

2022

NBIF

**IMPACT
REPORT**

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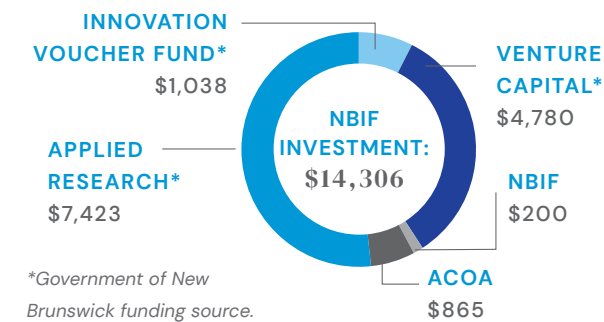
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YEAR IN REVIEW

NBIF OVERALL FY22 INVESTMENT



*Government of New Brunswick funding source.
(\$000's)

NBIF Investment	\$14,306	TOTAL NEW INVESTMENT \$118,064
Private Sector Investment	\$90,135	
Other Funding Sources	\$13,623	

IN FY22 WE SAW:

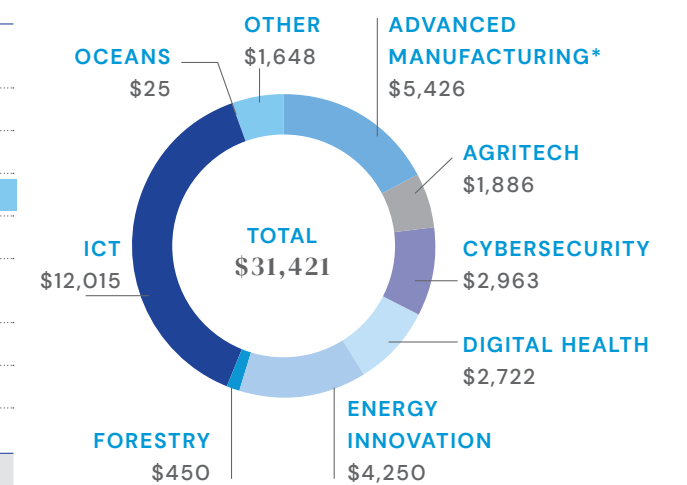
- 44** Venture Capital Investments
- Our portfolio value jumped to **\$32 million**
- Portfolio annual revenue reached **\$80 million**
- 1,200** Jobs created in NB to date
- 127** Applied Research Project Grants
- Leveraged **\$17.8 million** from private sector
- \$6.7 million** in incremental funding

SECTOR VIEWS | AWARDED FUNDS

	# OF COMPANIES	# OF PROJECTS	TOTAL 2021-2022
ADVANCED MANUFACTURING	5	17	\$1,552
AGRITECH	3	10	\$466
CYBERSECURITY	3	2	\$1,255
ICT	11	13	\$2,904
DIGITAL HEALTH	4	20	\$1,643
ENERGY INNOVATION	4	11	\$1,835
FORESTRY	5	12	\$982
OCEANS	1	13	\$784
OTHER	8	29	\$1,890
TOTAL	44	127	\$13,304

(\$000's)

SECTOR VIEWS | PORTFOLIO ACTIVITY



A MESSAGE FROM OUR CHAIR

Have you ever had someone tell you to slow down and stop and smell the roses? When there are incredible things happening all around you, but you get so busy that you forget to pause and take a minute amidst all the daily responsibilities and commitments?

That's what hit me when I had a look at this year's Impact Report. I had to sit down and read through each section. As board members, we hear many of NBIF's entrepreneurial and research stories. We assist with investment decisions and more, and when I see the material assembled into one document and look back at the year, I get the wow factor. NBIF's successes, results, investments, hires, and more. It reminds me that incredible talent in New Brunswick is working to grow our economy and the NBIF team is privileged to be a part of their path forward.

In this year's Impact Report, you will read the journeys of ambitious innovators, dedicated researchers, imaginative students, ambitious entrepreneurs, creative leaders, and growing companies. We tell these stories but not often enough for their impact to be well understood. New Brunswickers are modest, hardworking, incredibly dedicated and resourceful people.

At NBIF, our responsibilities include finding more private and public funding for venture and research initiatives and then collaborating to assist our clients. Our role is vital in our innovation ecosystem, and this report shows the collective impact we are having in New Brunswick.

NBIF has been delivering on its promise of driving innovation and achieving tangible results for two decades, and FY22 was another stellar year. On behalf of the NBIF Board of Directors, we hope you get the same sense of pride after reading through the content and understand the tangible and sustained impacts these investments are having on our provincial economy.

Cathy Simpson
Chair



NBIF has been delivering on its promise of driving innovation and achieving tangible results for two decades, and FY22 was another stellar year.



A MESSAGE FROM OUR CEO

For nearly 20 years, NBIF has been cultivating the resources to solve today's problems and create tomorrow's opportunities—the kinds of opportunities that will drive economic and societal growth. By investing in emerging research and early-stage companies, we've been developing the intellectual and economic infrastructure in which innovators can flourish.

We're now growing research-based companies that are making a global impact and operating at a scale that attracts international investment. In FY22, record amounts of private venture capital funding flowed into New Brunswick-based portfolio companies, totalling \$86 million. This level of investment reflects the global relevance of solutions developed in New Brunswick, which are driving revenue and employment growth.

In FY22, we also implemented a critical strategy: we began including in our research portfolio mission-driven programs targeting priority sectors and challenges for NB. In partnership with ONB and ACOA, we established funds to tackle three broad themes that present both challenges and opportunities for the province: climate change, artificial intelligence, and adult literacy.

Our innovation ecosystem has now developed to the point that we have the depth of resources we need

to take hold of such complex issues. With significant capacity in highly skilled researchers and entrepreneurs, we now have the resources to improve productivity, make local companies more resilient, and manage the unpredictability of the climate crisis and other changes.

Our researchers and entrepreneurs are continuing to create products to solve problems we find in our backyard and around the world. As they do so, they're attracting new revenue to the province, providing quality jobs, and building wealth.

The achievements of the past 12 months show that New Brunswick is headed for incremental, sustainable economic growth. The groundwork we've laid over the past two decades is now accelerating the pace at which we're moving toward greater provincial prosperity.

Jeff White
CPA, CA
CEO



For nearly 20 years, NBIF has been cultivating the resources to solve today's problems and create tomorrow's opportunities.



FINANCIAL IMPACT FY22

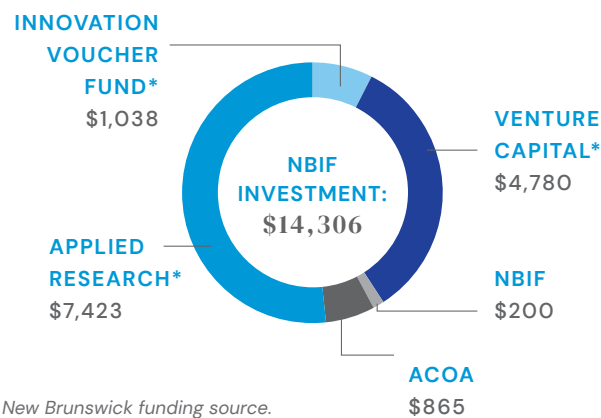
In FY22, **\$118 million** of new investment added fuel to the economic engine created by our provincial research community, start-ups, and scaling companies.

