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National Investment Key Factor In Successful R&D Regions Worldwide And Canada

By Ross McGregor

It is often said that to stand still is to fall behind but nowhere is this more true than in the international R&D marketplace. The global race to gain and maintain a foothold in today's knowledge-based economy is fast-moving and fiercely competitive.

The top tier R&D regions in the world are well-known – Boston, Silicon Valley, Stockholm and Cambridge, to name a few. These are now joined by emerging regions such as Shanghai and Bangalore, which are quickly developing their own R&D capacity to drive the future prosperity of China and India. China is already the third-largest R&D performer, behind only the U.S. and Japan, and others are coming on strong.

As the stakes increase, Canada's competitors worldwide are responding by dramatically increasing investment in their regional R&D economies. National governments, from Beijing to Washington, are establishing dramatic programs to grow their research capacity, attract investment and recruit top scientific talent from around the world.

These are the conclusions of a recent report commissioned by the Toronto Region Research Alliance (TRRA) and prepared by a team of leading researchers with the University of Toronto's Program on Globalization and Regional Innovation Systems.

TRRA is catalytic network of business, academic and government leaders engaged in transforming the Toronto region into a world-leading venue for research and research-intensive industry. The alliance embraces the broader Toronto region, including Hamilton, Guelph, the Waterloo Region and the Greater Toronto Area. TRRA commissioned this study to better understand how world-leading R&D centres organized themselves to achieve success. The researchers examined the development of six prominent R&D regions in the international community: Austin, TX; Boston, MA; Raleigh, NC; San Diego, CA; Singapore and Stockholm. They also spotlight three emerging high-tech centres: Albany, NY; Bangalore and Shanghai.

The study confirms that the broader Toronto region is a globally competitive R&D venue, which is positioned to be amongst the top hot spots for innovation in the world. With a population of almost seven million, the region is home to world-leading high-tech industry clusters and a remarkable concentration of research excellence.

The region includes North America's second-largest automotive and financial services clusters, the third-largest information technology and telecom equipment cluster and the fourth-largest pharmaceutical and biotechnology cluster. In employment terms, these sectors account for over 460,000 jobs and drive a significant share of the regional economy, which currently accounts for over 20 per cent of the country's GDP and contributes annually some \$3 billion in tax revenues to the rest

of Ontario and \$17 billion to the rest of Canada.

Supporting this economic activity are exceptional public institutions in the region, including nine universities, 10 colleges, 11 academic hospitals and more than 200 research institutes, which together have provided an incomparable foundation in knowledge generation, training and technology development. The region performs 35 per cent of all R&D in Canada, accounts for 33 per cent of the country's most highly cited scientists and is ranked second only to Boston in the number of science and engineering articles published worldwide.

Notwithstanding these extraordinary strengths, the TRRA study shows that all of Canada's R&D clusters, including the Toronto region, are at an increasing disadvantage in the global community where national governments are making transformational investments in their regional R&D economies.

As profound as our investments in national research programs over the last decade may have been, Canada's federal R&D expenditure languishes at 0.7 per cent of GDP, ranking this country lower than the overall OECD average.

Contrast our situation in Canada with President Bush's announcement this year of the American Competitiveness Initiative, which doubles the U.S. government's stake in science research programs by committing a staggering \$136 billion U.S. over 10 years.

Or Singapore's new five-year Science and Technology Plan 2010 that will invest \$13.5 billion U.S. to strengthen the country's R&D capabilities in niche areas while developing and recruiting world-class talent.

And it's not just the world renowned innovation hotspots that are racing ahead. Medium sized American cities such as Albany, NY are receiving hundreds of millions of government dollars to help them compete in the emerging nanotechnology sector.

Clearly, Canada is at a crossroads.

The emphasis on R&D in the Minister Flaherty's Economic Update this past November was gratifying, but the predominant theme of tax cutting and government retrenchment is worrisome to many in the innovation community.

In the upcoming budget the federal government must provide reliable, predictable and growing funding in support of research and innovation. And this federal funding must be complemented by provincial, municipal and private sector support if this country wants to maintain and strengthen its competitive position in the global, knowledge-based economy. At the end of the day, no less than Canada's future prosperity depends on it.

Ross McGregor is president and CEO of the Toronto Region Research Alliance (TRRA). Sources for this article are found in "At a Crossroads: Strengthening the Toronto Region's R&D Economy" at www.trra.ca. For more information about TRRA, visit the website or call (416) 673-6670.