

Federal government spending on science and technology, 2021/2022

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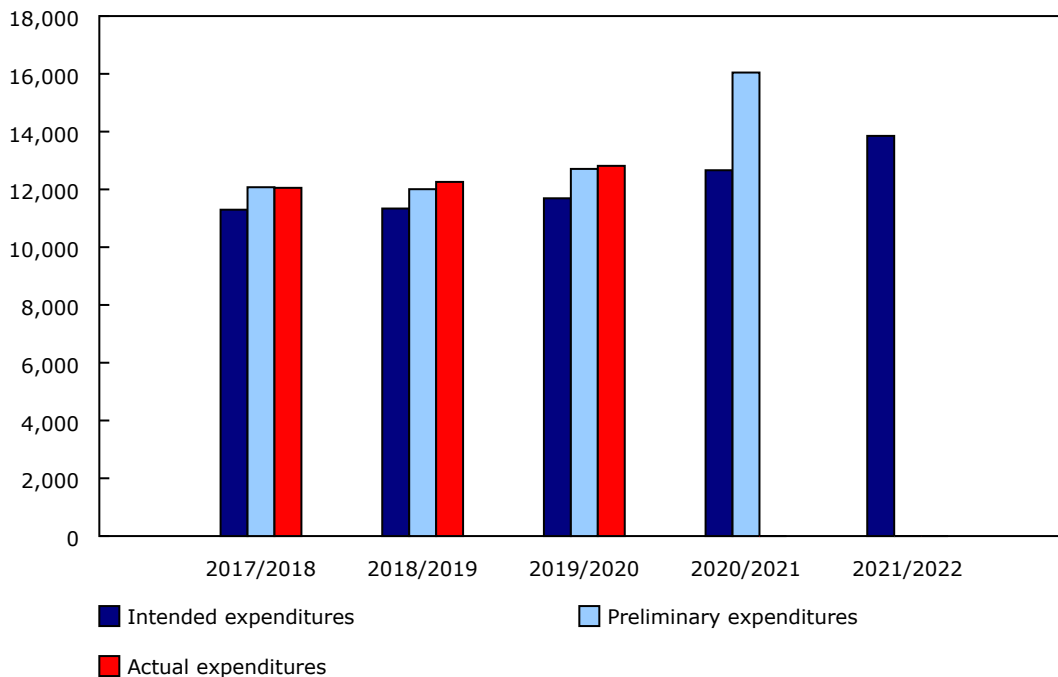
Canadian federal government expenditures on science and technology (S&T) activities represent the government's commitment to the development of new ideas. This is particularly important given that economic prosperity and competitiveness are dependent on a country's ability to undertake and ultimately benefit from new research, experimental development and innovation.

Federal science and technology spending intentions amid the COVID-19 pandemic

Preliminary spending on S&T by the Canadian federal government is expected to reach \$16.0 billion in 2020/2021, up 26.7% from what was originally intended. Looking ahead to the upcoming 2021/2022 fiscal year, survey results indicate that S&T spending intentions are expected to decrease compared with preliminary estimates, down 13.7% to \$13.9 billion, as Canada enters the second year of the COVID-19 pandemic.

Chart 1
Comparison of actual, preliminary and intended federal science and technology expenditures from 2017/2018 to 2021/2022

millions of dollars



.. not available for a specific reference period
Source(s): Table 27-10-0005-01.

Federal government spending on science and technology up for the sixth consecutive year in 2019/2020

Federal government expenditures on S&T activities in Canada reached \$12.8 billion in 2019/2020, up 4.5% from the previous year. This was the sixth consecutive annual increase.



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S&T are composed of two activities: research and development (R&D), and related scientific activities (RSA) (see note to readers). R&D activities rose 3.3% to \$7.8 billion and accounted for 60.9% of all S&T expenditures in 2019/2020. Meanwhile, RSA expenditures advanced 6.5% to \$5.0 billion.

Federal in-house spending on science and technology activities

Expenditures for intramural (or in-house) S&T activities performed by the federal government rose 1.1% to \$5.6 billion and accounted for two-fifths (43.6%) of all S&T expenditures. This was the fourth consecutive year of decelerating increases.

More specifically, the gain in in-house spending was the result of an increase in RSA activities, which rose 2.3% to \$3.3 billion. This gain was spread out among several scientific departments and agencies. Meanwhile, in-house R&D spending decreased 0.5% in 2019/2020—the first decline following two consecutive years of increases.

Federal payments to businesses and non-profits advance

Extramural expenditures (external payments made by a federal government department or agency funder) were up 7.4% to \$7.2 billion. This was the fifth consecutive annual increase in extramural S&T payments. The gain was led by payments to businesses (+18.1%). Federal payments to other sectors rose as well, with the exception of provincial and municipal governments, which reported declines (-11.3%).

