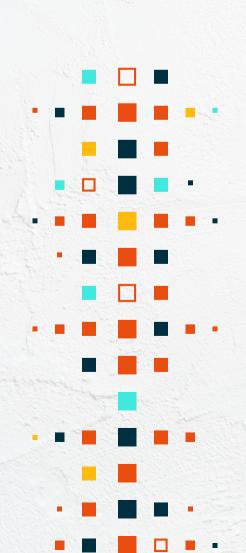
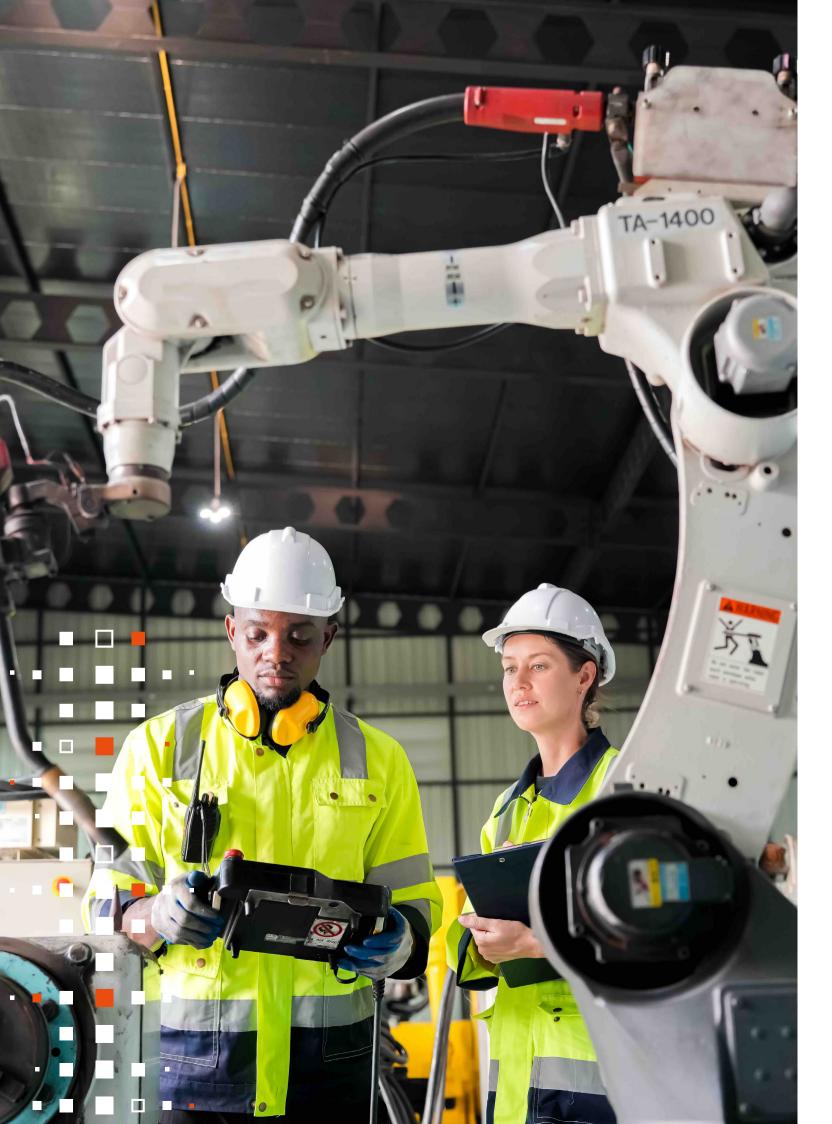


# Corporate Plan 2024-2025



www.ngen.ca





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### **Next Generation Manufacturing Canada**

Next Generation Manufacturing Canada (NGen) is dedicated to building world-leading advanced manufacturing capabilities in Canada for the benefit of Canadians.

We aim to strengthen the competitiveness and growth potential of Canada's critical advanced manufacturing sector and deliver step-change improvements in greenhouse gas (GHG) emission reductions, environmental sustainability, health and safety, food and water security, and supply chain resilience for Canadians and the world.

NGen leads Canada's Global Innovation Cluster for Advanced Manufacturing. We help bridge the gap between research and the development of advanced manufacturing technologies on one hand and their industrial application, production scale-up, and commercialization on the other.

NGen builds ecosystems. We aim to enhance, connect, and leverage Canada's research, technology, and manufacturing strengths, workforce skills, and supporting innovation ecosystems. Our goal is to increase industry investment in innovation, accelerate the development, scale-up, and productive deployment of advanced technologies in Canadian manufacturing, grow innovative businesses in Canada, and help them commercialize their capabilities and Intellectual Property in global markets.

To that end, NGen works with industry and research partners across Canada to help develop and co-invest in collaborative Technology Leadership projects that integrate technologies in transformative manufacturing solutions that can be adopted at scale by manufacturers and commercialized in global value chains. We also undertake strategic initiatives that strengthen Canada's advanced manufacturing ecosystem by:

- Building partnerships that help our members and project partners commercialize their Intellectual Property (IP).
- Identifying strategic opportunities for

Canadian advanced manufacturing solutions.

- Making connections, facilitating innovation partnerships, and improving access to ecosystem resources including advanced manufacturing education and training programs and centres that enable technology scale-up and adoption.
- Amplifying initiatives and deepening collaboration across a national network of advanced manufacturing clusters.
- Supporting the development and attraction of a highly skilled, diverse, and inclusive advanced manufacturing workforce in Canada, with special emphasis on attracting youth and under-represented groups into advanced manufacturing careers.
- Helping companies improve the management of advanced manufacturing processes, enhance supply chain resilience, and accelerate the implementation of net-zero emission facilities.
- Promoting Canada's advanced manufacturing capabilities across the country and around the world.

#### **STRATEGIC OBJECTIVES**

NGen's Strategic Plan describes how NGen will build on the strong track record of success we have achieved since 2018 to meet even more ambitious investment, economic growth, and job creation targets by 2028 and beyond.

Our goal is to invest at least \$480 million in Technology Leadership projects and Strategic Ecosystem initiatives, leveraging 1.7X that amount in industry contributions, to generate a cumulative total of \$1.3 billion in innovation investments between 2018 and 2028. We aim to create or sustain 15,000 jobs and generate \$15 billion in GDP over that ten-year period.

Economic Impact	Result by: Dec. 31st, 2023	Cumulative Target March 31st, 2028	Cumulative Target March 31st, 2033
Industry Investment Match for Projects*	1.67**	1.7	1.7
NGen Investments in Completed Projects	\$216.4 million	\$480 million	\$1 billion
Total Innovation Investments in Projects	\$561.0 million	\$1.3 billion	\$3 billion
Revenue Generated (Total Direct & Indirect GDP)	\$7.0 billion	\$15 billion	\$25 billion
Jobs Created/Sustained	3,449	15,000	25,000

<sup>\*</sup>For Technology Leadership projects and Ecosystem initiatives where an industry match is required.

NGen's aims to achieve our long-term targets by acting as a:

- National Force Strengthening Canada's advanced manufacturing ecosystem in a way that creates a global advantage for Canada by leveraging and attracting industry investment, developing a global profile, and collaborating on projects at a national scale.
- Driver of Growth Accelerating the scale-up of small and medium-sized enterprises (SMEs) by fostering collaboration and integration in emerging value chains, to drive international opportunities, expand market share, and grow revenues.
- Creator of Networks Strengthening connections and collaborations among private, public, and academic organizations to drive impactful commercialization outcomes and develop domestic capacity.
- Catalyst for Skills Development Addressing skills gaps, acting as a magnet for global talent, collaboration, and skills and talent development, and fostering opportunities for equity-seeking groups to benefit from connections, to drive innovation and contribute to inclusive economic growth.

NGen strives to be Canada's leading enabler of transformation and business success in advanced manufacturing. Our success depends on our ability to continue to:

 Respond knowledgeably and rapidly to industry needs, identify strategic innovation opportunities, and work collaboratively to support the development, adoption, scale-

- up, & commercialization of leading-edge manufacturing solutions.
- Strengthen Canada's advanced manufacturing ecosystem by providing strategic leadership, amplifying and promoting ecosystem capabilities, deepening connections and collaboration across value chains, helping build a highly skilled, diverse, and inclusive workforce, and leading strategic initiatives that enable transformation in advanced manufacturing.
- Excel as an organization in creating positive change by engaging expert, entrepreneurial, and motivated professionals pursuing their career objectives in a respectful, equitable, diverse, and inclusive work environment.
- Operate as a financially sustainable business outperforming expectations through compliant and responsible stewardship of investments in high-impact projects and ecosystem initiatives.

<sup>\*\*</sup> Excluding COVID Rapid Response projects where no industry match was expected.

#### **NGEN'S FIVE YEAR STRATEGY**

NGen builds world leading advanced manufacturing capabilities in Canada for the benefit of Canadians.