NBIF's contribution was **\$14.3 million**, which attracted an additional **\$104 million** for new and growing companies, applied research projects and talent development.

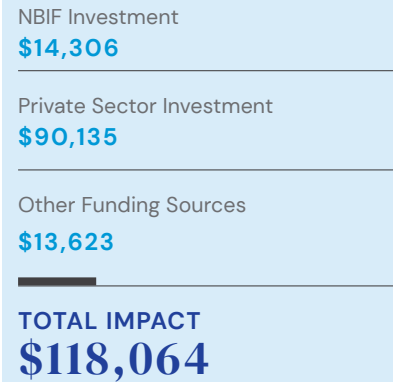
But those record-breaking numbers tell only part of the story.

New investment into NB means that new practical solutions and companies can be created to drive growth in the province's priority sectors. It also means that new jobs and new intellectual property are driving ongoing innovation and economic growth.

OVERALL INVESTMENT 2021-2022



*Government of New Brunswick funding source.



In FY22, NBIF invested in all eight of New Brunswick's priority sectors. We saw the most activity in ICT and Energy Innovation, two sectors that are also experiencing

rapid growth globally. NB companies leading the charge in those domains include Beauceron Security, TrojAI, and Potential Motors.

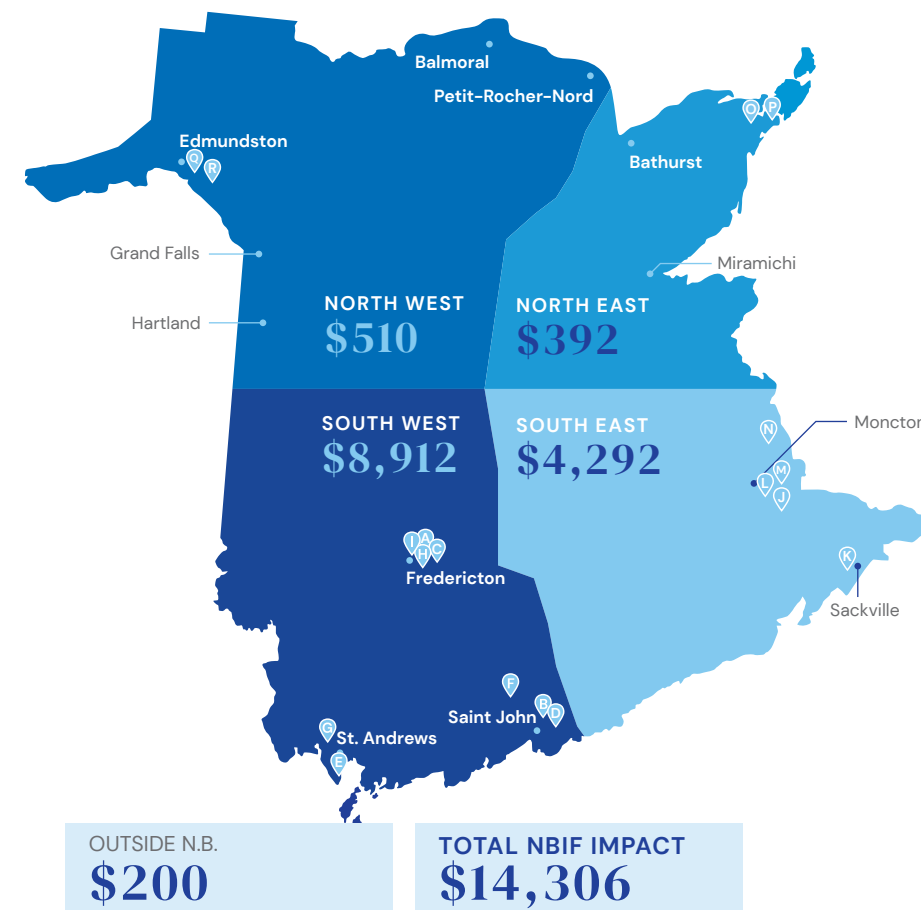
SECTOR VIEWS

	# OF COMPANIES	# OF PROJECTS	TOTAL 2021-2022
ADVANCED MANUFACTURING	5	17	\$1,552
AGRITECH	3	10	\$466
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OTHER	8	29	\$1,890
TOTAL	44	127	\$13,304

(\$000's)

*Does not include \$1,002 in scholarship awards.

GEOGRAPHICAL BREAKDOWN



*Includes \$1,002 in scholarship awards. (\$000's)

SOUTH WEST:

- a. UNB Fredericton
- b. UNB Saint John
- c. NBCC Fredericton
- d. NBCC Saint John
- e. NBCC St. Andrews
- f. Dalhousie Medicine, NB
- g. Huntsman Marine Science Centre
- h. Research and Productivity Council (RPC)
- i. St. Thomas University

SOUTH EAST

- j. Atlantic Cancer Institute
- k. Mount Allison University
- l. Centre de formation médicale du Nouveau-Brunswick
- m. Université de Moncton

NORTH EAST

- n. CCNB-INNOV
- o. Valorès
- p. Université de Moncton, Shippagan

NORTH WEST

- q. Northern Hardwoods Research Institute
- r. Université de Moncton, Edmundston

EQUITY, DIVERSITY AND INCLUSION (EDI)

As we foster research and entrepreneurial growth throughout New Brunswick, we recognize how important it is that we do so in ways that promote equity, diversity, and inclusion.

Sound EDI practices are core to the practice of innovation itself. In 2019, we developed an EDI policy, which serves as our North Star as we now turn aspirations into guidelines.

As an organization, we have set out to develop EDI standards to make New Brunswick's innovation ecosystem a model of high inclusion and performance. We've begun collecting and analyzing EDI metrics from our research grant applications to reach this ambitious goal and selecting diverse review committees.

This past year, we educated ourselves and our review committees on the complexities of benchmarking and tracking EDI statistics. We've revisited our current policy, and we'll soon be in a position to share that knowledge and those metrics.

We're currently creating an EDI Toolkit, which will give our portfolio access to the best practices we've gleaned through research and training. While the toolkit is being developed, we're recommending that our start-up portfolio start using an EDI reporting template provided by BDC.

02



VENTURE CAPITAL: YEAR IN REVIEW

If you've ever watched the Fundy tidal bore come up the Peticodiac River, then you have a sense of what FY22 was like for us at NBIF. Over the course of the year, we invested \$5 million into 29 New Brunswick companies, and those companies secured another \$86M in private sector investment.

Such great success signals that our provincial innovation ecosystem is maturing. With many seasoned founders in our network, we're now experiencing a self-feeding cycle of venture capital (VC) investment. For example:

- **Repeat entrepreneurs, who have successfully exited, are supporting new companies, as founders, advisors, or investors.** For example, Potential Motors has benefited from mentorship and investment connections provided by former members of Radian 6.

- **New Brunswick start-ups are attracting capital from outside the limited pool of Atlantic Canadian investors.** NB has become known internationally as an "emerging market" offering two important advantages, reasonable valuations and political stability.

