



# Building the Knowledge Economy

*Impact of the Knowledge Infrastructure Program on Atlantic Canada's Universities*



## Approach

The Association of Atlantic Universities (AAU) engaged <sup>TM</sup> Solutions Inc. to undertake an economic impact analysis of the Knowledge Infrastructure Program (KIP) in Atlantic Canada.

<sup>TM</sup> Solutions Inc. used a proprietary Inter-Regional Input-Output model that is based on Canada's National System of Accounts to assess the impact of the planned expenditures on the economy of the four Atlantic Provinces.<sup>1</sup>

The model uses commodity level provincial and territorial industry input and output data, and inter-provincial trade data to model economies of each province and territory, and then calculates the impact of the proposed infrastructure investments.

Financial data used in the assessment were provided by participating universities, through the AAU.

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<sup>1</sup> The inter-provincial input-output model used in this analysis was developed by Solutions Inc.'s Senior Economist John Jozsa together with William Schaffer, Emeritus Professor of Economics at the Georgia Institute of Technology.

## Executive Summary

**Bolstered with \$177,085,880** from the federal and provincial governments and other sources, Canada's east coast universities are upgrading, expanding or building new, state-of-the-art campuses.

The Knowledge Infrastructure Program (KIP) – the federal government's **\$81,789,075** contribution – provides the much needed funding for university infrastructure and facilities. KIP has reinforced the foundations for education, research and the future. Foundations our region's universities can build on.

KIP investments in our universities have helped build contemporary classrooms, state-of-the-art labs, 'green' buildings and deployment of leading edge technologies. Our university campus projects across the region will broaden education, encourage creation, stimulate innovation, support research and build our national competitiveness.

The local and regional economic stimulus created by KIP has been profound. Project spending has generated:

- **1,880 person years of employment**
- **Wages and salaries of \$85,400,000**
- **Federal tax revenue of \$23,230,000**
- **Provincial tax revenues of \$13,400,000**

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

The Patterson Hall redevelopment is phase I of an architectural, mechanical and electrical renovation of an 80 year old campus facility.

**FUNDING PARTNERS**

Federal	\$2,075,300
Provincial	\$2,075,300
<b>Total</b>	<b>\$4,150,600</b>


*Patterson Hall opened in 1928*

## Investment Benefits

The project is the first phase of a complete concept that embraces a new multi-disciplinary approach to understanding the environment and the world we live in, while fostering partnerships with government, industry and not-for-profit organizations. The redevelopment will ultimately create a space where economic, social and environmental challenges can be addressed in a collaborative, multidisciplinary environment—all while fostering innovation, productivity and environmental sustainability.

**POSITIVE ECONOMIC IMPACT**

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>49 person years</b>	<b>\$340,000</b>	<b>\$550,000</b>	<b>\$2,080,000</b>

Source: TM Solutions Inc. (consulting economists)

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

The CSEE will find innovative solutions to sustainable sources of energy and develop environmental remediation technologies and strategies.

**FUNDING PARTNERS**

Federal	\$ 7,500,000
Provincial	\$ 2,500,000
SOFI*	\$ 5,000,000
<b>Total</b>	<b>\$15,000,000</b>

\*Strategic Opportunities Fund Inc.

**Investment Benefits**

Centre for Sustainability in Energy & the Environment (CSEE) is poised to support related social, environmental, economic and educational objectives. Students will study with an interdisciplinary cluster of research specialists in advanced lab facilities specific to energy and environmental performance. CSEE will create commercialization opportunities and serve as a catalyst for new technologies and professional services supporting enhanced expertise and a new economic foundation in the Atlantic region.



*\$20m environmental research facility construction underway on CBU campus*

**POSITIVE ECONOMIC IMPACT**

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
176 person years	\$1,240,000	\$1,990,000	\$7,500,000

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

This project is a building systems retrofit (HVAC, lighting, electrical, roofs, water efficiency) of the Dalhousie University Life Sciences Centre (LSC, 450,000 sqft).

**FUNDING PARTNERS**

Federal	\$14,334,255
Provincial	\$8,308,261
SOFI*	\$5,902,495
Other	\$151,663
<b>Total</b>	<b>\$28,696,674</b>

\*Strategic Opportunities Fund Inc.

**Investment Benefits**

Biology, Earth Sciences, Oceanography and Psychology, as well as the Environmental Studies Program (24 world-class researchers) are housed in the Dalhousie Life Sciences Centre. The LSC is also home to the Aquatron, a unique research facility in the world. Renovations resulting in energy conservation measures are expected to generate annual reductions in utility and operating costs and over 6,000 tonnes of CO<sub>2</sub>.