A National I	Force as an Enabler of Transforma	tion and Growth in Advanced Ma	anufacturing		
	orative Technology Leadership proj anced technologies and their adop				
	Unique Valu	e Proposition			
Focus on Transformative Solutio	ns for Manufacturing - Industry-Led		s - Collaboration - Results Driven		
	Values & Leade	rship Behaviours			
Re	espect - Trust - Commitment - Innov	vation - Collaboration - Accountabi	lity		
	•	olders			
Manufacturers, Researchers, & Technology Providers	Ecosystem Partners	Workforce	NGen Funders & Employees		
	Organizati	ional Goals			
A Driver of Growth	A Creator of Networks	A Catalyst for Skills Development	A Financially Sustainable Business Outperforming Expectations		
	Strategies & T	argets to 2028			
- Support and funding for collaborative and transformative Technology Leadership projects leading to solutions that drive business growth, strengthen Canada's advanced manufacturing sector, and contribute to environmental sustainability, supply chain resilience, and other global societal benefits - Commercialization support: IP and commercialization plans; promotion; connections with partners, customers, suppliers; transformation management roadmaps; access to funding	- Initiatives that define strategic opportunities for Canada, connect and strengthen collaboration among stakeholders, strengthen ecosystem capacity, and improve access to ecosystem resources - Network of advanced manufacturing clusters across Canada and internationally enabling innovation partnerships, business connections, shared expertise, joint programs and initiatives - International promotion of ecosystem capabilities to position Canada as a magnet for talent and investment	- Initiatives that attract young people and under-represented groups into careers in advanced manufacturing - Roadmaps and tools that help businesses identify skills requirements and workers to transition into and between skilled jobs - Collaborative initiatives that enhance access to training and skills development in advanced manufacturing	- An engaged team of experts focused on customer value and operational excellence and pursuing career objectives in a respectful, equitable, diverse, and inclusive work environment - Compliant and responsible stewardship of investments in high-impact projects and ecosystem initiatives - Revenue growth through collaborative funding partnerships - Best-in-class governance and management practices - Continuous improvement based on Lean management principles		
- \$1.3 billion in total innovation investments - Industry investments at least 1.5X NGen funding - \$15 billion in new sales and IP licensing revenues - 15,000 direct new jobs - 5,000 companies participating in NGen-led initiative	- 45 advanced manufacturing clusters working together and supported by NGen - 50 public and private sector partners working with NGen to support Technology Leadership projects and Ecosystem Development Initiatives - Recognition as Canada's leading advanced manufacturing connector	- 3,000 individuals registered in NGen-led skills training and placement programs, including 2,000 from equity-seeking groups - 1 million students engaged in career development initiatives - 8,000 students from equity-seeking groups enrolled in advanced manufacturing education programs - 1,000 participants registered in Transformation Leadership program	- 90% employee engagement rating - Net Promoter Scores - World Class (>80) for projects and Exceptional (>50) for ecosystem programs - Revenue growth and operational efficiency improvements sufficient to cover more than \$15 million in operating expenses - Clean financial audits - No compliance issues		
Strategic Priorities for 2024-2025					
- Commit \$40 million in funding for GIC II and PCAIS projects - Grow project co-investment opportunities - Continue to support the commercialization of NGenfunded projects and leadingedge solutions developed by our members	- Provide strategic insights to members and public officials - Deepen connections among innovation and supply chain partners - Expand and support cluster network - Facilitate Canada's industrial presence at key international trade shows, and particularly at Hannover Messe in 2024 and 2025	- Expand Careers of the Future and advanced manufacturing education initiatives - Increase participation in NGen's Transformation Leadership and skills development initiatives - Increase engagement of equity-seeking groups in workforce development initiatives	- 90% employee engagement rating - Net Promoter Scores of 75 for projects and 50 for ecosystem programs - Raise \$25 million in additional revenues to enhance financial sustainability - Clean financial audit - No compliance violations		

#### **STRATEGIC PRIORITIES FOR 2024-2025**

NGen's priorities for 2024-2025 reflect these objectives and build on our progress to date.

Our top priority is to take steps that will ensure NGen is able to operate as a financially sustainable business up to and beyond 2028. To that end, in 2024-2025 we will aim to:

- Develop new partnerships with public and private funders.
- Take a balanced approach to managing the funds that are currently available to us in a way that will provide a significant amount of financial support for launching new Technology Leadership projects over the year ahead and at the same time allow us sufficient opportunity to leverage co-investments with other funders.
- Develop a suite of NGen services based on the Ecosystem investments we are making, that can be commercialized in order to establish ongoing revenue streams.
- Enhance business excellence by undertaking initiatives that deliver more value to NGen members while continuously improving the efficiency of our processes.

Our operating priorities in 2024-2025 will be to:

- 1. Approve \$40 million in Technology Leadership project investments from our Global Innovation Clusters (GIC) and Pan Canadian Al Strategy (PCAIS) funding programs. We will focus particularly on projects involving:
- Innovation challenges in the Electric Vehicle value chain;
- Green solutions supporting decarbonization and circular manufacturing;
- Opportunities to accelerate homebuilding through applications of advanced manufacturing processes with sustainable materials; and
- Commercialization of Artificial Intelligence applications in manufacturing.
- 2. Continue to support the commercialization of NGen-funded projects and leading-edge solutions developed by our members.
- 3. Take the lead on Strategic Ecosystem Initiatives that promote Canada's advanced manufacturing capabilities across Canada and internationally; build connections and

collaboration across Canada's advanced manufacturing sector; attract more young people into advanced manufacturing careers; develop a more highly skilled, equitable, diverse, and inclusive advanced manufacturing workforce; and help manufacturers manage business and technology transformation including their transformation to net-zero facilities.

4. Facilitate Canada's industrial presence and promote our advanced manufacturing capabilities at key international trade shows, and particularly at Hannover Messe in 2024 and 2025.

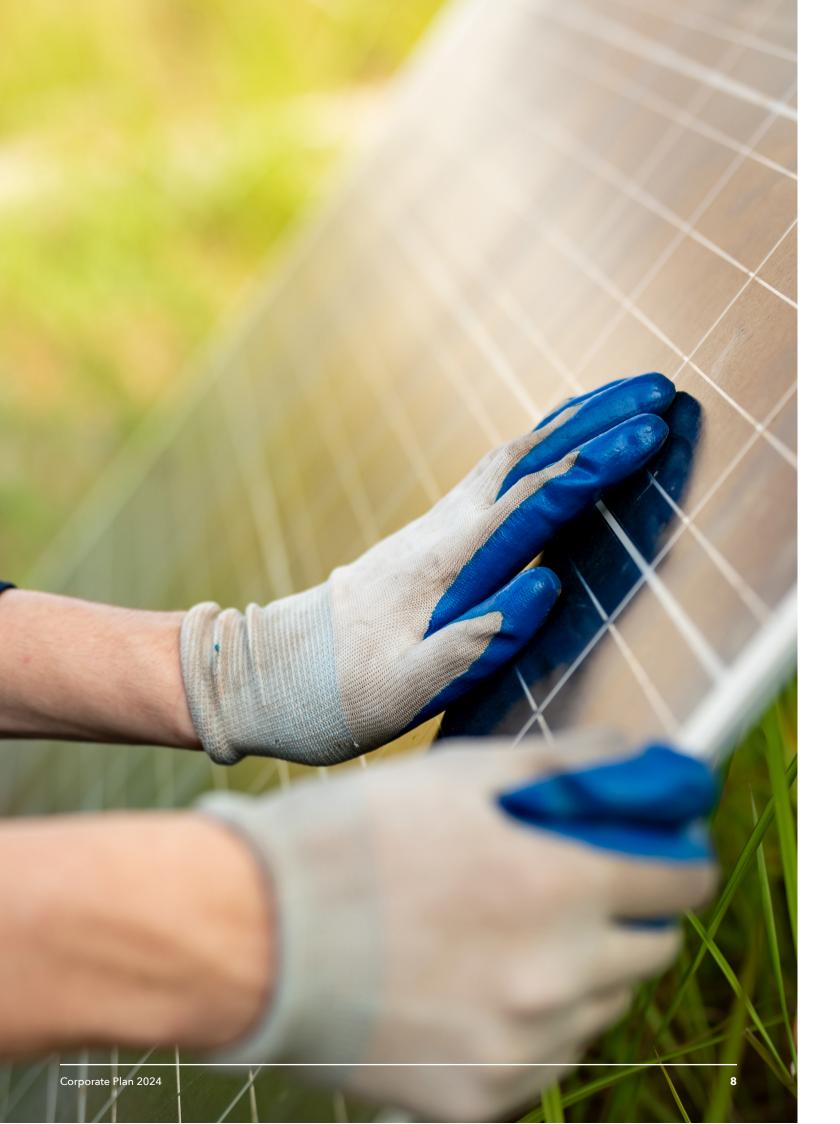
### BUILDING A FINANCIALLY SUSTAINABLE BUSINESS

NGen's long-term growth plan is based on our vision of playing a critical role in enabling innovation, industrial transformation, and economic growth in Canada well into the future. The strategic challenges and opportunities facing Canada's advanced manufacturing sector will not end in 2028 which is the date that our current funding from the Global Innovation Clusters program terminates. In fact, the need to facilitate the transformation of manufacturing in Canada into a sector that is globally competitive, highly responsive to changing customer requirements, resilient in the face of supply chain risks, digitally enabled, and capable of addressing major challenges like climate change, environmental sustainability, health care, as well as food, water, and housing insecurity is likely to be more pressing than ever.

Since 2018, Global Innovation Clusters funding has provided the seed capital that has allowed NGen to grow from an experimental start-up, through our scale-up phase as we invested in Technology Leadership projects and Ecosystem initiatives, and now to a fully fledged business concern that can leverage our achievements and capabilities to generate revenue from a variety of public and private sources to sustain our mission in the long-term.

NGen has demonstrated that an industry-led model focusing on strengthening collaboration across Canada's advanced manufacturing ecosystem works. So far, we have built a network of more than 7,000 members and 21 advanced manufacturing clusters that fosters innovation partnerships and creates new business opportunities through shared risks and benefits. We have a proven track record of being able to deploy funding rapidly into high quality impactful projects. Our focus on integrating

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technologies into innovative solutions that can be readily adopted and managed by industry is key to their commercial success. With sales revenue from our projects currently running 32x the amount we have invested in them, NGen has been able to achieve returns that are highly attractive for private investors and public funders alike.

Our well-proven and audited governance and operational processes for project development, facilitating collaborative partnerships, independent project selection and approval, claims management, project monitoring, and IP and commercialization strategy support not only provide assurance of NGen's operational excellence but create opportunities to deliver value through new revenue-generating services as well.

## In 2024-2025 NGen will build on our achievements to create the basis for a financially sustainable business up to and beyond 2028.

To that end, we will aim to:

- Develop new partnerships with public and private funders to secure additional sources of revenue that will allow NGen to enhance our support for Technology Leadership projects and Ecosystem initiatives while sustaining our operating requirements.
- Take a balanced approach to managing the funds that are currently available to us in a way that will provide a significant amount of financial support for launching new Technology Leadership projects over the year ahead and at the same time allow us sufficient opportunity to leverage co-investments with other funders.
- Develop a suite of NGen services based on the Ecosystem investments we are making, together with our capabilities in project and partnership development, IP and commercialization support, and access to funding and supporting services, that can be commercialized in order to establish ongoing revenue streams.
- Enhance business excellence by undertaking initiatives that deliver more value to NGen members while continuously improving the efficiency of our processes to reduce our operating costs.

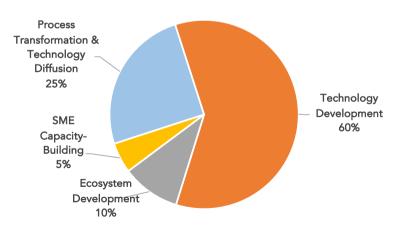
Developing new revenue streams will allow NGen to continue to support the transformative Technology Leadership projects and Strategic Ecosystem initiatives that are intrinsic to our mission.

### DRIVING GROWTH: TECHNOLOGY LEADERSHIP PROJECTS

NGen supports the development, successful completion, and subsequent commercialization of industry-led Technology Leadership projects that integrate Canadian research, technology, and manufacturing capabilities to develop innovative advanced manufacturing solutions that can be implemented at scale by industry and commercialized widely in global supply chains. All Technology Leadership projects are required to meet strategic eligibility criteria established by NGen's Board of Directors. They must be:

- Transformative building world-leading advanced manufacturing capabilities in Canada that enhance the competitiveness of Canada's advanced manufacturing ecosystem.
- Applied supporting the development, scaleup, and adoption of advanced manufacturing solutions with significant near-term commercial potential.
- **Collaborative** enabling capabilities that no individual company can achieve on its own.
- Enduring contributing know-how and resources that strengthen Canada's advanced manufacturing ecosystem.

