

OPINION

Investing in Canada's promising future



By Gary Goodyear,
Minister of State for Science
and Technology

The recent global recession has reaffirmed what Canadians have long known: that we live in a country with sound economic fundamentals and a balanced and successful approach to economic growth and job creation.

The numbers speak for themselves: since July 2009, employment has increased by more than 690,000 and is now more than 260,000 above its pre-recession peak. Furthermore, both the IMF and the OECD predict that Canada will be among the fastest growing G7 economies this year and next.

This is a result of the actions by our government. We have lowered taxes, paid down debt, reduced red tape and promoted free trade.

And while Canadians can be proud of our accomplishments, we cannot be complacent. We recognize that in the

face of increased global competition, Canada must invest in creation, invention and innovation to grow.

Canada has a strong foundation. We have a skilled workforce and a world-class post-secondary research system, in which we have invested considerably. As a result, Canada leads the G7 in post-secondary investment in R&D as a percentage of our economy.

However, Canadian businesses continue to lag behind competitors in terms of overall innovation performance.

Recently, our government introduced Economic Action

Plan 2012. This plan is the latest in our government's continued strategy to create jobs, growth and long-term prosperity for Canada. We have put forward significant investments to stimulate change in Canada's business climate, which will help bring new innovations to market.

Specifically, the plan proposes an investment of \$1.1 billion over five years to support business innovation, and makes available \$500 million for venture capital. It also commits to providing additional resources to support advanced research at universities and other leading research institutions, including \$500 mil-

lion to the Canada Foundation for Innovation over five years to support its core activities.

These investments will give researchers the tools they need to conduct their research, entrepreneurs the support they need to develop their products, and businesses the support they need to create jobs.

The result will be to position Canada to succeed in the knowledge economy of the 21st century. We will be able to build more globally competitive companies, which will create more high-quality jobs and a greater quality of life for all Canadians.

ENVIRONMENT

Unique lab explores mysteries of arctic sea ice

The day the first frost flowers appeared at the Sea-ice Environmental Research Facility (SERF) was an occasion to celebrate for Dr. Feiyue Wang and his research team at the University of Manitoba in Winnipeg.

The crystalline blooms, which form on the surface of newly formed sea ice, were as delicate and beautiful as the sugar embellishments on a wedding cake. But what truly got Dr. Wang and his team excited was the mere fact that the frost flowers could even exist in this lab on the prairies – and the possibilities that presents for Arctic research and environmental science.

"The frost flowers look very beautiful, but chemically and microbiologically they are even more interesting," says Dr. Wang, a professor at the university's Centre for Earth Observation Science and project leader of SERF, which opened this year with support from the Canada Foundation for Innovation, the Manitoba Research and Innovation Fund and the university's own endowment fund.

"They've all melted now, but we were fortunate enough to

"With SERF, we have a longer window to do experiments and obtain samples. And ... by changing certain factors, such as the chemistry of the water, we can modify our experiments to test certain theories."

Sarah Beattie,
University of Manitoba



Dignitaries Digvir Jayas, Hon. Dave Chomiak, David Barnard, Albert Friesen and Feiyue Wang broke the ice at the grand opening of the Sea-ice Environmental Research Facility in February. PHOTO: MIKE LATSCHISLAW

be able to track their entire growth," he says.

Built with a movable roof, sensors and an outdoor seawater pond the size of a small backyard pool, SERF is the first experimental sea-ice facility in Canada and one of only three in the world. Conditions in the water and inside the facility can be manipulated to mimic water and ice in the Arctic – something that cannot be done as easily or effectively with smaller holding tanks.

To create the frost flowers, SERF researchers had to produce

delicate conditions that would favour the growth of the salty ice crystals on newly formed thin ice on the pond's surface. A time-lapse camera was set up to record the formation of the flowers, a natural process rarely seen by humans.

The creation of SERF means Dr. Wang and other sea-ice researchers won't always have to head to the Arctic and board an icebreaker to conduct field studies and experiments.

"There are only certain points in time when we can go to the Arctic to collect core samples

from the sea ice," explains Sarah Beattie, a graduate student working at the facility with Dr. Wang. "With SERF, we have a longer window to do experiments and obtain samples. And another great thing is that by changing certain factors, such as the chemistry of the water, we can modify our experiments to test certain theories."

What theories were SERF researchers testing with the frost flowers?

Dr. Wang and four other sea-ice researchers at the University of Manitoba were involved recently in a NASA-led study that looked at how disappearing sea ice in the Arctic may be causing "bromine explosions" – a series of chemical reactions in the lowest layer of the Earth's atmosphere that turn elemental mercury into a pollutant. Frost flowers, which appear on thin sea ice but not on older, multi-year ice, are believed to play a role in these bromine explosions, says Dr. Wang.

"With the changing sea-ice conditions in the Arctic," he explains, "we might see these frost flowers more often, which could also mean more pollution from mercury."

PARTNERSHIP CREATES IMPACT

Dr. Tom Chau is helping kids with severe disabilities to have better lives.

Thanks to a powerful partnership that includes the Canada Foundation for Innovation, the University of Toronto and Bloorview Research Institute, Tom Chau and his team invent amazing devices that enable kids with profound challenges to do what all kids do – talk with their friends, read a book, play music and change the channel on the TV.

And Tom's impact goes even further.

As a U of T professor, he has trained more than 60 graduate students and his devices are being made by companies that create jobs and prosperity.

Tom is one of more than 600 U of T researchers working with the CFI to change futures and improve lives.

From U of T to the CFI: THANKS.



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