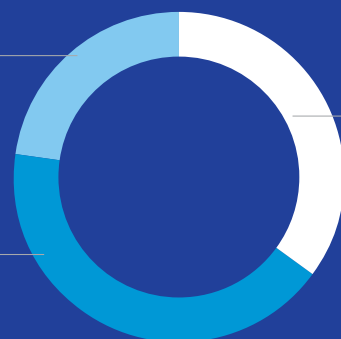
- **We're seeing lucrative exits take place each year.** These replenish our resources, enabling us to fund new start-ups.

NBIF has helped create the conditions for this sustainability through our renewable investment strategy, which supports start-ups across a comprehensive continuum of growth. This forward-looking approach gives New Brunswick a continuous pipeline of emerging, growing, and exiting companies to drive ongoing growth across the economy.

VENTURE CAPITAL DISTRIBUTION

ACCELERATOR INVESTMENTS
\$1,125

START-UP INVESTMENTS FUND
\$600



VENTURE CAPITAL FUND
\$1,750

2021-2022 INVESTMENT
\$4,780

For a complete list of our Venture Capital Investments in FY22, see page 18

(\$000's)

OUR INVESTMENT STRATEGY

At NBIF, we take a holistic approach to investment because we see beyond the individual deal to the potential impact the deal has on the New Brunswick economy. We're creating a renewable supply of innovative companies that will generate new wealth, new jobs, and new opportunities for economic growth.

THE NBIF INVESTMENT CONTINUUM

Our investment strategy enables us to support companies along a continuum of growth, from start-ups just developing a novel idea to companies scaling up to millions of dollars in revenue and hundreds of employees.

In the investment community, we are known for boldly going into early-stage companies that don't have a lot of traction but have potential to deliver tremendous returns.

We become a co-owner of each company we invest in, and we participate directly in its growth and success.

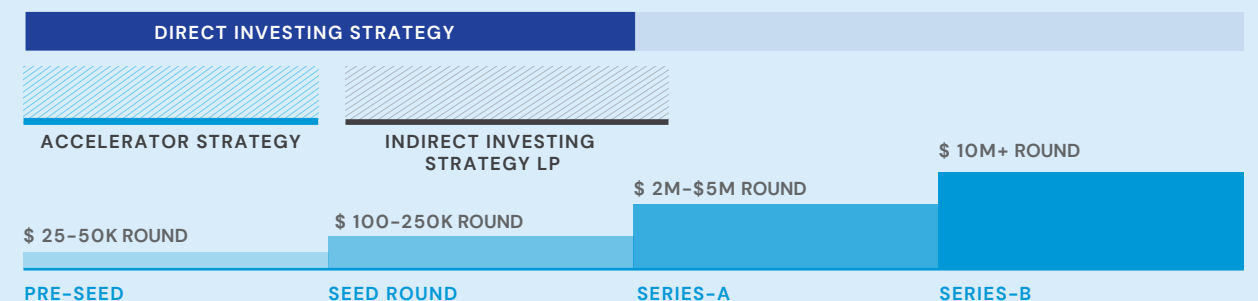
We're also known for reinvesting in the most promising of those companies, sometimes for five or more years, continuing to lend our support as they seek larger and larger amounts of leveraged funding.

THREE INVESTMENT STRATEGIES TO FUEL CONTINUOUS GROWTH

Through our made-for-New Brunswick strategy, we engage in three different investment strategies, in collaboration with local stakeholders and a growing circle of global investors. This three-part game plan explains our ability to generate exceptional returns as we invest in the long-term vision of an innovation-driven economy for New Brunswick.

START-UP INVESTMENT CHAIN

In healthy ecosystems there needs to be a funding continuum for start-ups. If there is a break in the chain, a promising start-up could stall and collapse before it has a chance to break into its target market and secure more funding. The current situation in NB looks like the following:



OUR PORTFOLIO

Today, our portfolio boasts 67 active companies, at different growth stages, distributed across various industry sectors and regions of the province. Based on the reporting from our portfolio companies, these companies are bringing in \$80 million in annual revenue, which represents a 33% increase over last year.

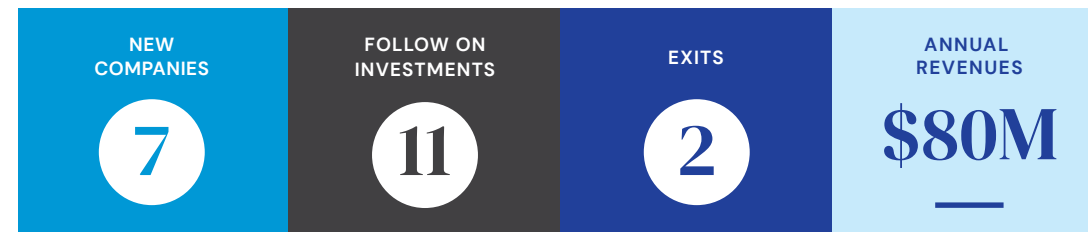
In line with national trends, more than 50% of our current companies are classified as business in ICT, Cybersecurity or Agritech. These categorizations don't, however, show the

true impact that NBIF-funded companies are making on the New Brunswick economy.

In FY22, our portfolio companies brought innovative solutions to all eight priority sectors of New Brunswick while exporting those solutions around the world.

Taken as a whole, our portfolio companies employ approximately 1,200 New Brunswickers. Given the growth trajectory of some of the more established companies, we expect this number to keep increasing in coming years.

PORTFOLIO ACTIVITY IN FY22



	# OF COMPANIES	INVESTMENT	%
ADVANCED MANUFACTURING	4	\$5,426	17%
AGRITECH	4	\$1,886	6%
CYBERSECURITY	5	\$2,963	9%
DIGITAL HEALTH	5	\$2,722	9%
ENERGY INNOVATION	10	\$4,250	14%
FORESTRY	3	\$450	1%
ICT	29	\$12,015	38%
OCEANS	1	\$25	0%
OTHER	5	\$1,684	5%
TOTAL	66	\$31,421	

(\$000's)

PORTFOLIO OVERVIEW & INVESTMENT HOLDINGS

	COMPANY NAME	FIRST INVESTMENT DATE	TOTAL INVESTMENT	
START-UP INVESTMENT FUND	Alongside	2014	\$2,000	
	Anessa	2017	500	
	Avrij	2019	750	
	Beauceron	2017	900	
	Eigen	2014	2,150	
	Encore	2009	500	
	Flixel	2012	450	
	Gemba	2015	1,850	
	Gray Wolf	2019	250	
	HotSpot	2014	250	
	IntroHive	2012	1,000	
	Inversa	2016	1,575	
	Kognitiv Spark	2017	1,450	
	Mesh Diversity	2019	550	
	Mycodev Group	2015	600	
	Patchell Brook	2016	350	
	Populus	2010	1,572	
Potential Motors	2019	1,000		
Quber	2017	400		
Resson Aerospace	2017	786		
Rise	2016	550		
SceneSharp	2011	350		
SimpTek	2015	1,000		
Smart Skin	2009	1,601		
Smartpods	2015	984		
SomaDetect	2018	950		
Sonrai Security	2018	713		
Soricimed	2017	875		
Stash Energy	2017	650		
Terris	2019	600		
Total Pave	2013	250		
TrojAI	2020	950		
TurboPlay	2017	650		
VENTURE CAPITAL FUND	AVSS	2018	\$100	
	Black Arcs	2016	200	
	BlueJay DB	2020	25	
	Brunvalley	2021	200	
	Chinova Bioworks	2017	100	
	Elandas	2020	200	
	EyesOver	2018	200	
	Global Intelligence	2019	150	
	Jaza Energy	2016	200	
	Parados	2021	25	
	RIDDL	2019	225	
	ACCELERATOR	Bloxo	2021	25
		Clanz (o/a Sensi)	2019	50
		Drinkable	2021	50
		FoodByte	2020	25
		Gaia Refinery	2021	50
		GHP Scholastic (HomeSchool to Go)	2021	25
MADA		2021	50	
NUMERiiQ		2021	25	
Picketa		2021	50	
PLAEX		2021	50	
QuickFacts		2022	25	
Reel Data		2019	25	
Renderator		2021	25	
Room Service		2019	25	
Side Door		2019	40	
Simbi		2020	25	
SnapAP		2020	25	
SolarSteam	2021	50		
Tail Wind	2019	50		
TotalQ	2020	25		
Trelent	2022	25		
TROES	2021	50		