### TOTAL PHASE | PROJECT FUNDING ALLOCATIONS TOTAL = \$215 MILLION

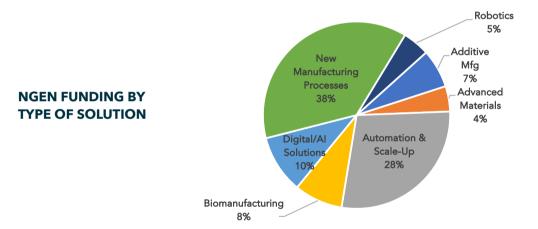


The initial allocation (Phase I) of Global Innovation Clusters (GIC) funding enabled NGen to co-invest \$215 million in:

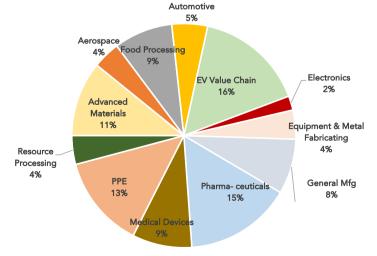
- 1. High Potential Technology Development projects that develop and scale new manufacturing processes with the potential to give Canadian manufacturers a significant competitive advantage in world markets.
- 2. Ground-Breaking Process Transformation and Technology Diffusion projects that involve the adoption of advanced technologies to transform existing manufacturing processes in critical sectors of Canadian manufacturing.
- 3. Industry-led Ecosystem Development projects that enhance education and training, research and testbed infrastructure, and scale-up supports for Canada's advanced manufacturing ecosystem, particularly for SMEs.
- 4. SME Capacity Building projects that support smaller-scale pilots, technology and commercialization feasibility studies, and cluster-building activities.

We focused on projects that:

- Filled critical supply chain gaps in equipping Canada's health care system with test kits, medical devices, disinfection systems, and personal protective equipment to protect Canadians against the COVID pandemic.
- Strengthened the competitiveness of Canada's Electric Vehicle value chain.
- Developed and implemented new advanced manufacturing solutions in fields like advanced materials and additive manufacturing, automation and robotics, biomanufacturing, digital and Artificial Intelligence, and other multi-technology manufacturing processes.
- Added to Canada's scale-up infrastructure for environmental and life sciences biomanufacturing and electric battery production.



NGEN FUNDING BY SECTOR OF APPLICATION



#### A. COMPLETION OF PHASE I PROJECTS

One of the priorities in NGen's Corporate Plan for 2023-2024 was the completion of all projects supported by funding approved prior to 2023 from the Global Innovation Clusters Program (Phase I funding)

All Phase I projects were completed and closed out by the end of January 2024. The 165 projects supported by Phase I GIC funding have delivered impressive results to date.

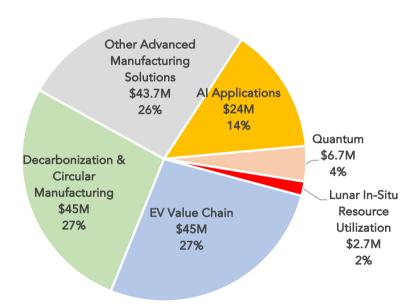
Project Engagement					
Number of Phase I projects	165				
Total number of project partners	681				
Number of industry partners	370				
Number of SME partners	328 (89%)				
Number of research partners	311				
Number of students	203				
Number of projects with interprovincial collaboration	52				
Economic Impacts (January 31st, 2023)					
NGen Investment	\$215 million				
Total Innovation Investment	\$525 million				
Additional Investment per dollar of NGen funding	\$1.44				
Revenue generated from sales and IP licensing fees	\$7 billion				
Sales per dollar of NGen investment	32X				
Federal tax return per dollar of NGen investment	4.8X				
New companies created	55				
Direct jobs created	3,449				
Direct and indirect jobs expected to be created by 2028	32,749				
IP Commercialization					
IP strategies developed	151				
Background IP assets contributed to projects	741				
Instances of background IP shared with project partners	515				
Foreground IP assets created by projects	745				
Number of IP rights created	1,617				
IP rights available in IP Registry for licensing to NGen members	203				
Number of post-project licenses granted	433				
Ecosystem Impacts					
Percent of projects with positive environmental impact	75%				
Percent of projects resulting in GHG emission reductions	60%				
Percent of projects contributing to supply chain resilience	52%				
Percent of projects contributing to improved health care	28%				

#### **B. CURRENT PROJECT FUNDING STREAMS**

Thanks to the acquisition of additional (Phase II) funding from the Global Innovation Clusters (GIC) program, Pan-Canadian AI Strategy (PCAIS), National Quantum Strategy (NQS), and Canadian Space Agency (CSA), NGen is now supporting and investing in Technology Leadership projects that address:

- Innovation challenges in the Electric Vehicle value chain.
- Scale-up and demonstration of de-carbonization and circular solutions in manufacturing.
- Other leading-edge advanced manufacturing solutions in fields like aerospace, electronics, advanced manufacturing systems, medical devices, biomanufacturing, robotics and customized automation.
- Commercialization of Artificial Intelligence applications in manufacturing.
- Applications of Quantum technologies in manufacturing and manufacturing for Quantum.
- New technological solutions for lunar in-situ resource utilization that can be repurposed in industrial applications on earth.

### CURRENT PROJECT FUNDING ALLOCATIONS TOTAL = \$167.1 MILLION



In NGen's Corporate Plan for 2023-2024, we undertook to launch funding for Technology Leadership projects under Phase II of the Global Innovation Clusters (GIC) program, the Pan Canadian AI Strategy (PCAIS), and National Quantum Strategy (NQS). NGen was also awarded an additional \$1.5 million from the Canadian Space Agency in 2023, of which \$1.35 million has been made available to fund projects that will develop innovative technologies for in-situ resource utilization on the moon which can then be repurposed and commercialized in mining, mineral processing, and advanced manufacturing applications on earth. These projects will be part of our Moonshot for Mining, Minerals, and Manufacturing (M4M3) initiative. NGen will match CSA funding from our advanced manufacturing project stream.

By the end of January 2024, NGen had approved investments amounting to \$70.7 million in 35 projects under our new Technology Leadership project streams. Twenty-seven of those projects were contracted and underway.



Project Stream	Number of Approved Projects	Number of Contracted Projects	Industry Partners	SME Partners	NGen Funding	Total Estimated Investment
GIC Phase II	22	15	59	50	\$49.6 million	\$134.6 million
- Advanced Manufacturing	17	11	48	41	\$38.3 million	\$103.9 million
- EV Value Chain	5	0	11	9	\$11.3 million	\$30.7 million
PCAIS	12	12	31	24	\$19.1 million	\$55.1 million
Quantum	1	0	2	2	\$2.0 million	\$5.1 million
Total	35	27	92	76	\$70.7 million	\$194.8 million

We intend to approve investments for all National Quantum Strategy and M4M3 projects by the end of March 2024 resulting in an additional commitment \$6.9 million in NGen funding.

It is a priority for NGen to fully allocate project funding available from the Pan Canadian AI Strategy (PCAIS) program and at least \$84 million from the Global Innovation Clusters (GIC) program by the end of March 2025.

That means that NGen will approve \$40 million in investments from our currently available funds in 2024-2025. We will aim to commit \$5 million from the PCAIS program and \$35 million from our Phase II GIC funding over the course of the year. Our main focus will be on projects involving:

- Innovation challenges in the Electric Vehicle value chain.
- Green solutions leading supporting decarbonization and circular manufacturing.
- Opportunities to accelerate homebuilding through applications of advanced manufacturing processes with sustainable materials.
- Commercialization of Artificial Intelligence applications in manufacturing.

## C. METAL AND ENGINEERED PLASTICS ADDITIVE MANUFACTURING INDUSTRIAL DEMONSTRATION PROGRAM

NGen continued to work with NRC-IRAP in 2023-2024 in support of its Additive Manufacturing Industrial Demonstration Program. NGen received \$500,000 in funding from IRAP to carry out program activities over the past year. We allocated \$400,000 of that amount to supporting additive manufacturing feasibility studies, testing, and demonstration projects.

The objective of the program is to reinforce and di-

versify Canada's additive manufacturing supply chain, increase the awareness and confidence of smaller manufacturers applying additive manufacturing and new materials for specific tooling and production applications, and provide business development opportunities for materials suppliers and additive services providers.

NGen partnered with NRC-IRAP's industry technology advisors across Canada to identify and engage SMEs interested in undertaking a feasibility study of metal or engineering grade plastic additive manufacturing for their R&D or production needs. We also identified and engaged larger manufacturers (Original Equipment Manufacturers) and their suppliers in projects to help create sustainable additive manufacturing supply chains in Canada's manufacturing sector, particularly in aerospace and automotive. Suppliers of raw materials and services companies were selected and contracted to carry out additive manufacturing and post-processing of test coupons and/or small parts as required to support selected projects. NGen also supported approved projects by providing feedback and coordination between companies and contracted service providers to ensure project success.

Our target for the past year has been to engage 70 companies including 11 OEMs in additive manufacturing projects. By the end of December 2023, we had allocated just over \$300,000 to support 47 projects including 50 companies and 11 larger companies. We are on track to fund 70 additive manufacturing projects by the end of March 2024.

NGen has secured an additional \$400,000 from NRC-IRAP to continue our Metal and Engineered Plastics Additive Manufacturing Industrial Demonstration Program in 2024-2025.

We will aim to involve 50 companies including ten OEMs in new additive demonstration projects over the course of the year.

#### STRATEGIC ECOSYSTEM INITIATIVES

#### A. STRATEGIC OBJECTIVES 2023-2028

NGen has allocated a total of \$25.75 million from our current funding programs (\$22 million from Phase II GIC, \$3.75 million from PCAIS), to support Strategic Ecosystem initiatives between 2023 and 2028.