Payments to performers of RSA activities rose 15.1% to \$1.7 billion in 2019/2020, with the largest increase in payments made to non-profit institutions (+34.4%). Similarly, payments made to performers of R&D activities rose 5.1% to \$5.5 billion, while payments to businesses increased by about a fifth (+21.3%).

Scientific workforce grows slowly

The number of full-time equivalent (FTE) personnel in federal S&T rose 2.3% (+844 FTEs) to 37,746 in 2019/2020—the fourth consecutive annual increase. Environment and Climate Change Canada (+293 FTEs), National Defence (+247 FTEs) and National Research Council Canada (+159 FTEs) contributed the most to this gain. The vast majority of growth in employment (89.5%) was attributable to work related to R&D activities.

Pandemic response will continue to influence federal science and technology activities

While data on preliminary expenditures and on spending intentions were gathered amid the second wave of the COVID-19 pandemic, they will serve as an important benchmark to measure the full effect of the pandemic on the Canadian economy. It is important to note, however, that there are many ways in which both the pandemic and the government's response can affect these data.

Survey results for 2022/2023 will provide a comprehensive view of the federal S&T response to the global pandemic, and will complement the benchmark data collected for the 2020/2021 fiscal year.

Note to readers

Federal Science Expenditures and Personnel, Activities in the Social Sciences and Natural Sciences is an annual survey of all federal government departments and agencies that perform or fund science and technology activities. Actual data for 2019/2020, preliminary data for 2020/2021 and intentions for 2021/2022 were collected from September to December 2020, based on the federal government's fiscal year running from April 1 to March 31.

Science and technology activities comprise two types of scientific activities: research and development (R&D), and related scientific activities (RSA). They can be defined as all systematic activities that are directly related to the generation, advancement, dissemination and application of scientific and technical knowledge in all fields of science and technology.

Research and development comprise creative and systematic work done to increase the stock of knowledge—including knowledge of humankind, culture and society—and to devise new applications of available knowledge. R&D activities must satisfy all five of the following core criteria: 1. They are aimed at new findings (novel). 2. They are based on original, not obvious, concepts and hypotheses (creative). 3. They are uncertain about the final outcome (uncertainty). 4. They are planned and budgeted (systematic). 5. They lead to results that could be possibly reproduced (transferable/or reproducible).

Related scientific activities are all systematic activities directly related to the generation, advancement, dissemination and application of scientific and technological knowledge. RSA activities generally include general purpose data collection, which excludes the collection of data as part of an R&D project; information services (the collection, coding, analysis, evaluation, recording, classification, translation and dissemination of scientific and technological information); special surveys and studies (systematic investigations carried out to provide information needed for planning or policy formulation); education supports (grants to support the postsecondary education of students in the natural or social sciences and technology).

Natural sciences and engineering consist of all disciplines concerned with understanding, exploring, developing or using the natural world. Included are engineering, technology, mathematics, computer and information sciences, physical sciences, medical and health sciences, agricultural sciences, veterinary sciences, and forestry.

Social sciences, humanities and the arts consist of disciplines concerned with the study of human actions and conditions and the social, economic and institutional mechanisms that affect humans. Included are the arts, economics and business, education, history and archeology, law, languages and linguistics, media and communications, philosophy, ethics and religion, psychology and cognitive sciences, social and economic geography, and sociology.

Full-time equivalent is the personnel expressed as a ratio of working hours actually spent on scientific activities during a specific reference period divided by the total number of hours conventionally worked in the same period by an individual or a group. For example, an employee who is engaged in scientific activities for half a year has a full-time equivalence of 0.5.

Scientific and professional personnel (also called researchers) are professionals engaged in the conception or creation of new knowledge. They conduct research and improve or develop concepts, models and methods. Managers and administrators who plan and manage the scientific and technical aspects of a researcher's work, as well as graduate students, are also included.

Technical personnel perform scientific and technical tasks involving the application of concepts and operational methods in one or more fields of the natural sciences and engineering, or of the social sciences, humanities and the arts, normally under the supervision of researchers.

Other personnel (also called support staff) includes skilled and unskilled workers, as well as administrative, secretarial and clerical staff directly associated with research and development projects.

Available tables: [27-10-0005-01](#) to [27-10-0014-01](#) and [27-10-0026-01](#) to [27-10-0029-01](#) .

Definitions, data sources and methods: survey number [4212](#).

For more information, or to enquire about the concepts, methods or data quality of this release, contact us (toll-free 1-800-263-1136; 514-283-8300; STATCAN.infostats-infostats.STATCAN@canada.ca) or Media Relations (613-951-4636; STATCAN.mediahotline-ligneinfomedias.STATCAN@canada.ca).