes," a geothermal exchange project involving students from the Faculty of Engineering at Concordia University, which is partnering with Public Works in collaborative research and development.

"In recent years, there is a trend to ventilate building using hybrid ventilation – using a combination of mechanical and natural system, and 'Earth Tubes.' This helps to reduce the fan energy while using the thermal storage of

soil," says Fariborz Haghighat, a professor at Concordia's Department of Building, Civil and Environmental Engineering.

"There's a huge market for this right now," says Professor Haghighat, noting the potential is also huge – both for businesses to make money by developing and installing such systems, and for companies looking to save money by cutting energy costs.

In the longer term, companies that reduce their emissions may also avoid the sorts of financial penalties expected to come as the world moves towards a carbon-constrained economy.

For their part, Earth Tubes offer a sophisticated yet sur-

prisingly low-tech means of saving energy.

Instead of bringing air into buildings directly from outside, Earth Tubes suck in air through ducts buried underground. As the surrounding earth remains a relatively constant temperature year-round, a natural heat exchange happens.

As a result, winter air drawn through Earth Tubes enters the building a few degrees warmer than it would otherwise, so less energy is needed to heat it. In summer, the same ducts help cool the fresh air, which leads to savings in air conditioning costs.

Dr. Morofsky says one large tunnel can supply a number of buildings, raising the possibility of entire subdivisions linked to Earth Tubes.

A world of potential, indeed. ■

This report was produced by RandallAnthony Communications Inc. (www.randallanthony.com) in conjunction with the advertising department of The Globe and Mail. Richard Deacon, National Business Development Manager, rdeacon@globeandmail.com.



Students and faculty members at Concordia University are examining disparate issues such as population health, corporate governance, wireless satellite communications and developing the video skills of disenfranchised youth to see how they can contribute to creating truly sustainable communities.

Be part of the thinking.

www.concordia.ca