Using that funding, we are aiming to:

- Facilitate the successful commercialization of advanced manufacturing solutions developed by NGen members, and especially those arising from our Technology Leadership projects, within Canada as well as in international markets and supply chains. Our goal is to help generate at least \$15 billion in new advanced manufacturing sales and IP licensing revenues by 2028.
- Develop strategic opportunity roadmaps for advanced manufacturing in Canada based on industry and technology trend analysis and innovation needs assessments of larger companies leading Canadian supply chains. The roadmaps will identify innovation and commercialization opportunities for Canadian advanced technology and manufacturing companies, with a priority focus on fighting climate change, improving environmental sustainability, and strengthening Canadian advanced manufacturing value chains and supply chain resiliency.
- Enhance connections and deepen collaboration across Canada's advanced manufacturing ecosystem. Our goal is to help NGen members quickly identify advanced manufacturing capabilities and potential business leads across more than 10,000 Canadian businesses and supporting organizations by 2028.
- Expand connections and deepen collaboration among the advanced manufacturing clusters that are part of NGen's cross-Canada cluster network, providing opportunities for the clusters to build on each others capabilities and provide their members tools to improve business performance through collaboration, talent development, and technology development, adoption, and commercialization. NGen supported the development and growth of 17 advanced manufacturing clusters during Phase I of GIC funding. We aim to increase the number of clusters in our network to 45 by 2028.
- Support transformation management on the part of SMEs looking to develop, protect, and commer-

cialize IP, adopt advanced manufacturing technologies, or develop their technology solutions for business growth. NGen will scale up delivery of our IP advisory service, our educational workshops focusing on strategic issues, opportunities, and critical technologies for advanced manufacturing in Canada, as well as delivery of our Transformation Leadership Program (TLP). TLP is designed to help manufacturing executives manage technologies more productively, transform their business to capitalize on changing market conditions, and build more resilient supply chains. We have added TLP modules to help manufacturers transform their processes and facilities to net-zero and build more circular systems of materials re-use and recycling. Our goal is to have 1,000 registrants in TLP by 2028.

- Help build a more equitable, diverse, inclusive, and highly-skilled advanced manufacturing workforce by further developing NGen's CareersoftheFuture.ca initiative aimed at attracting young people from diverse backgrounds into careers in advanced manufacturing and expanding our Indigenous advanced manufacturing education and skills development programs in partnership with NGen members, the Martin Family Initiative, and the Indigenous Manufacturing and Suppliers cluster that NGen helped establish. Our goal is to engage over one million young people in NGenled career development initiatives and enrol at least 8,000 Indigenous students in manufacturing entrepreneurship and financial literacy courses in over 100 schools across Canada by 2028.
- Enhance NGen's existing workforce development programs. We will expand our open-source online education program (AmpUp) to include more modules on energy management, net-zero processes, circular manufacturing, advanced technologies, and digital transformation. NGen will also continue to partner with educators and other skills development organizations to develop tools enabling manufacturers to conduct customized assessments of their skills requirements, support advanced manufacturing workforce training, and facilitate placements for workers in advanced manufacturing, especially those from equity-seeking groups. Our goal by 2028 is to engage 3,000 individuals in NGen-led training and placement programs, including 2,000 from equity-seeking groups and newly arrived immigrants.
- Promote NGen's role in strengthening Canada's advanced manufacturing ecosystem across Canada and on a global stage.

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#### **B. COMMERCIALIZATION INITIATIVES**

#### **National Force Driver of Growth Creator of Networks**

In NGen's 2023-2024 Corporate Plan we committed to work with project partners, and NGen members generally, to facilitate the successful commercialization of their advanced manufacturing solutions within Canada, as well as in international markets and supply chains.

#### We planned to:

- Conduct a commercialization needs assessment of our project partners.
- Conduct ecosystem gap analyses and innovation needs assessments of larger manufacturers operating or looking to invest in Canada and facilitate introductions to our project partners.
- Convene a conference for Phase I project partners and other ecosystem partners to showcase project outcomes and technology use cases.
- Launch an online Solutions Centre to promote the capabilities of project partners and other NGen members to showcase solutions and advanced manufacturing use cases.
- Facilitate industry participation and promote Canadian capabilities at major international trade shows.
- Increase and promote Intellectual Property assets available for licensing to NGen members.
- Work with government partners to identify and remove regulatory barriers to commercializing solutions arising from our projects.

All industry partners in completed projects were surveyed at the end of 2023 with a view to identifying how NGen could assist them in commercializing the solutions developed in their projects. They have told us that NGen could play a valuable role primarily in facilitating:

- Access to post-project funding for scale-up and commercialization.
- Development of market or updated IP commercialization plans.
- Introductions to potential customers, suppliers, and/or innovation partners in Canada and interna-

tionally.

- Access to public procurement.
- Opportunities to showcase and promote solutions in Canada and internationally.
- Connections to supporting commercialization and export development services.
- Access to skilled personnel.

Over the past year we commissioned strategic opportunity and supplier development assessments for battery manufacturing, small modular reactors, hydrogen infrastructure, and decarbonization by large industrial emitters

NGen's N3 Summit will take place on February 8th. The event will showcase over 60 projects for an audience of more than 500 manufacturers, technology entrepreneurs, investors, and public officials.

NGen developed an Al-enabled matchmaking tool which will make an important contribution to Canada's advanced manufacturing ecosystem by assisting users searching for advanced manufacturing capabilities and solution use cases available across NGen's membership. PCAIS ecosystem funding will allow us to include Al use cases in the system to accelerate their application and commercialization in Canadian manufacturing.

NGen facilitated the participation of 33 exhibitors and 63 other delegates in major trade events in 2023, including:

- 17 exhibitors and 41 delegates at Hannover Messe, the world's largest advanced manufacturing trade show.
- 6 exhibitors and 14 delegates at Formnext, the world's largest trade event for additive manufacturing.
- 10 exhibitors at the Canadian Manufacturing Trade Show.
- 8 delegates at the UK Electric Vehicle show.

We also organized a cross-country roadshow to promote Canada's presence at Hannover Messe in 2024 and 2025 and recruit exhibitors and delegates to the fair. We partnered with Hannover Messe, Innovation, Science, and Economic Development and Global Affairs Canada, the German Canadian Chamber of Com-



merce, Deloitte, and several NGen members who had participated previously at the fair. The roadshow drew a business audience of more than 500 attendees.

NGen promoted Canada's advanced manufacturing capabilities in other international advanced manufacturing events as well, including Automatica/World of Photonics, Rapid and AM Berlin in the field of additive manufacturing, the Greener Manufacturing Show, Nanotech Japan, and the Asia Pacific Foundation's Canada in Asia Conference on Climate Solutions.

By the end of 2023, 203 IP rights were available in NGen's IP Registry for licensing to NGen members, 87 more than nine months earlier. In addition, 433 post-project licenses had been granted, an increase of 273 since the end of March last year.

With respect to the removal of regulatory barriers to commercialization and public procurement, NGen is participating as an active member of the national Community of Practice organized by the Supply Chain Advancement Network in Health (SCANH) based at the University of Windsor. The initiative focuses on building resilient supply chains for critical health care products in the event of future emergency situations such as another pandemic. NGen co-chairs the working group on supplier development which includes regional health authorities, health care practitioners, federal and provincial health care and procurement officials, NRC-IRAP, and Canadian manufacturers of medical devices, therapeutics, and personal protective equipment.

NGen will continue to support the commercialization of solutions arising from our Technology Leadership projects in 2024-2025.

In line with requirements identified by our project partners, we will work with them to:

- Identify additional funding and investment opportunities for scaling their solutions.
- Enhance their market or IP commercialization plans.
- Showcase and promote their solutions in Canada and internationally.
- Leverage our network of members, clusters, and international contacts to provide introductions to potential customers, suppliers, and/or innovation partners.

- Connect project partners with supporting commercialization, export development, and investment attraction services.
- Help them attract skilled personnel.
- Identity and reduce regulatory barriers and improve access to public procurement.

We will make it a priority to showcase Canada's advanced manufacturing capabilities at key international trade shows, and particularly at Hannover Messe in 2024 and 2025.

NGen's role in facilitating the participation of members in advanced manufacturing shows is an important means of showcasing Canadian capabilities on the international stage and is an objective for ecosystem funding under both our GIC and PCAIS contribution agreements.

NGen is working in partnership with Industry, Science, and Economic Development Canada, Global Affairs Canada, provincial governments, and other ecosystem partners to organize Canadian exhibition space in four halls at the Hannover Fair in April 2024, focusing on advanced automation and manufacturing systems, the Electric Vehicle value chain, digital and AI solutions, and hydrogen technologies. Our target is to recruit and provide business development opportunities for 75 exhibitors and 150 visitors attending Hannover Messe 2024. We will also work over the year ahead to achieve an even greater and more impressive Canadian presence in 2025, the year when Canada will be the partner country at the Hannover Fair.

NGen will also target other international trade events in 2024-2025 where we can facilitate the participation of NGen members as either exhibitors or visitors, including the Global Electric Vehicle Symposium and Exhibition (Seoul, April), the JSAE Expo (Nagoya, July 2024), Automate (Chicago, May 2024), Rapid (Additive Manufacturing, Anaheim, June 2024), the International Manufacturing Trade Show (Chicago, September 2024), and Formnext (Frankfurt, November 2024).

#### C. STRATEGIC INSIGHTS

#### **National Force Driver of Growth**

In 2023-2024, NGen undertook to provide advanced manufacturing insights for our members and the ecosystem at large by commissioning and publishing analyses of strategic innovation and commercialization opportunities, organizing webinars and podcasts on technology trends and NGen projects, and participat-

ing in advanced manufacturing conferences across Canada.

Over the year we have:

- Commissioned a competitiveness update for Canada's advanced manufacturing sector and five strategic opportunity roadmaps related to decarbonization priorities of large industrial emitters, sector-wide GHG emission reporting, small modular reactors, medical devices, and electric battery supply chains. We also published a report on potential technology and economic development opportunities arising from lunar in-situ mining which formed the basis of our Moonshot for Mining, Minerals, and Manufacturing initiative co-funded with the Canadian Space Agency.
- Organized five webinars with panels of industry experts discussing the subjects of smart manufacturing, biomanufacturing, Al applications in manufacturing, and circular manufacturing. (We co-hosted one of the two webinars on circular manufacturing with It's OWL, an advanced manufacturing cluster based in OstWestfalenLippe Germany).
- Hosted seven podcasts with project partners to explore emerging trends in their fields of expertise.
- Reported in social media and NGen's Insights webpage on six international trade shows at Hannover Messe, Formnext, The Greener Manufacturing Show, AM Berlin, Automatica/World of Photonics, and Nanotech Japan.
- Participated as speakers in 124 industry conferences across the country.

NGen will continue to provide strategic insights on advanced manufacturing for our members as well as for policy makers and other ecosystem partners in 2024-2025.

We plan to publish the strategic opportunity assessments we commissioned over the past year and to look for new fields to explore. We will continue with our program of technology webinars and project podcasts discussing emerging trends and technologies in advanced manufacturing with the goal of doubling social media impressions in 2024-2025. We will post social media reports and podcasts for the major trade events we attend over the course of the year, beginning with Hannover Messe. NGen will also continue to participate as speakers in industry events across

Canada and internationally highlighting trends in advanced manufacturing and promoting NGen activities, projects, and services.