*Retrofit of the Life Sciences Centre at Dalhousie University*

**POSITIVE ECONOMIC IMPACT**

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
336 person years	\$2,360,000	\$3,810,000	\$14,350,000

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### CAMPUS INFRASTRUCTURE IMPROVEMENT

Replacement of ten obsolete heating and air handling units no longer functioning in Prince Hall, the College's largest multi-function space.

### FUNDING PARTNERS

Federal	\$172,500
Provincial	\$172,500
Other	\$5,751
<b>Total</b>	<b>\$350,751</b>



*Prince Hall: multi-purpose class room, dining and recreational space*

PHOTO CREDIT: Taylor Jones

## Investment Benefits

For students, faculty and staff, the new heating and air handling system delivered greatly improved air quality and temperature control. The project reduced energy consumption and because it eliminates drastic temperature fluctuations, it also serves to better protect our heritage buildings.

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>4 person years</b>	<b>\$30,000</b>	<b>\$50,000</b>	<b>\$180,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

This Arts and Science Building expansion will add academic, computing and meeting space, as well as a striking architectural element, to the Grenfell Campus.

**FUNDING PARTNERS**

Federal	\$11,475,000
Provincial	\$15,525,000
<b>Total</b>	<b>\$27,000,000</b>



*The extension will attach at the former main entrance to the Arts & Science Building*

PHOTO CREDIT: Grenfell Campus, Memorial University

## Investment Benefits

Disciplines such as chemistry, physics, earth science, biology and ecological economics will benefit from the addition. Faculty and staff offices, as well as dedicated study areas for students, will also be included; small group rooms will be particularly important for the business program. The extension will also house a state-of-the-art observatory, featuring a telescope valued at just under \$500,000.

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
226 person years	\$1,230,000	\$3,530,000	\$12,050,000

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

**INITIATIVE D'AMÉLIORATION  
DE L'INFRASTRUCTURE**

Construction d'environ 3 000 m<sup>2</sup> de nouveaux laboratoires de recherche et d'enseignement dans les secteurs d'ingénierie, de nutrition et de science infirmière.

**PARTENAIRES FINANCIERS**

Canada	5 965 435 \$
Province	6 855 720 \$
<b>Total</b>	<b>12 821 155 \$</b>



*Esquisse montrant l'élévation nord du nouveau bâtiment au Campus de Moncton*

**Avantages sur le plan des investissements**

Ce projet permettra de satisfaire aux exigences actuelles et futures en ce qui a trait à l'environnement, à la santé et sécurité au travail et à la R & D dans le domaine de l'ingénierie, de la nutrition et des sciences infirmières. Il permettra aussi de renforcer de façon significative la capacité en recherche et développement et celle de former des partenariats avec l'industrie pour la mise au point de nouvelles technologies et de nouveaux produits.

**RETOMBÉES ÉCONOMIQUES POSITIVES**

Emplois	Revenus fiscaux provinciaux	Revenus fiscaux fédéraux	Traitements et salaires
<b>116 années-personnes</b>	<b>990 000 \$</b>	<b>1 630 000 \$</b>	<b>5 900 000 \$</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

Chemistry Building features were renewed to improve safety and energy efficiency, and to increase effectiveness for teaching and research.

**FUNDING PARTNERS**

Federal	\$2,087,000
Provincial	\$2,216,000
<b>Total</b>	<b>\$4,303,000</b>



*A new ventilation system enhances Mount Allison's research capabilities*

**Investment Benefits**

The safety, usefulness and accessibility of this building for students and faculty have been improved for teaching and research, and the University's carbon footprint has been reduced, through the installation of new fume hoods, new exhaust fans, two modern classrooms, two accessible washrooms, emergency power, deluge showers, sprinklers, increased water supply, and an improved fire and heat detection system.

**POSITIVE ECONOMIC IMPACT**

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>39 person years</b>	<b>\$330,000</b>	<b>\$550,000</b>	<b>\$1,980,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### CAMPUS INFRASTRUCTURE IMPROVEMENT

Renovations of multiple laboratories to current standards for research and teaching, expanding the utilization to 12 months.

### FUNDING PARTNERS

Federal	\$ 1,698,227
Provincial	\$ 1,060,998
SOFI*	\$ 640,775
<b>Total</b>	<b>\$ 3,400,000</b>

\*Strategic Opportunities Fund Inc.

## Investment Benefits

The key component to fostering a stronger knowledge base is to increase the skills of our graduates. Providing high-quality teaching and research spaces, challenging our students, and collaborating with the private sector are paramount to Canada playing a vital role in the global economic community.



*Renovated Chemistry Lab with advanced instructional technology and new fumehoods*

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>40 person years</b>	<b>\$280,000</b>	<b>\$450,000</b>	<b>\$1,700,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### CAMPUS INFRASTRUCTURE IMPROVEMENT

A 2,161m<sup>2</sup> laboratory with supporting research spaces focused on the field of human movement is contained within the new \$62.5M Richard J. Currie Center.