CONCRETE VENTURES: \$500

TOTAL ACTIVE PORTFOLIO INVESTMENTS: \$31,921

(\$000's)

SPOTLIGHT ON POTENTIAL MOTORS

POTENTIAL MOTORS IS USING SOFTWARE TO ACCELERATE OFF-ROAD VEHICLE ELECTRIFICATION.

The company provides a great example of how early investment from NBIF can shift a startup into high gear. We first invested in Potential Motors in 2019, when it received \$500,000 through the Start-up Investment Fund. Then, in 2020, we followed up with an additional \$500,000.

This past year, we joined in an international funding round that raised \$4M USD. We contributed \$500,000, and other investors included Build Ventures (based in Halifax) and Marc Benioff, founder of Salesforce.

Potential Motors connected with Benioff through the mentorship they've received from two former members of Radian 6, Marcel LeBrun and Chris Newton. When Radian 6 was acquired by Salesforce in 2011, the Canadian Venture Capital Association called the transaction "Venture Capital Deal of the Year." Ten years later, LeBrun and Newton played a key role in helping Potential Motors make the deal that enabled them to move from concept to functioning product.

The involvement of other successful entrepreneurs in the journey of Potential Motors testifies to how the New Brunswick innovation ecosystem is advancing. Through the connections of experienced entrepreneurs, new startups are gaining access to power players of the VC world.

Potential Motors is using their latest round of financing to develop a technology prototype to showcase their vehicle control system, Off-Road OS, and a production prototype of their upcoming consumer vehicle. Most vehicles have individual computers, or ECUs, for every subsystem, but Off-Road OS controls the entire drivetrain through a centralized computing system. This gives the driver "holistic control"; the system automatically accommodates

differences in terrain, adjusting power, torque, and suspension. This enables new off-road drivers to conquer more challenging situations with confidence and experienced drivers to go further than previously possible.

With world-class investors and mentors surrounding CEO Sam Poirier and COO Nick Dowling, and a growing team, this young company is headed for the open road at full speed.



SPOTLIGHT ON ALONGSIDE

ALONGSIDE HAS CREATED A HIRING PLATFORM THAT TRANSFORMS THE RECRUITMENT PROCESS. IT'S A SIMPLE, FRIENDLY WEB APPLICATION THAT MAKES HIRING BOTH MORE EFFICIENT AND MORE PERSONAL.

Usually, an acquisition story features a Goliath buying a David. The new kid on the block gets bought—they don't do the buying.

But Alongside reversed that standard plot when it acquired Atlantic Canada's leading job board CareerBeacon in early 2022. To execute this acquisition, they secured \$4.5 million in debt financing from TD Financial, along with \$1.5 million USD from 500 Global, and \$750,000 from us.

Mind you, the Alongside journey did not start at the time of this deal. The company was established in 2013, and at the time of the acquisition, they were bringing in more than \$4 million in annual revenue by serving more than 2,000 global customers.

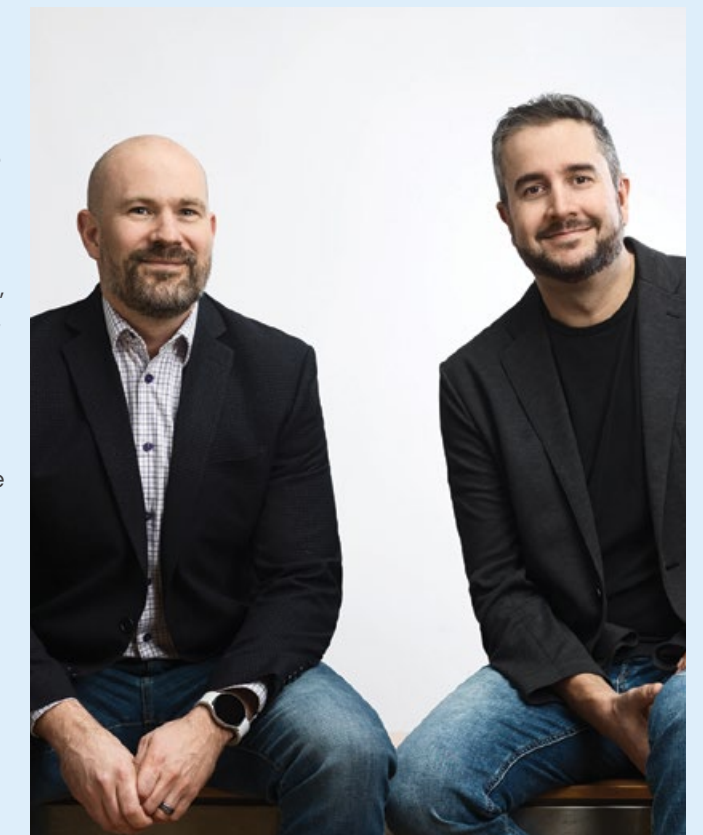
They also had a history of successful fundraising. In 2014, they secured pre-seed investment of \$500,000. In 2015, they also secured an additional \$1 million to fund their growth and expansion.

Like Potential Motors, Alongside is a company in which we have reinvested, another example of how our appetite for early-stage opportunities fuels growth and creates jobs. Today, Alongside employs 19 full time employees and is poised to continue growing.

The ambitious acquisition strategy executed by co-founders Yves Boudreau and Benoit Bourque demonstrates how tech companies will pave the way for our provincial growth. The Alongside platform taps into the rising demand for online recruitment and hiring solutions. HR tech is now one of the fastest-expanding segments of the tech sector, and there's no reason that

a New Brunswick business can't go toe to toe with global competitors.

Alongside has secured the largest amount of debt financing we have ever seen in the NBIF portfolio. We're looking forward to seeing what other boundaries it will break.



