



CANADA'S ECONOMIC STRATEGY TABLES

Advanced Manufacturing

The sector today
and opportunities
for tomorrow

INTERIM REPORT

AAM





AM

Budget 2017 proposed the establishment of six Economic Strategy Tables to **lead the creation of Canada's economic growth strategies**. Working with leading Canadian innovators, Innovation, Science and Economic Development Canada has now established the Economic Strategy Tables to identify growth opportunities in advanced manufacturing, agri-food, clean technology, digital industries, health/biosciences and clean resources.

Canada's economic growth is expected to continue at a moderate pace, potentially impacting Canadians' standard of living. The Economic Strategy Tables will galvanize stakeholders in six high impact sectors by setting ambitious growth targets, identifying sector-specific bottlenecks to growth, recommending specific strategies to achieve the targets, drive long-term and sustainable economic growth, and create high quality jobs for Canadians. The Tables will also help guide the Government of Canada in its efforts to provide relevant and effective programs for Canada's innovators.

Long term sector specific action plans to meet ambitious economic growth targets for 2025 and beyond across six sectors where Canada is globally competitive will include:

- A common vision for both industry and government that sets the course for moving forward to identify sector strengths, overcome obstacles, and improve competitiveness and growth;
- Business-led solutions, government policy recommendations and public-private partnerships based on short-, medium- and long-term actionable areas;

- Greater inclusion of those traditionally underrepresented in the workforce, such as Indigenous Peoples, women, Canadians with disabilities and older workers, in these sectors; and
- A mechanism to champion and monitor sector growth strategies and results.

Each Table is chaired by an industry leader who drives the agenda of the Table and facilitates candid discussion. The Chairs of each Table also meet to take stock of progress and address key horizontal issues affecting all sector tables.

The sectors under the Economic Strategy Table Initiative have strong potential for innovation, growth and the creation of good, middle class jobs for all Canadians, including currently untapped pools of talent. They also face powerful forces of competition that demand action now to build on their strength and secure a place in the global economy.

Taking a sector-wide approach and sharing best practices will speed up and spread out the adoption of innovations, making sectors stronger on the whole. This will help make Canada's economy be more resilient, better able to weather market cycles, and will help cement our world leadership where we excel.

"We need to set an ambitious, quantifiable target that we will work together to achieve. For me, it is not important where we rank today; what is important is our velocity, the speed at which we improve. Let's accelerate the distribution of knowledge. This is what limits the speed of growth. If we can learn best practices and disseminate knowledge faster than others, then we will succeed, we will have the leading edge."

Charles Deguire,
Co-Founder, Kinova Robotics

THE ADVANCED MANUFACTURING SECTOR TODAY

Advanced manufacturing is defined by the development and adoption of innovative technologies to create new products, enhance processes and establish more efficient and cost-effective ways of working. All parts of the value chain are connected — from R&D and design to production and distribution — enabling new value-added models such as manufacturing as a service, which optimizes production by forming networks of shared facilities and equipment.

AT A GLANCE

MANUFACTURING IS A SIGNIFICANT CONTRIBUTOR TO CANADA'S ECONOMY

- Accounts for 10% of Canada's GDP¹
- Provides 1.7 million high-quality, well-paying jobs²
- Generates 70% of Canadian merchandise exports³

MANUFACTURING FUELS CANADIAN COMMUNITIES

- Involves 80,000 manufacturing establishments that serve as the economic engines of communities across the country⁴

THE SECTOR ATTRACTS INVESTMENT TO CANADA

- 29% of foreign direct investment in Canada in 2012 flowed into the manufacturing sector⁵

CANADA HAS MANY STRENGTHS

- Home to top companies including:
 - Five of the world's top 10 injection mold and toolmakers⁶
 - Three of North America's top 30 parts manufacturers⁷
 - One of the world's top three aerospace clusters⁸
- Leading capabilities in:
 - Additive manufacturing metal powders (two of the world's top five suppliers are Canadian)⁹
 - Biomanufacturing, including for stem cells and biologics
- Strong industry–academic research collaboration
- Emerging research clusters including the Canadian Network for Research and Innovation in Machining Technology and the Pan-Canadian Additive Manufacturing Network

1 <https://www.ic.gc.ca/eic/site/mfg-fab.nsf/eng/home>

2 Ibid.

3 Ibid.

4 Innovation, Science and Economic Development Canada. *An Overview of Canadian Manufacturing*. PowerPoint presentation. 2015.