#### D. CONNECTIONS AND COLLABORATION

#### National Force Creator of Networks Driver of Growth

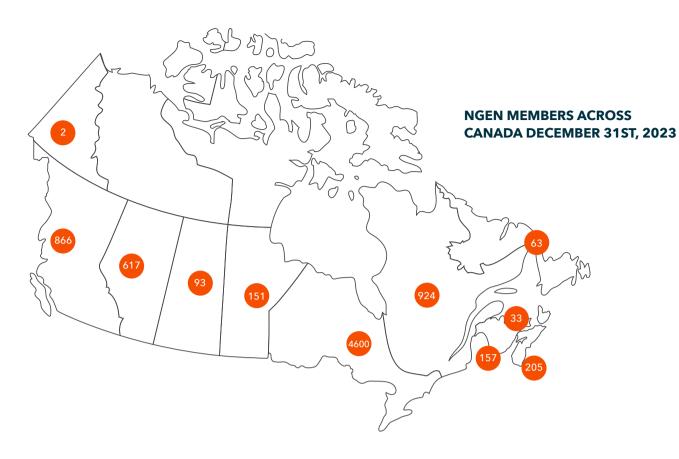
NGen creates opportunities for innovation partnerships, supply chain development, and business growth through connections that we build with and among our members. Our membership is composed of manufacturers, technology providers, supporting ecosystem organizations, as well as individual experts and researchers that contribute to Canada's advanced manufacturing sector. NGen does not charge a fee for membership because we want to engage as many participants in our activities as possible across Canada's advanced manufacturing ecosystem. However, we do ask members to register in our database identifying the contributions they make to Canada's advanced manufacturing ecosystem. They are then eligible to apply for and participate in Technology Leadership projects, receive information updates from NGen, and list information about their solutions and advanced manufacturing capabilities on our digital collaboration platforms.

In our Corporate Plan for 2023-2024:

- NGen aimed to increase our membership to 7,000. At the end of December 2023, our membership had grown to 7,298, including 3,203 corporate members and 5,805 individual experts and researchers. This represents a 1,905 increase since March of last year. NGen now counts members in every province and one territory across Canada, along with 163 members based outside the country.
- We said that we would host three collaboration events to inform members about eligibility requirements following our calls for Technology Leadership project proposals and help them identify potential project partners. Over the course of the year, NGen organized 12 collaboration workshops related to advanced manufacturing, the EV value chain, Quantum applications, and our Moonshot for Mining, Minerals, and Manufacturing project streams. The workshops, which were presented in English and in French, involved 32 ecosystem partner organizations and more than 1,150 participants.
- We planned to launch an Al-enabled matchmaking platform with the capabilities of 4,000 compa-

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nies and other ecosystem partners searchable on the site. A prototype version was unveiled at Hannover Messe in April. By the end of March 2024 there will be more than 4,000 organizations listed on the platform which will be made available to the public on our website.

NGen also undertook to expand and deepen our engagement with ecosystem partners, including with other Global Innovation Clusters as well as with other advanced manufacturing clusters, across Canada. NGen now has formal working agreements with 53 ecosystem partners across Canada facilitating joint efforts to support Technology Leadership projects, promote and commercialize member capabilities, attract young people and equity-seeking groups into advanced manufacturing, and support skills and workforce development. Over the past year we partnered with the Digital Technology Cluster to launch and co-fund project investments under the National Quantum Strategy. We participated in joint Cluster events like Collision in Toronto and Scale Al Cluster's All IN to promote our projects and the Global Innovation Clusters program. NGen also expanded our advanced manufacturing cluster network as described below.

NGen plans to expand connections and deepen collaboration further in 2024-2025, both across Canada and internationally.

Over the course of the year, we aim to:

- Grow our membership to more than 9,000 organizations and individuals.
- Organize collaboration events involving over 500 members.
- Expand the number of organizations on NGen's online capability matchmaking platform to over 5,000 and develop new collaboration services based on the site.
- Grow our cross-Canada network of advanced manufacturing clusters.

### E. ADVANCED MANUFACTURING CLUSTER NETWORK

National Force Creator of Networks Driver of Growth Catalyst for Skills Development

As an important element of NGen's strategy to strengthen and connect Canada's advanced manufacturing ecosystem, we have established a Cluster Accelerator program with funding allocated to support the activities of, and deepen collaboration among, advanced manufacturing clusters across Canada. Clusters supported by the program are members of NGenCAN, a cross-Canada advanced manufacturing network that aims to accelerate the development,

adoption, and commercialization of advanced technologies in manufacturing, along with the development of the workforce skills and management capabilities required for successful innovation and business growth.

Around the world clusters have been demonstrated to accelerate innovation, improve economic competitiveness, and drive business growth.

- Organizations that are members of clusters are more innovative, creating solutions to solve common challenges.
- Clusters offer the opportunity to take solutions from one industry and apply it to a different industry sector challenge.
- Clusters give organizations a **competitive edge** domestically and globally.
- Clusters attract foreign investments to and enhance innovation infrastructure in Canadian communities.
- Clusters attract, inspire, and build skilled workforce for the future.
- Clusters create new innovative economies.

The NGenCAN network is a cluster of clusters and is intended to supercharge Canada's advanced manufacturing ecosystem by:

- Connecting advanced manufacturing clusters and their members across Canada and internationally.
- Amplifying the voice, expanding the reach, and enhancing the value that individual advanced manufacturing clusters provide their members.
- Promoting and showcasing cluster activities.
- Leveraging cluster capabilities through a collaborative network of shared best practices, industry insights, tools, and services.
- Promoting Canada's advanced manufacturing ecosystem as a magnet for international talent and investment attraction.

In our Corporate Plan for 2023-2024, NGen undertook to:

Expand NGenCAN membership from 17 to 24

- clusters. As of December 2023, the network consisted of 21 advanced manufacturing clusters.
- Establish a NGenCAN action plan for the year. The plan was approved at an in-person networking conference in April.
- Facilitate the participation of clusters and cluster members in key conferences and trade shows in Canada and internationally. Over the past year NGen has supported 15 clusters participating in NGen's N3 project showcase and Talent Goes North event, as well as in the Canadian Robotics Council conference, Canadian Semiconductor Symposium, Canadian Manufacturing Trade Show, Hannover Messe, the UK EV and Battery Show, and Nanotech Japan.
- Build online connections and business opportunities for cluster members. NGen's Al-enabled capability matchmaker platform contains descriptions and use cases for over 1,000 cluster members.
- Launch a cluster accelerator program for funding cluster development. The program will be launched by the end of March 2024 and will provide financial support for:
  - Start-up Projects which will support the development of new advanced manufacturing clusters with a shared goal of driving innovation and business growth within a collaborative framework.
  - Innovation Projects which will promote the development and/or adoption of advanced manufacturing technologies by cluster members.
  - Commercialization Projects which will scope out strategic opportunities for supplier and business development, support commercialization and export readiness of cluster members, and/or facilitate participation in international export or investment missions.
  - Sustainability Projects which will assist cluster members in improving environmental management, reducing GHG emissions, and/or strengthening domestic supply chain resilience.
  - Workforce and Management Enhancement Projects which will enhance the innovation management capabilities of cluster mem-

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bers, attract young people and equity-seeking groups into careers in advanced manufacturing, develop new skills training end employee placement initiatives, enhance diversity and inclusion in Canada's advanced manufacturing workforce, and/or position the cluster as a magnet for international talent attraction.

 Network Projects which will support collaborative initiatives among two or more clusters in pursuit of innovation, commercialization, sustainability, or workforce and management enhancement objectives.

NGen will continue to provide financial and networking support for advanced manufacturing clusters across Canada in 2024-2025.

Over the course of the year, we will aim to:

- Expand the NGenCAN network to 30 clusters.
- Launch 12 cluster projects as part of our Cluster Accelerator funding program.
- Facilitate the participation of 20 clusters in international conferences and trade shows, focusing particularly on Hannover Messe in 2024 and 2025.

#### F. TALENT ATTRACTION

#### **National Force Catalyst for Skills Development**

With over a quarter of Canada's advanced manufacturing workforce likely to retire over the next ten years, it is more important than ever to attract more young people, equity-deserving groups, and recent immigrants into careers in the sector.

In 2023-2024, NGen undertook to:

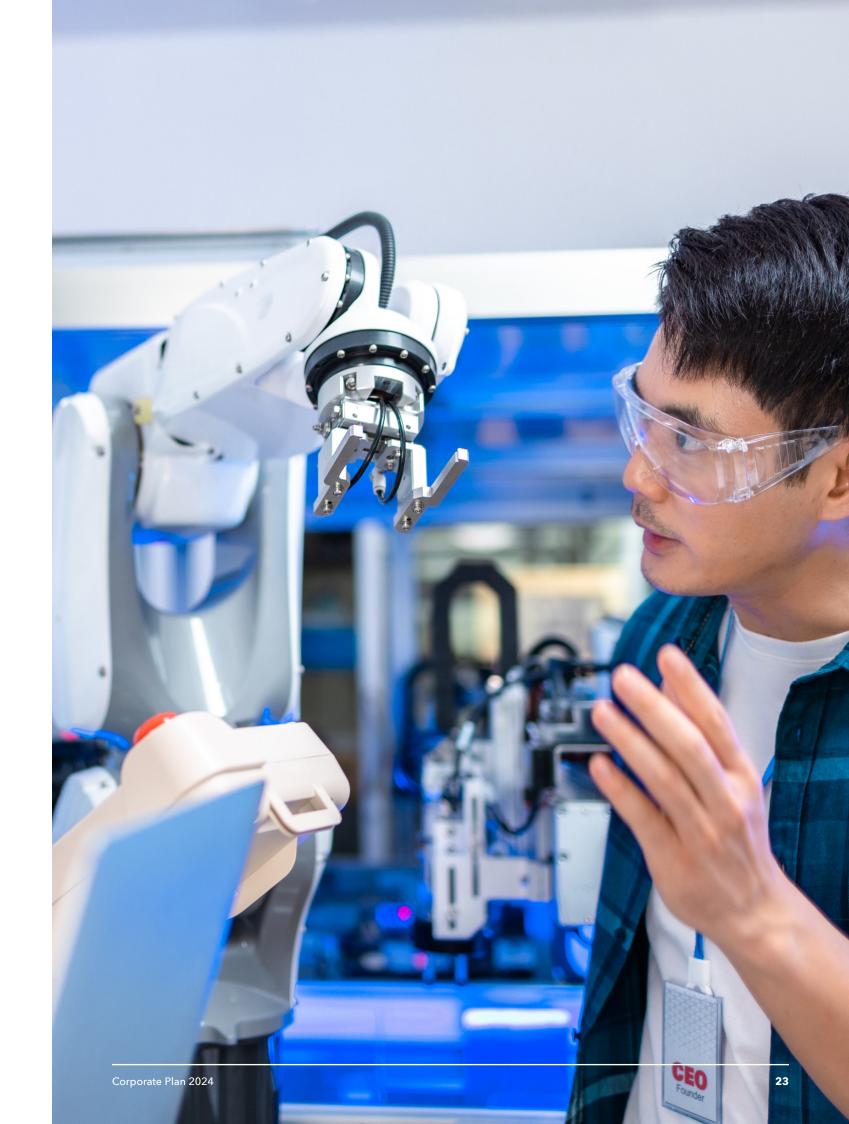
• Partner with other organizations to expand and enrich our Careers of the Future (COTF) initiative aimed at educating students about the career opportunities open to them in advanced manufacturing. We worked with the Student Commission of Canada to develop social media materials about advanced manufacturing that were shared with students and employers across the country as part of Canada's Take our Kids to Work initiative. We also partnered with Youth Culture to recruit more young ambassadors for advanced manufacturing and refresh our Careers of the Future website. By the end of December these initiatives had regis-

tered more than 450,000 engaged social media visits.