VENTURE CAPITAL FUND & START-UP INVESTMENT FUND FY22

VENTURE CAPITAL INVESTMENTS		
COMPANY NAME	NBIF FUND	TOTAL INVESTMENT
Alongside	Venture Capital Fund	\$750
Bloxo Inc	Accelerator Investments	25
BlueJayDB Inc	Start-up Investment Fund	25
Brunvalley	Start-up Investment Fund	100
Drinkable	Accelerator Investments	50
Eigen Innovations	Venture Capital Fund	100
Gaia Refinery	Start-up Investment Fund	50
Gray Wolf Analytics	Start-up Investment Fund	50
HomeSchoolToGo	Start-up Investment Fund	25
Kognitiv Spark	Venture Capital Fund	500
MADA Analytics Ltd.	Accelerator Investments	50
NUMERiiQ	Start-up Investment Fund	25
Parados	Start-up Investment Fund	25
Picketa Inc	Accelerator Investments	50
Picomole	Start-up Investment Fund	200
PLAEX	Accelerator Investments	50
Potential Motors	Venture Capital Fund	500
Quickfacts	Accelerator Investments	25
Renderator Technologies Labs Inc.	Accelerator Investments	25
Scenesharp Technologies	Venture Capital Fund	50
Simptek	Venture Capital Fund	250
Smartskin Technologies	Venture Capital Fund	100
Sonrai Security	Venture Capital Fund	380
Soricimed	Venture Capital Fund	200
Stemble	Accelerator Investments	25
SweetSpot Labs	Start-up Investment Fund	200
TrojAI	Venture Capital Fund	750
Turboplay	Venture Capital Fund	200

(\$000's)

ACCELERATOR INVESTMENTS
\$300

START-UP INVESTMENT FUND
\$600

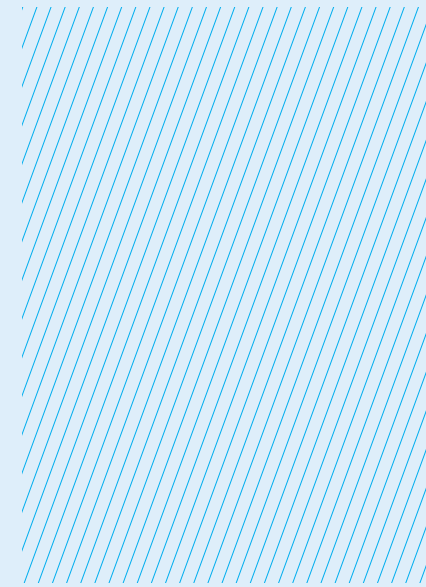
VENTURE CAPITAL FUND
\$3,780

TOTAL INVESTMENT
\$4,780

INNOVATION VOUCHER FUND FY22

INNOVATION VOUCHER FUND INVESTMENTS		
COMPANY NAME	RESEARCH PARTNER (INSTITUTION)	TOTAL INVESTMENT
Aqua Vet Services International	HMSC	\$64
Chinova Bioworks	CCNB	35
Clairitech	UdeM	80
Clow Canada	RPC	80
Dovico Software	UdeM	80
Dynamik Robotik Solutions	UdeM	80
Group Savoie	UdeM	80
Johnson Enterprises	UdeM	72
JP Holdco	NHRI	58
Nutrento	RPC	80
Ohlala de Sophie	CCNB	12
PMC Energy	UdeM	80
RC Hand Tool Woodworking Hand Tools Inc	RPC	80
Soricimed Biopharma Inc.	MTA	79
Spandrel Interactive	NBCC	78

(\$000's)



TOTAL INVESTMENT
\$1,038

03



APPLIED RESEARCH: YEAR IN REVIEW

Boundary-breaking ideas often begin in a petri dish or a computer lab—and they often get overlooked. To the inexperienced eye, it's hard to picture how an emerging scientific discovery could impact situations outside the lab.

Our applied research programs enable us to identify high-potential ideas at an early-stage and nurture them into innovative solutions that boost economic growth.

This visionary work is critical to New Brunswick's long-term economic prospects. To meet the challenges ahead of us as a province, we need radical new approaches to sustain our traditional industries and enable them to compete on the global stage. At the same time, we need the ability to cultivate emerging industries, such as Cybersecurity and Energy Innovation, that will take the New Brunswick economy forward into new growth zones.

To achieve this mission of economic growth across all sectors, New Brunswick will require a workforce of highly qualified personnel (HQP). Year by year, our investments are also building this labour force of the future, the researchers and technicians who will develop, implement, and evolve new technologies.

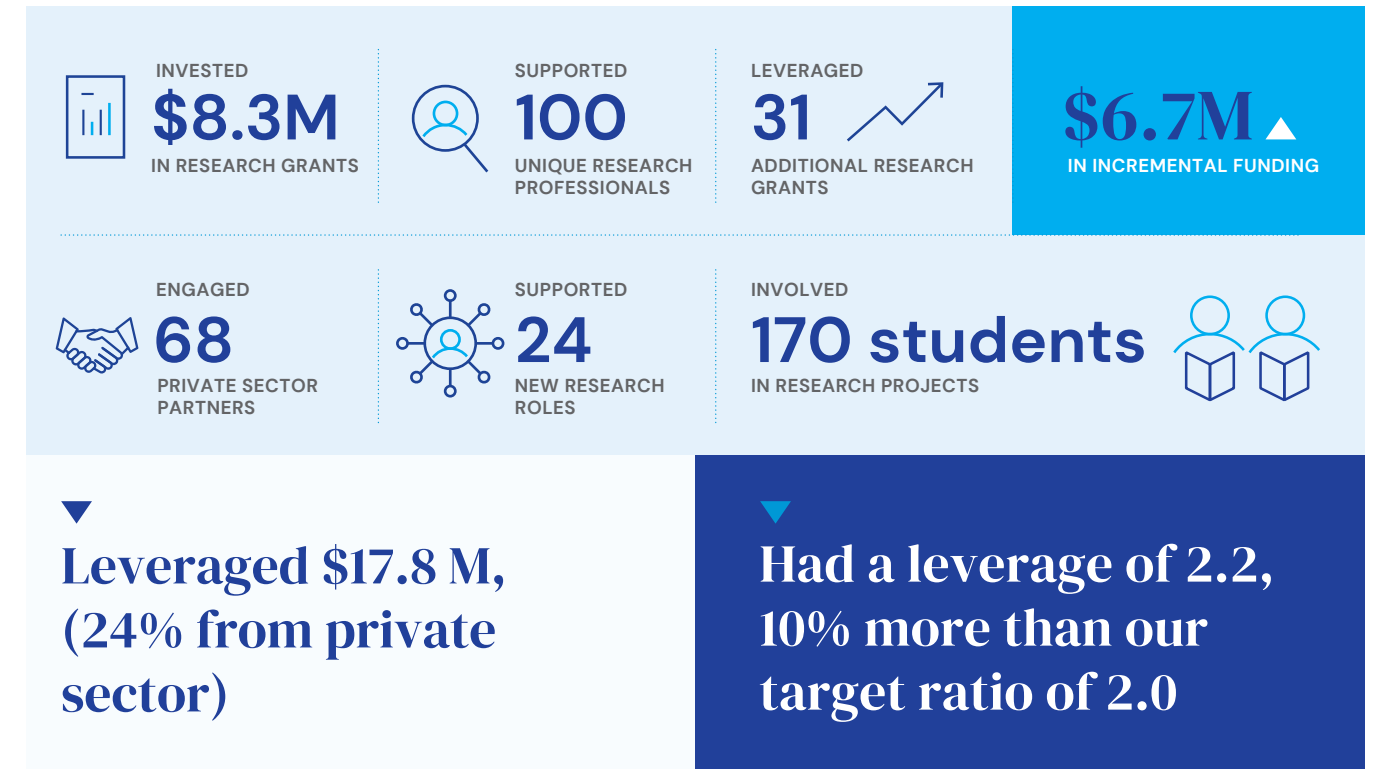
Over the past year, as we grew our financial investment and number of research projects, we put the eight priority sectors on the path to solving critical problems and discovering new opportunities. In addition, we launched three new funds targeting themes that will largely shape the future of our province: climate change, artificial intelligence, and adult literacy. These focused funding opportunities have played a key role in developing a mission-driven approach to fostering New Brunswick innovation.