### FUNDING PARTNERS

Federal	\$ 7,953,913
Provincial	\$ 10,000,000
Other	\$ 2,335,000
<b>Total</b>	<b>\$20,288,913</b>

## Investment Benefits

- Create a world class, one of a kind Canadian facility to study the field of human movement, biomechanics, chronic disease management and health promotion, allowing Canada to compete with the best in the world.
- Boost opportunities for private sector research in the areas of health and life related science and technologies.
- Advance a healthy living agenda for Canadians making a positive difference in the quality of people's lives.



*The Richard J. Currie Center, Human Performance Analysis*

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
184 person years	\$1,560,000	\$2,580,000	\$9,330,000

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### CAMPUS INFRASTRUCTURE IMPROVEMENT

This project provides NSAC with dependable, energy efficient greenhouse capacity that enables the expansion of quality teaching and research environments.

### FUNDING PARTNERS

Federal	\$299,500
Provincial	\$599,500
<b>Total</b>	<b>\$899,000</b>

## Investment Benefits

NSAC's enhanced greenhouse education and research capabilities will generate knowledge for producers and entrepreneurs and ensure that our students are highly skilled, knowledgeable and experienced regarding modern industry practices and standards. The renovated facilities will save 20% on energy costs and the new greenhouse provides students and researchers with 25% more space to conduct research under controlled environmental and bio-secure conditions.



*NSAC students and researchers benefit from improved greenhouse research and instructional capacity*

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
11 person years	\$70,000	\$120,000	\$450,000

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### CAMPUS INFRASTRUCTURE IMPROVEMENT

The Academy building renovations include stairway and window replacements, safety and energy re-fits, electrical, data, communications and mechanical systems upgrades.

### FUNDING PARTNERS

Federal	\$ 1,979,750
Provincial	\$ 453,492
SOFI*	\$1,528,323
<b>Total</b>	<b>\$ 3,961,565</b>

\*Strategic Opportunities Fund Inc.

## Investment Benefits

Collaborating with commercial and post-secondary partners, NSCAD provides resources in education and research for the local film industry while enabling knowledge transfer and advancements in film and digital media research. NSCAD University's teaching, studio, archival, screening and technical spaces at the Academy Building campus have been extensively rebuilt and upgraded to meet the needs of today's students, faculty and researchers.



*The Academy Building: NSCAD Film Program and Cineflux Research Centre*

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>46 person years</b>	<b>\$330,000</b>	<b>\$530,000</b>	<b>\$1,980,000</b>

Source: TM Solutions Inc. (consulting economists)

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

Various upgrades to the University infrastructure – water supply, roof repairs, fire panels, service tunnel upgrades and elevator modernization.

**FUNDING PARTNERS**

Federal	\$2,000,000
Provincial	\$2,000,000
<b>Total</b>	<b>\$4,000,000</b>



*Aerial view of the upgraded campus at UPEI*

**Investment Benefits**

The assistance has been a great help to the University in bringing together various projects that have been on the drawing board for a number of years regarding basic infrastructure. The upgrades will enhance the work environment at the University and assist us in maintaining a healthy work setting for both students and staff.

**POSITIVE ECONOMIC IMPACT**

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>45 person years</b>	<b>\$340,000</b>	<b>\$540,000</b>	<b>\$1,810,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### INITIATIVE D'AMÉLIORATION DE L'INFRASTRUCTURE

Un projet écologique d'envergure: Une installation de chauffage de l'eau à l'énergie solaire, une fourniture de gazéification de la biomasse et deux éoliennes de 50 kW.

### PARTENAIRES FINANCIERS

Canada	1 276 500 \$
Province	1 163 500 \$
Autre	60 000 \$
<b>Total</b>	<b>2 500 000 \$</b>



*La plus grande installation solaire en Nouvelle-Écosse*

## Avantages sur le plan des investissements

Ce projet permettra une réduction significative des émissions de gaz à effet de serre grâce à l'utilisation de sources d'énergie renouvelables et disponible dans la région, qui remplace l'importation de carburants non renouvelables. L'économie locale profitera des emplois durables pour les gens chargés de récolter, de conditionner et de transporter le biocombustible. Les bienfaits économiques directs pour l'université seront la réduction de ses frais de fonctionnement. L'argent épargné grâce à ces mesures servira à financer les programmes éducatifs.

## RETOMBÉES ÉCONOMIQUES POSITIVES

Emplois	Revenus fiscaux provinciaux	Revenus fiscaux fédéraux	Traitements et salaires
29 années-personnes	210 000 \$	330 000 \$	1 250 000 \$

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

**CAMPUS INFRASTRUCTURE  
IMPROVEMENT**

The Gerald Schwartz School of Business & Information Systems included the renovation and construction of 80,000 square feet.