- Renew our funding support for the development and delivery of the Martin Family Initiative's manufacturing entrepreneurship and financial literacy curriculum for Indigenous students. We are on track to enrol more than 800 Indigenous students and double the number of schools using the course material by the end of March 2024.
- Develop partnerships with organizations dedicated to supporting equity-seeking groups in advanced manufacturing technologies. As part of our Future Ready initiative supported by funding from Employment and Social Development Canada (ESDC), NGen partnered with the Canadian Skills Training and Employment Coalition (CSTEC) to train and place 571 individuals (including 451 from equity-deserving groups) in new jobs in manufacturing. We also partnered with College Technology Access Centres across Canada to conduct assessments and certify trades skills for newly arrived immigrants to Canada. The first assessment event was held at Mohawk College in December. Eleven individuals from six countries were assessed and certified for welding skills. Three more assessment events will be held before the end of March 2024.
- Explore opportunities to attract international talent into Canada's advanced manufacturing sector. In February 2024 NGen will co-host a Talent Goes North event in partnership with Canada's consulate in Boston and the Canadian student association at the Massachusetts Institute of Technology. The event will allow NGen members to meet science, engineering, and business students from MIT, Harvard, Boston University, and Northeastern University with the objective of informing them about and attracting them to advanced manufacturing job opportunities in Canada.

In 2024-2025, NGen will continue to support initiatives to attract talent into Canada's advanced manufacturing sector.

We will partner with more organizations to educate students about career opportunities in manufacturing and look to increase engaged social media visits above 450,000 over the year ahead. We will support the Martin Family Initiative in rolling out manufacturing entrepreneurship and financial literacy courses to more schools and Indigenous students across northern Canada, targeting 1,200 students in the 2024-2025 school year. We will aim to organize more Talent



Goes North events and develop a program to involve students in Hannover Messe in 2025. And we will look for additional funding to support our job placement and trades certification programs for equity-seeking groups and recent immigrants in advanced manufacturing.

### G. TRANSFORMATION LEADERSHIP AND WORKFORCE DEVELOPMENT

#### **National Force Catalyst for Skills Development**

Thanks to funding from Employment and Social Development Canada (ESDC), NGen was able to fulfil our objectives in 2023-2024 of gaining a more in-depth understanding of skills requirements in advanced manufacturing, supporting customized skills training for manufacturers and their employees, and enhancing advanced manufacturing management practices.

ESDC support allowed us to launch our Future Ready program, in which we:

- Provided skills training and management development opportunities in both official languages to executives and employees via our AmpUp open-source digital training platform and Transformation Leadership Program (TLP) which aims to enhance the strategic leadership and management skills of manufacturing executives, providing them with a methodology and tools to develop a balanced roadmap for business transformation. Between April and December 2023, 72 companies enrolled in AmpUp training programs while 69 companies and 281 individuals enrolled in live TLP workshops. On-demand TLP podcasts in both official languages will be launched by the end of March 2024 with close to 1,000 companies already registered.
- Developed a just-in-time skills inventory system for Canadian manufacturers, beginning with five key high-turnover frontline positions.
- Commissioned research projects with partner organizations to investigate:
  - Current and future competencies in strategic sectors including auto parts, biomanufacturing, shipbuilding, aerospace, industrial and mining equipment, and food processing.
  - The impact and/or role technology (both product and manufacturing technology) may have in the participation of equity deserving groups.

- The impact of artificial intelligence (AI) on the manufacturing workplace and workforce.
- The skills requirements involved
- Launched a credentialing framework that will enable Canadian manufacturers to identify and recognize key skills that are transferrable regionally and across manufacturing sectors.
- Developed an Al-based system to support benchmarking and assessment of skills baselines, which will enable individuals to assess their skills development needs, companies to assess training requirements, and NGen to measure the impact of our interventions.

### NGen aims to build on these accomplishments in 2024-2025.

We will transform TLP into a fee for service program based on the podcasts we have developed and look for further funding to support companies and individuals enrolling in our AmpUp and in-person TLP courses. We will also look to deploy the skills assessment tools we have developed in the Future Ready program to assist manufacturers and employees identify training requirements.

### H. PROMOTING NGEN AND CANADA'S ADVANCED MANUFACTURING ECOSYSTEM

#### **National Force**

Getting the word out across Canada and internationally about the importance of advanced manufacturing in Canada, the outstanding and diverse capabilities of Canada's advanced manufacturing sector and workforce, and the work that NGen is doing to develop a world-class ecosystem is fundamental to achieving our strategic objectives.

In 2023-2024 NGen undertook to enhance our social media presence and our profile in Canada and internationally. Between March and December 2023, NGen's social media posts on LinkedIn and You Tube attracted 680,048 impressions. There were 69,002 engaged visits on NGen's website. We also had four editorials published and were quoted in 18 media interviews with a reach of over 29.5 million subscribers.

In addition to our participation at international trade shows, NGen has been highlighted over the past year at the World Manufacturing Forum, Canada's Investment Roadshow at Hannover Messe 2023, the Asia Pacific Foundation's Canada in Asia conference, as well as at the OECD which is using NGen as a model for its study about the impact of advanced manufacturing clusters on innovation and economic growth.

We aim to enhance our media and international presence further in 2024-2025, particularly focusing on the impacts of our Technology Leadership projects and leveraging Canada's presence at Hannover Messe in 2024 and 2025.

Our goal is to exceed 100,000 engaged website visits and one million social media impressions over the course of the coming year.

#### INTERNATIONAL STRATEGY

NGen's international engagement objectives are to:

- 1. Promote Canada as a world leader in green manufacturing and the strengths of Canada's advanced manufacturing ecosystem globally.
- 2. Attract advanced manufacturing talent and investment to Canada.
- 3. Assist our project partners commercialize their solutions in global value chains.
- 4. Help our members connect with innovation partners, suppliers, and potential customers in markets at the forefront of advanced manufacturing, particularly the USA, European Union, United Kingdom, Japan, Singapore, South Korea, and Taiwan.

NGen is working to enhance Canada's profile internationally as home to innovative advanced manufacturing solutions and green supplier of choice to the world. Our efforts in leading business delegations to key international trade shows for advanced manufacturing, especially Hannover Messe, are important in this respect. Our participation on the advisory board of the World Manufacturing Forum and at other international meetings helps highlight Canada's advanced manufacturing ecosystem and the unique solutions arising from our projects to a global audience. NGen also develops media assets and provide speakers for investment attraction events in important markets for advanced manufacturing in partnership with Industry, Science, and Economic Development Canada, Global Affairs Canada, Destination Canada, and Invest in Canada.

NGen aims to attract international investment into

Canada's advanced manufacturing ecosystem and potential customers for advanced manufacturing solutions developed in Canada. We are working with multinational manufacturing companies that are looking to identify suppliers or source leading-edge technologies particularly related to the EV value chain, industrial decarbonization and circular manufacturing, biomanufacturing, advanced automation and robotics.

We also aim to help attract international talent to Canada's advanced manufacturing ecosystem. To that end, NGen is partnering with colleges, universities, and interested members to develop an international recruitment campaign to attract international students to advanced manufacturing programs and job opportunities in Canada.

Our AI matchmaking platform and international cluster connections assist our members as well as companies outside Canada in identifying potential innovation partners, customers, suppliers, investment, and talent attraction opportunities globally.

In 2023-2024 NGen aimed to put greater emphasis on our international role as a Global Innovation Cluster. As highlighted above, we increased our involvement with international organizations and conferences, led delegations of Canadian companies to major advanced manufacturing trade shows, started to build formal relationships with international manufacturing clusters, and launched new initiatives to attract international talent and investment to Canada.

### We plan to expand NGen's global engagement in 2024-2025.

We will focus on:

- Enhancing and leveraging opportunities arising from increased Canadian participation at Hannover Messe and other international trade shows.
- Assisting project partners in developing international commercialization plans.
- Launching new initiatives to attract students to advanced manufacturing jobs in Canada.
- Connecting NGen members and project partners with organizations that can help them grow their business and export sales in international markets.
- Matching Canadian capabilities with international industrial investment and supplier development opportunities.

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#### INTELLECTUAL PROPERTY STRATEGY

NGen aims to maximize the commercial value, ecosystem impact, and the economic, environmental, and social benefits of intellectual property generated as a result of NGen investments, in Canada.

IP refers to intangible intellectual assets contributed to ("Background IP") or arising from ("Foreground IP") the projects and ecosystem development initiatives in which NGen invests. IP thus includes, but is not limited to, patents, trademarks, copyrights, industrial designs, software, algorithms, data, machine learning models, trade secrets, confidential information, and know-how.

NGen investments are determined according to the transformative and commercial potential of the foreground IP expected to be generated by individual projects, as well as the extent to which resulting commercial, ecosystem, economic, environmental, and other social benefits are expected to accrue within Canada. The objective of NGen investment is not the creation of IP itself, but the application of that IP to create value for Canadian businesses and for Canadians.

NGen maintains clear, transparent, and predictable IP ownership policies and licensing structures for the management of background IP applied in projects, treatment of foreground IP arising from projects, and processes by which NGen members can request and negotiate licenses to use foreground IP. Our policies, guidelines for treating IP contributed to and arising from projects, and collaboration agreement templates to assist project partners manage their IP relationships are posted on NGen's website along with calls for project proposals.

Our objective is to capture, retain, and maximize the value of project IP in Canada. To that end, project funding is contingent on demonstrating that the benefits of IP commercialization will accrue in Canada.