ANOTHER YEAR OF STEADY GROWTH

In FY22, we invested **\$8.3 million** across **14 programs**, up from **\$7.5 million in 2021**, including three new funds to drive solutions and skill development in our academic research institutions. With ONB, we launched the Climate Impact Fund; with ACOA, we provided the Artificial Intelligence Fund; and in partnership with NBSPRN, we created the Adult Literacy Fund.

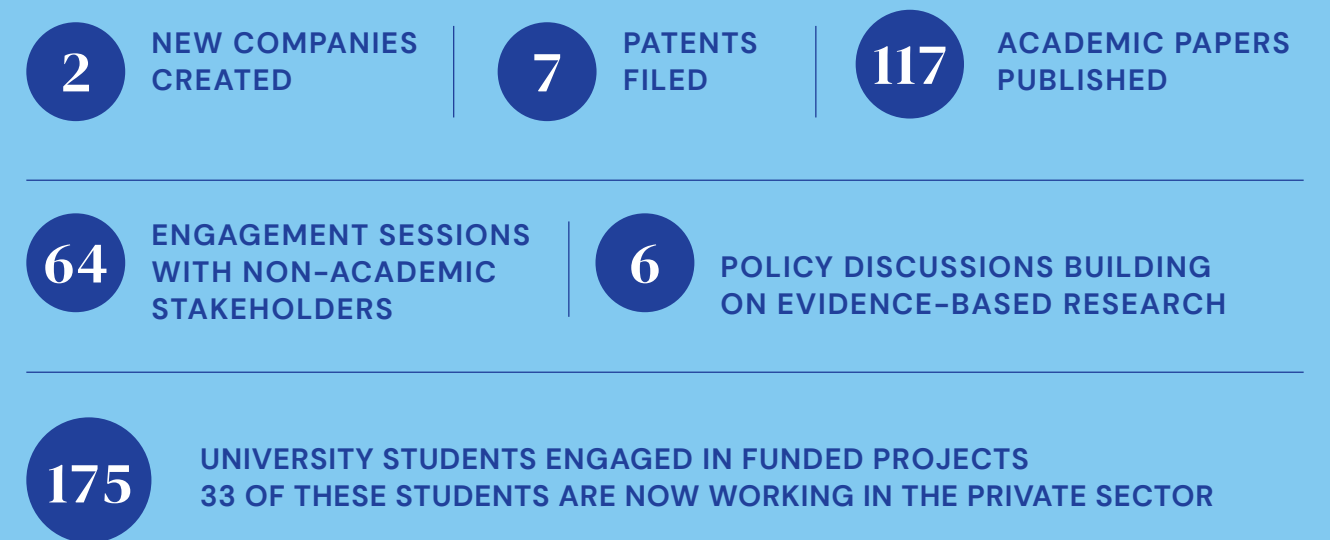
Compared with our pre-pandemic activity, we saw encouraging growth across all performance metrics.

APPLIED RESEARCH ACTIVITY IN FY22



RESULTS TO CELEBRATE

Ground-breaking applied research takes a sustained effort over a number of years to deliver the solutions and results expected. In FY22 we saw the conclusion of 60 applied research projects which had spanned multiple years. The results were as follows:



PARTNERSHIPS

DIVERSE PARTNERS ACROSS THE PROVINCE AND THE GLOBE

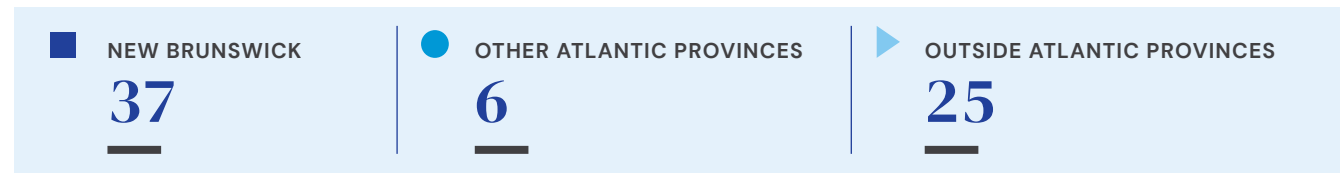
Our partners have always been key to our success. As we pursue a mission-based approach to innovation, they will play an even more integral role in applied research.

Partners provide valuable insight into challenges they are facing, inspiring our researchers to apply their expertise and create solutions to challenges. Industry

and researchers then work side by side to implement solutions. This collaborative co-creation between researchers and industry doesn't just solve today's issues—it also opens new opportunities, for individual companies and for New Brunswick as a whole.

In 2022, 68 private sector partners, from New Brunswick and beyond, participated in NBIF-funded projects.

WHERE THEY WERE LOCATED:



WE SAW BROAD-BASED ENGAGEMENT BY COMPANIES COLLABORATING WITH RESEARCHERS ACROSS THE PRIORITY SECTORS OF NB.

PRIORITY SECTOR	NUMBER OF PARTNERS
ADVANCED MANUFACTURING	15
AGRITECH	5
DIGITAL HEALTH	6
ENERGY INNOVATION	5
FORESTRY	2
ICT	14
OCEANS	2
OTHER	19
TOTAL	68

THREE MISSION-DRIVEN FUNDS

TWO OF THE NEW FUNDS THAT WERE ESTABLISHED IN FY22 SUPPORT EMERGING TECHNOLOGIES (CLEANTECH AND AI) THAT WILL EQUIP NEW BRUNSWICK TO SURVIVE AND THRIVE THROUGH THE UNCERTAIN TIMES AHEAD. THE THIRD FUND ADDRESSES A SOCIAL ISSUE THAT'S EQUALLY CRITICAL TO THE PROVINCE'S ECONOMIC WELL-BEING: ADULT LITERACY.

▶ THE CLIMATE IMPACT FUND

In collaboration with ONB we created this fund to respond to the province's climate change action plan. Funds supported a continuum of innovation to help us mitigate, adapt to, and survive climate change:

- ▶ RESEARCH TO INVESTIGATE HOW CLIMATE CHANGE IS AFFECTING NEW BRUNSWICK
- ▶ RESEARCH TO DEVELOP CLEANTECH INNOVATIONS | ▶ START-UPS DEVELOPING CLEANTECH SOLUTIONS
- ▶ CLEANTECH PROJECTS AT NEW BRUNSWICK CORPORATIONS



In November 2021, we convened R3 Cleantech: Advancing Climate Innovation, a one-day public education and training session. This event brought together 145 researchers, start-up founders, and members of the broader business community to discuss ways to advance cleantech innovation for the betterment of NB.