5 Ibid.

6 Mould-Plastic News. 2017.

7 Automotive News. 2017.

8 Innovation, Science and Economic Development Canada. *State of Canada's Aerospace Industry*. 2017.

9 Innovation, Science and Economic Development Canada. *Market Analysis*. 2017.

CANADA FACES SOME CHALLENGES

- Increasing global competition, especially from emerging economies
- Uneven technology adoption and lagging productivity
- Fluctuating commodity prices and dollar create variable costs
- Slow growth in our export market of the U.S.
- Shortages of skilled and digitally skilled labour

CANADA COULD SEIZE KEY OPPORTUNITIES

- Manufacturing has shifted toward high-value (i.e., not commodity-based) activities
- Canada is strong in knowledge-intensive segments and on the leading edge of technology domains like AI
- Capital is becoming more mobile
- Automation and robotics that support on-shoring for global mandates allow smaller industrialized economies to compete
- Canada is an open and diverse economy

■ PRIORITY THEMES

Technology and global competition continue to disrupt the manufacturing sector and open up new arenas of opportunity. Canadian manufacturers need to make innovation a competitive strategy and invest in leading-edge technology solutions to seize those opportunities. With that in mind, the Advanced Manufacturing Economic Strategy Table has identified the following priority themes:

1. ATTRACTING GLOBAL MANDATES

Investments by multinational enterprises bring capital for R&D, machinery and equipment, provide well-paying jobs for Canadians, and create clusters to support new smaller companies and value chain players. Canada needs to attract and retain these investments for a sustainable manufacturing ecosystem. As a first step, the Table is exploring measures that build a Canadian value proposition including a supply of targeted and skilled workers, cost-competitiveness, regulatory alignment and an agility of response to opportunities.

2. GROWING FIRMS TO SCALE

Growing to scale means being able to compete internationally, expand into new markets and meet new demand. Table members are working to identify where Canadian companies are challenged in growing to scale — with a focus on access to talent, capital and export markets. The Table is looking at opportunities for Canadian firms to “leap frog” by sharing best practices across a strong ecosystem, and significantly accelerating our number of high growth firms.

3. SPEEDING UP TECHNOLOGY ADOPTION

Advanced technologies, including those of digitization and automation, help manufacturers reduce production costs and improve their productivity and international competitiveness. Canada needs to position itself as a global leader in new technologies that improve productivity, output and competitiveness by accelerating innovation adoption and providing a more receptive domestic market for Canadian innovation. This could involve “doubling down” on machinery and equipment investments, getting technology developers and adopters to co-create relevant solutions, and preparing Canadian firms to participate in digitized supply chains.

4. EQUIPPING WORKERS FOR THE JOBS OF TOMORROW

New technologies create new opportunities but also demand new skills. Apprenticeships and experiential learning will be important to preparing IT-literate, next-generation workers for advanced manufacturing. For the sector to succeed, we also need to include skilled workers from traditionally under-used talent pools, such as Indigenous Peoples, Canadians with disabilities and women. To highlight the career opportunities available in advanced manufacturing, the sector needs to brand “the factory of the future” as the workplace of tomorrow — a maker-space, technologically advanced and environmentally sustainable.



■ WHAT'S NEXT

With the release of these interim reports, Tables will: work on establishing a vision and aspirational, top-down targets for long-term sectoral growth; integrate sectors action-oriented proposals into one comprehensive report; develop an action plan that includes short-term early deliverables and long-term initiatives; and identify performance indicators to track and measure results.

Ongoing consultations and transparency are key components of the Economic Strategy Tables. Canadians are also invited to share their answers via the following email: ic.est-tsse.ic@gc.ca.

- What is your aspirational vision for your sector? What would success look like in 2025?
- It is often suggested that countries need to target their growth efforts toward areas of competitive advantage. In your sector, where does Canada have strength or emerging strength?
- What are the obstacles to innovation in your sector? (You may wish to think about investment, talent and skills, access to markets, rules or regulations, or demand.) How could these be overcome?
- What is, or will be, the most significant innovation globally in your sector for the next 10 years? What is needed to capitalize on this innovation and establish Canada as a world leader?
- To ensure that all Canadians benefit from accelerated economic growth, what actions and partnerships could governments, businesses, educational institutions and Canadians undertake?

To support a transparent process, Table minutes are posted at <http://www.ic.gc.ca/eic/site/098.nsf/eng/home>.



ADVANCED MANUFACTURING ECONOMIC STRATEGY TABLE MEMBERS

Chair

Charles Deguire, Kinova Robotics

Members

Rhonda Barnet, Steelworks Design Inc.

Luc Dionne, Tekna Plasma and Powders

Sean Donnelly, ArcelorMittal Dofasco

Cynthia Garneau, Bell Helicopter Textron Canada Ltd.

Mike Greenley, MDA

Mark Kirby, S2G Bio Chemicals

Tessa Myers, Rockwell Automation

Marc Parent, CAE

Mojdeh Poul, 3M Canada

Nancy Southern, ATCO

Susan Uthayakumar, Schneider Electric Canada

Rob Wildeboer, Martinrea International Inc.

Federal Representatives

James Meddings, FedDev Ontario

Iain Stewart, National Research Council

Financial support from Innovation, Science and Economic Development Canada was provided to prepare this interim report.



CANADA'S ECONOMIC STRATEGY TABLES