NGen works with project partners to help them assess their freedom to operate, develop strategies to recognize and protect IP assets arising in projects, and put together plans to commercialize IP assets. We encourage project partners to make IP arising from projects available for licensing by other NGen members. IP assets available for licensing are posted on our IP Registry.

There were no changes in NGen's IP strategy last year. However, we have made some changes in the way that we implement our IP strategy. We developed a template to help project participants structure their project's IP Plan and address salient issues related to IP management and commercialization. We also integrated NGen's public IP Registry with ISED's ExploreIP platform.

NGen published an IP Guide in 2023 providing insights on IP management in general and how it factors into project applications, contracting, and execution. We also hosted three webinars on IP management over the past year, two for NGen members looking to develop advanced manufacturing and EV projects, and one on the topic of trade secrets which was open to NGen members as well as to the public.

The following table summarizes the results of NGen's IP strategy across our entire project profile.

In 2024-2025 NGen will continue to work with project partners to develop IP and commercialization strategies and increase the number of IP assets on our IP Registry available for sharing and licensing by NGen members.

We do not foresee any modifications in NGen's IP strategy in 2024-2025.

Our goal for the year is to develop 200 IP strategies and have 250 IP assets posted on the Registry by the end of March 2025.

#### **DATA STRATEGY**

NGen's Data Strategy aims to maximize the value of the data collected by NGen for the benefit of Canada's advanced manufacturing ecosystem and to support the financial sustainability of NGen. Our strategy determines how we acquire, store, govern, manage, use, and share data to accomplish our mission, achieve our strategic objectives, create value for our members and clients, carry out our operations, and ensure our long-term business success. Data privacy is a priority. NGen's Data Strategy is posted on our website, as are our policies regarding:

- Privacy
- Data Use
- Use of Member Data.

Our strategy is based on leveraging data as a strategic asset - focusing on business results, using data as a competitive advantage for NGen and its members, and supporting NGen's strategic objectives. NGen has implemented robust operational, governance, and

	Results as of December 2023	Change from March 2023
IP Strategies developed for project partners	171	+ 22
Background IP assets contributed to projects	876	+ 147
Background IP assets being shared with project partners	632	+ 125
Foreground IP assets expected to be created	900	+ 174
IP Rights created	1,617	+ 883
IP assets available for sharing or licensing with other NGen members	203	+ 87
Post-project licenses granted to NGen members	433	+ 273
New companies created to commercialize IP and solutions arising in projects	55	+ 11

compliance processes to ensure data integrity, privacy, and security.

NGen's Data, Information Technology, and Cybersecurity team is responsible for developing, implementing, and overseeing the policies and procedures related to the governance and management of data contained in and transferred into, out of, and between third party platforms and NGen's corporate services IT stack. With respect to NGen's internal management systems, all project application processes and NGen programs are administered online.

NGen continuously works to harden cybersecurity protection for the data we manage. We undertake regular third-party audits of our cybersecurity systems. Cybersecurity awareness training is provided to NGen staff on a bi-weekly basis. NGen also runs regular workshops for NGen members and other industry participants on cybersecurity. NGen is a member of Canada's Cybersecurity Advisory Council (CSAC) and the Cybersecurity Working Group of the Canadian Centre for Cybersecurity (CCCS).

There were no changes in our data strategy in 2023-2024

In pursuit of our strategy last year NGen:

- Implemented a new online process for managing project information, including application intake, assessments, IP strategies, contracting, monitoring, and reporting that will help us consolidate data, improve project management efficiencies, and integrate project information into an enhanced CRM system.
- Developed an Al-enabled collaboration platform and solutions centre that will allow rapid identification of advanced manufacturing capabilities among NGen members and ecosystem partners.

- Hardened our cybersecurity defences. We raised our cybersecurity score by 10% in 2023, scoring 84% on MNP's cybersecurity preparedness assessment. We also developed and provided staff training on our Business Continuity Plan in the case of a ransomware attack.
- Engaged with 30 companies as part of a cybersecurity collective enabling them to share intelligence about cyber-threats and best practices in cyber-risk mitigation related to advanced manufacturing.
- Implemented an automated due diligence process for sanctions compliance.

In 2024-2025 NGen will develop new value-adding services from the information available in our automated matchmaker system, look at opportunities to simplify and drive efficiency improvements in our internal data management, continue to upgrade our cybersecurity defences, and enhance the cybersecurity services we offer NGen members.

We do not foresee any modifications in NGen's data strategy in 2024-2025.

#### **BUSINESS EXCELLENCE**

NGen is comitted to building a high-impact organization that is financially sustainable beyond 2028. To that end we aim to maintain:

- An engaged team of experts focused on customer value and operational excellence, pursuing career objectives in a respectful, equitable, diverse, and inclusive work environment.
- Compliant and responsible stewardship of investments in technology projects and ecosystem initiatives.

- Revenue growth through collaborative funding partnerships, sponsorships, and service fees.
- Best-in-class governance, operating, and financial management practices.
- Continuous improvement based on Lean management principles.

#### **A. REVENUE GROWTH**

In 2023 NGen developed a Business Growth Plan, with input from our Board of Directors, that sets out our strategy to increase revenue growth through new partnerships with public funders and private sector investors and the commercialization of new client services. We set a short-term goal to raise \$100 million in additional revenues, with \$15 million to cover operating expenses, by 2028. To achieve that target, we will look to:

- Leverage our current funding for Technology Leadership projects to raise co-investments in NGen projects.
- Raise additional funding for new innovation and workforce development initiatives.
- Leverage our current ecosystem funding to develop value-adding services that NGen members would be willing to pay for.

NGen was able to raise \$6.9 million in additional funding in 2023 from ESDC to expand our Future Ready program, the Canadian Space Agency for our Moonshot for Mining, Minerals, and Manufacturing initiative, and NRC-IRAP to continue our Additive Manufacturing Demonstration Program.

NGen aims to raise \$25 million in additional revenue from public and private sources in 2024-2025.

We will explore opportunities for new funding programs as well as co-investments from funding partners. We will also increase revenue from sponsorships and fees for NGen services.

#### **B. GOVERNANCE**

NGen is a not-for-profit corporation governed by an industry-led Board of Directors. NGen's Board operates according to the requirements of Canada's Not for Profit Corporations Act, the Competition Commissioner's Guidelines for Global Innovation Clusters, the provisions of NGen's Contribution Agreement with

the Global Innovation Clusters program, and a set of governance policies approved by the Board itself. NGen's Code of Conduct and governance policies are publicly available at https://www.ngen.ca/about/codes-of-conduct.

Our governance policies were updated in 2023 to strengthen NGen's Conflict of Interest guidelines and implement new Sanctions Compliance procedures.

NGen's governance policies are reviewed annually by the Board. Statements of compliance are received from our CEO at each Board meeting, and by the Director General of the GIC program and NGen's legal counsel at the first Board meeting of our financial year in the spring.

NGen's Board is assisted by four committees which report to the Board in carrying out its governance responsibilities: (i) The Executive Committee, composed of the Board Chair as well as the Chairs of our three other Board committees, (ii) Governance and Compliance Committee, (iii) Finance and Audit Committee, and (iv) Human Resources and Nominating Committee. Their roles and responsibilities are outlined in our Five-Year Strategic Plan.

Board and Committee meetings are scheduled quarterly according to a workplan approved by the Board at the beginning of each calendar year. Meeting dates for the coming year are agreed at the Board's fall meeting. The Corporate Plan for the coming fiscal year is approved during the first Board meeting of the year. NGen's performance is reviewed in the spring. Our Annual Report, Financial Statements, and any revisions of the Corporate Plan are approved in July. The Board reviews and, if necessary, updates NGen's Five-Year Strategy at its fall meeting. This workplan will be followed in 2024-2025.

NGen's Board currently consists of 15 directors who are representative of and experienced in a broad range of sectors, including automotive, aerospace, IT and digital technologies, electronics, defence, automation and robotics, solar and wind energy, materials and resource processing, and health care industries. Board members are also involved and expert in building capabilities in the EV value chain, industrial decarbonization and alternative energy, advanced materials, and supply chain management. Four observers also participate in our Board meetings. They include representatives from Innovation, Science, and Development Canada, the Federal Economic Development Agency for Southern Ontario, as well as college and university observers.



Currently, eight out of 15 NGen Board members are female, including our Chair. Seven are independent directors. Three of the four members of NGen's Executive Committee are female. Three directors are from SMEs, four from larger companies, and three from advanced manufacturing associations.

Succession planning for NGen's Board takes industry, academic, and regional representation into account, as well as requirements to maintain at least 50% female Board and Executive Committee membership and at least one-third independent directors. Board members may hold appointments for three-year terms. Recommendations for Board Chair, Committee Chair, and director and observer succession are made by the Human Resources and Nominating Committee of NGen's Board. Board members and observers are elected during NGen's annual Members' meeting which is held in the fall of the year. This process will be followed again in 2024-2025.

#### C. OPERATIONAL EXCELLENCE

In 2023-2024, NGen maintained our policies and procedures related to project funding and financial management. We did, however, made some other important changes in the way we operate in line with our Corporate Plan for the year:

- We strengthened our leadership role in identifying strategic opportunities for advanced manufacturing and industry transformation in Canada by engaging industry and ecosystem leaders in our Strategic Ecosystem initiatives and consultations with NGen members.
- We implemented new guidelines for the selection of Strategic Ecosystem initiatives and assigned responsibilities for developing and designing those initiatives to teams from across the organization to ensure we focus on strategic outcomes, provide support for project commercialization, and coordinate activities effectively.
- We focused more selectively on Technology
  Leadership projects and Ecosystem Development
  initiatives that align with our investment priorities,
  create a strategic advantage for Canada, leverage
  further co-investment by industry and other federal and provincial funding programs, and have high
  commercialization potential.
- We expanded our operational presence in Quebec.
- We created a business development role to

diversify NGen's sources of funding and support the commercialization of solutions developed by NGen, our members, and ecosystem partners.

- We also created an international team to help us promote Canadian capabilities, organize delegations to international events, support international business development for our project partners and members, and coordinate our international activities with ISED, Global Affairs Canada, EDC, Invest in Canada, Destination Canada, provincial governments, and other ecosystem partners.
- We established an Innovation Committee to identify opportunities for process improvements and launched initiatives based on Lean management principles to simplify and improve efficiencies in our operating processes, targeting \$2 million in cost savings by 2028.

Organizational alignment with our strategic objectives and continuous improvement in our operating processes will be essential as we focus on member value and cost efficiencies in our journey toward financial sustainability in 2024-2025.