(continued on page 20)

ARTIFICIAL INTELLIGENCE (AI) FUND

In collaboration with ACOA, we identified an opportunity to raise awareness about AI and make this emerging set of technologies more usable for New Brunswick industries. Together, we launched our AI fund, giving Atlantic Canadian companies access to research-based

expertise that will help them increase their productivity and competitiveness. We are accomplishing this goal by supporting a continuum of applied research, funding projects that:

- ▶ ACCELERATE EXISTING APPLIED RESEARCH PROGRAMS AT NB INSTITUTIONS
- ▶ ENABLE SMEs TO ADOPT AI SOLUTIONS
- ▶ DEVELOP AI PROTOTYPES

To date we have awarded \$2.18M of funding across 28 different AI projects. These projects cover a wide range of technologies and sectors. For example, through the

AI Innovation Voucher part of the program, we helped New Brunswick SMEs work toward improvements to:

- ROBOTICS IN PALLET MANUFACTURING (FOR PAINTING AND STAMPING)
- TIMESHEET ANALYSIS AND PREDICTIONS
- ASSESS AND INCREASE THE PRODUCTIVITY OF FOREST HARVESTING

ADULT LITERACY FUND

This new fund emerged through a partnership with the New Brunswick Social Policy Research Network (NBSPRN), backed by the Province of New Brunswick. It continues the work we started with our Social Innovation Research Fund in 2019.

province's economic growth: low adult literacy rate. Improving the current adult literacy rate will increase the talent available to participate in the workforce and contribute to New Brunswick communities.

The new fund specifically addresses a barrier to the

By directing funding toward this issue, we supported projects to:

- ▶ ADVANCE OUR UNDERSTANDING OF ADULT LITERACY
- ▶ IDENTIFY AND UNDERSTAND BARRIERS TO DEVELOPING LITERACY, FOR INDIVIDUALS AND SUPPORT ORGANIZATIONS
- ▶ EXPLORE INNOVATIVE APPROACHES TO LITERACY TRAINING

As we stimulate economic growth in NB, overcoming our literacy challenges is a critical step forward. The skills needed to drive innovation depend on reading and

writing. By supporting literacy research, we are helping create a future in which all New Brunswickers can flourish.

SPOTLIGHT

INVESTIGATING THE LEARNING JOURNEYS OF NEW BRUNSWICKERS WITH LOW LITERACY



Jules Maitland, PhD.
All in Research & Innovation Inc.

Dr. Maitland and her team collaborated with organizations that serve marginalized populations, leveraging multiple research and design methods to gain an understanding of the experience of finding and accessing literacy supports and the surrounding ecosystem that shapes it. Using this data, they created a menu of literacy options and a map of stakeholders, touchpoints, and decision points on the journey to accessing adult literacy supports.

In our technologically complex society, a person requires various kinds of literacy to thrive—digital literacy, financial literacy, media literacy, and so on.

But underlying all these competencies is basic alphanumeric literacy, an understanding of how letters translate into spoken sounds and meaning.

More than half of adults in New Brunswick are considered “functionally illiterate” in alphanumeric terms.

That means they can't read and write well enough to participate in many social activities and jobs or to help their community develop. They might have trouble completing a job application form, following written directions, gleaning information from a website, or interpreting a child's report card.

Insights from this analysis helped identify the limitations of—and opportunities to improve—existing service offerings, outreach efforts, discoverability and usability of online information, and the referral and intake processes for adult literacy programs in New Brunswick. This will be an important step toward increasing the provincial literacy rate, reducing poverty, and alleviating burdens on various social supports.

Through the Adult Literacy Fund, we provide funding to researchers and connect them with provincial policymakers. It will take a collaborative approach to raise the functional literacy rate, which presents one of the most pressing challenges for New Brunswick's economy, present and future.

MULTI-STAKEHOLDER STUDY OF HOW “THINNING” CAN PROTECT NEW BRUNSWICK FORESTS



Loïc D'Orangeville,
UNB

Forestry is an essential and priority sector industry in New Brunswick—and vulnerable to climate change.

As droughts become more common, how can we protect the health and diversity of our forests, along with the livelihoods that depend on them?

In response to the climate crisis, new methods of forest management are emerging. One with particular promise is “thinning,” the practice of removing trees that are old, stunted, or diseased. This strategic harvesting gives the remaining trees, the healthiest specimens, more room and resources to flourish.

Dr. D'Orangeville and his team at UNB have titled their investigation THIRST-NB. As they study how thinning can

be used to mitigate drought conditions in NB forests, they'll be collaborating with an integrated forestry company and the Canadian Forest Service.

Together, this group will be finding answers to such questions as:

- How much thinning is beneficial?
- When should thinning happen?
- How effective is thinning to combat the effects of drought?

The project will include training of two Masters of Science Students. It will also involve sharing the findings with government and industry in ways that will encourage policymakers and companies to implement them.

This important research is supported by our new Climate Impact Fund and by an NSERC Alliance Grant, Silva 21. The federal funding recognizes that the insights Dr. D'Orangeville and his colleagues bring forward will contribute to forestry innovation on a national scale.

FIGHTING CHRONIC INFLAMMATORY DISEASE WITH NEW CHEMICAL COMPOUNDS



Marc Surette,
Université de Moncton

Inflammation is a key component of several chronic medical conditions that are difficult to treat. The short list includes rheumatoid arthritis, asthma, and Alzheimer's disease.

Current treatments involve drugs that have serious drawbacks. For example, some medications can be administered only intravenously while others alleviate just a few of multiple symptoms.

Dr. Surette and his team at the Université de Moncton are working to provide a better option. In their biochemistry lab in close collaboration with their partner Dr. Touaibia, they've developed a series of novel drug-like compounds. With the funding they've received from the Early-Stage

Commercialization Fund (ESCF), they'll be able to test these substances in living systems.

Once they've validated the compounds' ability to fight inflammation and are armed with compelling data, the team will be ready to seek a large pharmaceutical company as a development partner. With such a partner, they'll then be ready to start the journey through development, testing, clinical trials, and regulatory approval. As part of this process, they'll also secure additional IP protection for their discovery by refining the patents they've already filed.

The knowledge that Dr. Surette and his colleagues are creating has the potential to improve the health of New Brunswickers. It also positions NB research institutions to benefit from participating in clinical trials and ongoing drug development.

This project is just one example of how the ESCF enables far-sighted research that has great potential and isn't eligible for most conventional research grants.