**FUNDING PARTNERS**

Federal	\$ 11,337,638
Provincial	\$ 1,831,070
SOFI*	\$ 9,530,246
<b>Total</b>	<b>\$22,698,954</b>

\*Strategic Opportunities Fund Inc.

## Investment Benefits

Project increased capacity to train highly qualified business and information technology graduates while enhancing research and development spaces. Close to 300 direct and indirect jobs were created utilizing 25 Nova Scotia contractors and employing more than 100 workers from the Antigonish region. The project was designed to LEED gold accreditation creating an environmentally sustainable building while complimenting the heritage campus.



*New Home of the Schwartz School of Business & Information Systems*

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>266 person years</b>	<b>\$1,870,000</b>	<b>\$3,010,000</b>	<b>\$11,350,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

### CAMPUS INFRASTRUCTURE IMPROVEMENT

The renovation of the interior and exterior of the McNally Building to include enhanced laboratories, up-to-date classrooms and collaborative learning spaces.

### FUNDING PARTNERS

Federal	\$11,150,857
Provincial	\$ 1,742,516
SOFI*	\$9,431,627
Other	\$3,712,068
<b>Total</b>	<b>\$26,037,068</b>

\*Strategic Opportunities Fund Inc.

## Investment Benefits

Students and professors are the primary beneficiaries of this project as research capacities have been greatly improved. New technology and a complete overhaul of laboratories will greatly enhance research in Arts and Science including astrophysics, archeology and psychology. Graduate Arts students will benefit from the creation of a Graduate Student Commons which will facilitate research and collaboration.



*The renovated and upgraded McNally Building, Saint Mary's University*

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
305 person years	\$2,140,000	\$3,450,000	\$13,020,000

Source: <sup>TM</sup> Solutions Inc. (consulting economists)



**CAMPUS INFRASTRUCTURE IMPROVEMENT**

Edmund Casey Hall is a 40 year-old research, teaching and administrative facility that will see its core area upgraded.

**FUNDING PARTNERS**

Federal	\$483,200
Provincial	\$495,000
<b>Total</b>	<b>\$978,200</b>



*Edmund Casey Hall is St. Thomas University's primary academic building*

## Investment Benefits

The refurbishment project supports Canada's commitment to build science and technology assets and sustain research. The building upgrade – windows, doors, water fixtures, environmental controls – will improve the health, safety and comfort levels for 103 professors and students involved in research and an additional 250 students will benefit from much needed improvements to classrooms and common areas.

## POSITIVE ECONOMIC IMPACT

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>9 person years</b>	<b>\$80,000</b>	<b>\$120,000</b>	<b>\$450,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)

## SUMMARY OF KNOWLEDGE INFRASTRUCTURE PROJECTS

University	Project Spending
Acadia University (Wolfville, NS)	\$ 4,150,600
Cape Breton University (Sydney, NS)	\$ 15,000,000
Dalhousie University (Halifax, NS)	\$ 28,696,674
University of King's College (Halifax, NS)	\$ 350,751
Memorial University (Corner Brook, NL)	\$ 27,000,000
Université de Moncton (Moncton, NB)	\$ 12,821,155
Mount Allison University (Sackville, NB)	\$ 4,303,000
Mount Saint Vincent University (Bedford , NS)	\$ 3,400,000
University of New Brunswick (Fredericton, NB)	\$ 20,288,913
Nova Scotia Agricultural College (Truro, NS)	\$ 899,000
NSCAD University (Halifax, NS)	\$ 3,961,565
University of Prince Edward Island (Charlottetown, PE)	\$ 4,000,000
Saint Mary's University (Halifax, NS)	\$ 26,037,068
St. Francis Xavier University (Antigonish, NS)	\$ 22,698,954
St. Thomas University (Fredericton, NB)	\$ 978,200
Université Sainte-Anne (Church Point, NS)	\$ 2,500,000
<b>Total Project Spending</b>	<b>\$ 177,085,880</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)<sup>1</sup>

## SUMMARY OF TOTAL ECONOMIC IMPACTS

Employment	Provincial Tax Revenues	Federal Tax Revenues	Wages and Salaries
<b>1,880 person years</b>	<b>\$13,400,000</b>	<b>\$23,230,000</b>	<b>\$85,400,000</b>

Source: <sup>TM</sup> Solutions Inc. (consulting economists)<sup>1</sup>



<sup>1</sup> To read the full report: *Economic Impact of the Knowledge Infrastructure Program Investment in Atlantic Canada's Universities*, please visit [atlanticuniversities.ca](http://atlanticuniversities.ca)



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