Our goal is to achieve Net Promoter Scores above 75 among active project partners for the work we do in supporting our Technology Leadership projects and above 50 among participants in programs that are part of our Ecosystem initiatives over the year ahead. (A Net Promoter Score - NPS - is an indicator of customer satisfaction based on a survey question asking respondents to rate the likelihood that they would recommend a company, product, or service to others on a scale of 1 to 10. It is calculated by subtracting the percentage of detractors scoring between 1 and 6 from the percentage of promoters scoring 9 or 10. According to Bain & Company, a score above 50 is exceptional. A score above 80 is world-class).

#### D. EMPLOYEE ENGAGEMENT

NGen's success reflects the expertise, commitment, and incredibly hard work of an amazing team of professionals dedicated to strengthening Canada's advanced manufacturing sector, contributing to Canadian innovation and economic growth, and addressing some of Canada's and the world's most pressing challenges. NGen is committed to providing our employees professional development opportunities to further their careers and a respectful, equitable, diverse, and inclusive environment in which to work.

Every year NGen undertakes a skills assessment of our staff, incorporates personal development objectives in

our performance management process, and runs an employee engagement survey.

In 2023, according to Gallup, our employee engagement rating was 83%. We subsequently asked our employees to identify opportunities to improve NGen's performance. They identified three main areas where we could do better: job security; internal communications; and professional development. In response, over the past year we have moved from time limited to open employee agreements and implemented many of their recommendations for improvement. Every employee in the organization is now involved in our Innovation Committee looking for continuous improvement opportunities.

### In 2024-2025 our goal is to raise our employee engagement score to 90%.

Our Innovation Committee will identify opportunities for improvement at NGen. It is focusing on:

- Enhancing NGen as a "great place to work".
- Creating more opportunities for cross-functional collaboration.
- Developing and implementing sustainable solutions that simplify and optimize our operations.
- Enhancing our understanding of each other as members of the NGen team.
- Discovering untapped knowledge and skills among members of the team.

#### **RISK ASSESSMENT & MITIGATION STRATEGIES**

Current and potential organizational and operational risks are identified and reviewed quarterly by NGen's senior management team and Board of Directors. Mitigating actions are undertaken by management to reduce the potential impact of, or eliminate, risks. Their implementation is likewise reported to and monitored by the Board.

The risks we see facing NGen over the year ahead and the mitigating actions we are taking relate to:

 NGen's ability to resource our ambitious plans for 2024-2025 and the initiatives we want to undertake up to and beyond 2028. NGen will focus on our plans for revenue growth and cost savings. We will pursue additional funding opportunities and business services revenues to improve financial sustainability.

- Economic, labour market, and supply chain challenges that may slow down project applications and delay project progress and spending. NGen may provide cash advances to project teams in order to encourage progress. We monitor project performance and cash requirements on a regular basis.
- Project underspending which might leave some NGen funding unspent at the end of funding programs. We closely monitor project spending throughout their duration. Our experience with Phase I projects is that project partners have tended ed to underspend by about 6% on average. We will build this assumption into our allocations for project funding over the coming year.
- Cybersecurity threats to NGen and project partners. NGen undertakes regular cybersecurity audits and is continually upgrading cybersecurity protections and staff training. We are leading cybersecurity workshops for members and partnering with other organizations to provide education and tools that will help our members assess and address cybersecurity threats.
- Compliance with Canadian sanctions provisions.
   NGen completes compliance checks of our
   employees. We also ask our Board members,
   prospective project partners, and suppliers to
   sign attestations of sanctions compliance. NGen
   conducts online compliance checks of project
   partners before contracting. Compliance requirements are written into Master Project Agreements
   with project partners and contracts with suppliers
   as legally binding terms of agreement. In cases of
   uncertainty, NGen will ask ISED for advice in identifying unforeseen compliance risks. Processes will
   be fully documented.

#### PERFORMANCE MEASUREMENT FRAMEWORK

NGen measures success on the basis of the economic, environmental, health and safety, and security benefits provided to Canadians as a result of the world-leading advanced manufacturing capabilities we build through our collaborative Technology Leadership projects and Strategic Ecosystem initiatives.

Our Performance Measurement Framework is aligned with NGen's strategic objectives approved by our Board of Directors, the program objectives of the Global Innovation Clusters program, and the Innovation Cluster Economic Impact Framework (ICEIF).



It includes core performance indicators and targets that reflect short-, medium-, and long-term objectives of the GIC program, as well as impact measures for tracking progress in achieving NGen's strategic objectives, including metrics for organizational effectiveness and continuous improvement of governance and operating processes. Progress against these metrics will be documented in our Annual Report for 2024 and subsequent years.

#### INNOVATION CLUSTER ECONOMIC IMPACT FRAMEWORK



A National Force: Develop ecosystems that create a global advantage for Canada by attracting investment, developing a global profile, and collaborating on projects at a national scale

A Creator Of Networks: Strengthen connections and collaborations between private, public and academic organizations to drive impactful commercialization outcomes and develop domestic capacity

A Driver of Growth: Accelerate the scale-up of SMEs in cluster projects by fostering collaboration and integration into emerging value chains, in order to drive international opportunities, expand market share, and grow revenues.

A Catalyst for Skills Development: Address skills gaps, act as a magnet for global talent, collaboration, and skills and talent development, and foster opportunities for equity-seeking groups to benefit from connections, in order to drive innovation and contribute to inclusive economic growth.

To ensure the Global Innovation Clusters program's performance measurement approach fully captures the unique impact that each Cluster is delivering, ISED and the Clusters have co-designed a unique, made-in-Canada performance measurement framework based on a shared architecture of core program metrics along with a set of metrics that best reflects each cluster's contribution to achieving the four objectives of the GIC program.

Progress against these metrics will be documented in our Annual Reports.

#### **CORPORATE PERFORMANCE TARGETS 2024-2025**

Priority	Targets for March 31st, 2025
	- NPS of 70 among 75% of active project partners
Leadership	- NPS of 50 among 50% of ecosystem program registrants
	- \$40 million in funding committed for Global Innovation Clusters, PCAIS projects
Project Realization	- 12 cluster projects supported by NGen's Cluster Accelerator program
	- 9,000 members
	- 5,000 organizations on NGen's collaboration platform
	- 30 advanced manufacturing clusters in NGenCAN network
	- NGen supporting 50 companies commercialize advanced manufacturing solutions
Ecosystem Initiatives	- 75 NGen exhibitors and 150 delegates at Hannover Messe 2024
	- 1,000 SMEs in registered in NGen events
	- 1,000 individuals registered in NGen workforce and management development programs
	- 1,200 Indigenous students enrolled in manufacturing entrepreneurship and financial literacy courses
	- 450,000 students engaged in advanced manufacturing career development programs
Impact	- 100,000 engaged site visits on NGen website
трасс	- 1 million social media impressions
	- \$25 million in additional revenue raised
	- \$500,000 in administrative cost reductions from 2023-2028 budget in strategic plan
Financial Sustainability & Business Excellence	- 90% employee engagement rating
	- Financial statements signed off by external auditor
	- No compliance violations

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#### **FINANCIAL STATEMENTS FOR 2024-2025**

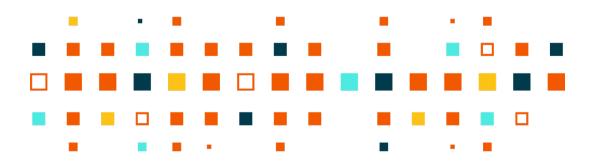
#### A. PLANNED EXPENDITURES

Expenditures from Government Funding Streams						
	GIC	PCAIS	NQS	CSA	IRAP	Total
Operating & Administrative	\$8,000,000	\$562,000	\$157,500	\$75,000	\$80,000	\$8,874,500
Projects	\$26,248,134	\$9,285,919	\$1,553,125	\$1,350,000	-	\$38,437,178
Ecosystem Initiatives	\$4,400,000	\$1,276,851	-	-	\$320,000	\$5,996,851
Total	\$38,648,134	\$11,124,770	\$1,710,625	\$1,425,000	\$400,000	\$53,308,529

Expenditures from Combined Funding Streams and Industry Contributions						
	GIC	PCAIS	NQS	CSA	IRAP	Total
Operating & Administrative	\$9,746,456	\$562,000	\$157,500	\$75,000	\$80,000	\$10,620,956
Projects	\$71,885,429	\$26,783,136	\$3,882,813	\$2,700,000	-	\$105,251,378
Ecosystem Initiatives	\$4,400,000	\$1,276,851	-	-	\$320,000	\$5,996,851
Total	\$86,031,885	\$28,621,987	\$4,040,313	\$2,775,000	\$400,000	\$121,869,185

#### **B. ANTICIPATED REVENUES FROM INDUSTRY AND OTHER SOURCES**

Anticipated Revenue from Other Sources						
Source	GIC	PCAIS	Other	Total		
Industry Matching Funds						
Contribution to Eligible Project Costs	\$45,637,295	\$17,497,217	\$3,679,688	\$66,814,200		
Project Management Fees	\$3,310,811	\$470,451	\$813,594	\$4,594,856		
Industry Sponsorships	\$160,000	-	-	\$160,000		
Conference & Service Fees	\$450,000	-	-	\$450,000		
Total Industry Matching Funds	\$49,558,106	\$17,967,668	\$4,493,282	\$72,019,056		
Other Non-Industry Sources	Other Non-Industry Sources					
Other Government Contributions	\$4,174,377	-	\$400,000	\$4,574,377		
Interest Income	\$150,000	1	1	\$150,000		
Total Non-Industry Sources	\$4,324,377	\$0.0 M	\$400,000	\$4,724,377		
Total Anticipated Revenue from all other Sources	\$53,882,483	\$17,967,668	\$4,893,282	\$76,743,433		



#### **CASH FLOW REQUIREMENTS FOR 2024-2025**

Incoming Cash	Amount
Global Innovation Clusters Contribution	\$38,648,134
(Previously advanced GIC funds not yet spent)	-
Pan-Canadian AI Strategy Contribution	\$11,124,770
(Previously advanced PCAIS funds not yet spent)	-
National Quantum Strategy Contribution	\$1,710,625
(Previously advanced NQS funds not yet spent)	-
Canadian Space Agency Contribution	\$1,425,000
NRC-IRAP Contribution	\$400,000
Project Management Fees	\$4,594,856
Conference & Service Fees	\$450,000
Sponsorship	\$160,000
Other Revenue (Interest)	\$150,000
Total items involving Cash	\$58,663,385
Items not involving Cash	
Amortization of Property, Plant, Equipment	\$20,000
Amortization of Intangibles	\$40,000
Accrued Interest	-
Total Non-Cash Items	\$60,000

#### C. AMOUNT OWING TO THE CROWN

NGen does not owe any amounts to the Crown pursuant to any legislation or agreement.