RESEARCH GRANTS FY22

ADULT LITERACY FUNDING PROGRAM		
RESEARCHER	INSTITUTION	AWARD
Jules Maitland	All In Research & Innovation Inc	\$20
Julia Smith	Elementary Literacy Inc	20
Lynda Homer	Literacy Coalition of New Brunswick Ltd	20
Susan Andrews	MTA	20
Veronica Whitford	UNB	20

AI PRE-VOUCHER		
RESEARCHER	INSTITUTION	AWARD
Christopher Baker	UNB	\$20
David Joly	UdeM	20
Moulay A. Akhloufi	UdeM	20
Moulay A. Akhloufi	UdeM	20
William McIver	NBCC	20
Zhen Lei	UNB	20

AI STRATEGIC ACCELERATION FUND		
RESEARCHER	INSTITUTION	AWARD
Erik Scheme	UNB	\$400
Moulay A. Akhloufi	UdeM	400
Yassine Bouslimani	Udem	200

CLIMATE IMPACT FUND		
RESEARCHER	INSTITUTION	AWARD
Barry Blight	UNB	\$45
Liuchen Chang	UNB	66
Brian Hayden	UNB	35
Clodualdo Aranas	UNB	90
Douglas Campbell	MTA	49
Gaetan Pelletier	NHRI	90
William Ward	UNB	51
Loic D'Orangeville	UNB	80
Lucia Tramonte	UNB	55
Marion Tétégan Simon	Valorés (IRZC)	90
Myriam Barbeau	UNB	50
Rémy Rochette	UNB	90
Tommi Linnansaari	UNB	45
Van Lantz	UNB	40
William McIver	NBCC	14

CORPORATE CLEANTECH INNOVATION FUND		
RESEARCHER	INSTITUTION	AWARD
Alain Doucet	Prime-X2 Technologies Inc.	\$35
Dan Curwin	Stash Energy Inc.	80
Hurdon Hooper	RUBRECO INC	80
Stephen Dixon	Nutrento	40

EARLY STAGE COMMERCIALIZATION FUND		
RESEARCHER	INSTITUTION	AWARD
France Talbot	UdeM	\$25
Lauren Beck	MTA	25
Lucas Boudreau	UdeM	35
Marc Surette	UdeM	50
Sid Ahmed Selouani	UdeM	50
Thierry Chopin	UNB	50
Zhibin He	UNB	25

EMERGING PROJECTS FUND		
RESEARCHER	INSTITUTION	AWARD
Andrew Gerber	UNB	\$25
Anna Ignaszak	UNB	25
Anne-Marie Dion-Côté	UdeM	25
Barry A Blight	UNB	25
Bassel Samad	UdeM	20
Clodualdo Aranas	UNB	25
Glen Briand	MTA	12
Gobinda Saha	UNB	19
Ian Church	UNB	15
Isdore Shamputa	UNB	20
Jon Sensinger	UNB	25
Kadia Aka	UdeM	18
Zhen Lei	UNB	25

EQUIPMENT FUND		
RESEARCHER	INSTITUTION	AWARD
N/A	Ace-Net	\$80
Alan Lloyd	UNB	127
Allen Curry	UNB	80
Anna Ignaszak	UNB	3
Brynle Barrett	UNB	150
Daniel Laplante	CCNB	7
Gaetan Pelletier	NHRI	84
Liuchen Chang	UNB	102
Loic D'Orangeville	UNB	50
Sandra Turcotte	UdeM	10
Tillmann Benfey	UNB	8
Tommi Linnansaari	UNB	145

GRADUATE SCHOLARSHIPS	
INSTITUTION	AWARD
UNB	\$710
UdeM	280
MTA	12

(\$000's)



LAB-TO-MARKET FUND		
RESEARCHER	INSTITUTION	AWARD
David Bremner	UNB	\$50
Lloyd Waugh	UNB	45
Luc Lanteigne	CCNB	75
Mike Doucette	CCNB	24
Scott Bateman	UNB	40
William McIver	NBCC	109

RESEARCH ASSISTANTSHIPS INITIATIVE		
RESEARCHER	INSTITUTION	AWARD
Anne-Marie Dion-Côté	UdeM	\$35
Aurora Nedelcu	UNB	22
Barry A Blight	UNB	53
Bruce Balcom	UNB	30
Brynle Barrett	UNB	60
Caroline Brunelle	UNB	15
Clodualdo Aranas	UNB	40
David I MaGee	UNB	38
Eric Allain	ACRI	51
Erik Scheme	UNB	60
Etienne Hébert-Chatelain	UdeM	60
Gilles Robichaud	UdeM	60
Igor Mastikhin	UNB	30
James Ted McDonald	UNB	15
Jenny Wong	MTA	30
John Kershaw	UNB	60
Jules Comeau	UdeM	30
Julia Riley	MTA	53
Lelievre Peter	MTA	40
Loic D'Orangeville	UNB	30
Lucia O'Sullivan	UNB	15
Mélanie Jean	UdeM	15
Sandra Turcotte	UdeM	60
Sarah Eisler	UNB	60
Serge Gauvin	UdeM	57
Suprio Ray	UNB	20
Usha Kuruganti	UNB	30
Zhen Lei	UNB	60

RESEARCH PROFESSIONAL INITIATIVE		
RESEARCHER	INSTITUTION	AWARD
Attiq Rehman	RPC	\$30
Benjamin de Jourdan	HMSC	58
Gilles Robichaud	UdeM	90
Ian Church	UNB	90
Peter Lelievre	MTA	25
Meng Gong	UNB	90
Shelley Doucet	UNB	90
Tyson MacCormack	MTA	45
Yahia Djaoued	UdeM	90
Yang Qu	UNB	90
Zhen Lei	UNB	90

STRATEGIC OPPORTUNITIES FUND		
RESEARCHER	INSTITUTION	AWARD
Jacob Matz	DMNB	\$100
Julia Woodhall-Melnik	UNB	154
Rémy Rochette	UNB	132
William McIver	NBCC	195

TALENT RECRUITMENT FUND		
RESEARCHER	INSTITUTION	AWARD
André Gallant	UdeM	\$55
Argyri Panezi	UNB	55
Chris Rouse	UNB	55
Corrine Cash	MTA	55
Fadoua Khennou	UdeM	55
Jillian Rourke	MTA	55
Julia Riley	MTA	55
Louis Lapierre	UdeM	55
Nan Gao	UNB	55
Said Mekary	CFMNB	55
Saikat Chakrabarti	UNB	55
Tobin Haley	UNB	55
Ziba Vaghri	UNB	55

RESEARCH GRANTS TOTAL	AMOUNT
ADULT LITERACY FUNDING PROGRAM	\$100
AI PRE-VOUCHER	120
AI STRATEGIC ACCELERATION FUND	1,000
CLIMATE IMPACT FUND	890
CORPORATE CLEANTECH INNOVATION	235
EARLY STAGE COMMERCIALIZATION FUND	260
EMERGING PROJECTS	279
EQUIPMENT FUND	846
GRADUATE SCHOLARSHIPS	1,002
LAB-TO-MARKET	343
RESEARCH ASSISTANTSHIPS INITIATIVE	1129
RESEARCH PROFESSIONAL INITIATIVE	788
STRATEGIC OPPORTUNITIES FUND	581
TALENT RECRUITMENT FUND	715
TOTAL	\$8,288

CONCLUSION

Innovation isn't just a sudden jolt of change that gives a regional economy a jumpstart. It's the key to energizing and growing our provincial economy over the long term.

What we do today to fuel the engine of innovation will determine how easily and successfully we adapt to the changes forced upon us by the climate crisis, globalization, demographic challenges, and emerging technologies.

In FY22, we witnessed an important sign that the investments we've been making for almost 20 years have now ignited a self-sustaining innovation ecosystem to drive ongoing economic growth. New Brunswick start-

ups brought more than \$100M of foreign investment into the province. This infusion of wealth from outside New Brunswick created jobs, tax revenues, and—perhaps just as importantly—a spirit of optimism about the province's future.

As we move forward into FY23 and beyond, our new mission-driven approach to fostering innovation will enable us to build on this platform of documented success. As we continue to stimulate innovation across all economic sectors, our investments in key domains (such as cleantech, AI, and adult literacy) will give New Brunswick a firm foundation on which to construct a wealthy future.



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