

GOAL 11: Post-Secondary Education Research and Development

New Brunswick will close the gap in funding levels for post-secondary education research and development between itself and Nova Scotia over the coming years.

Status: PROGRESSING

Current Situation

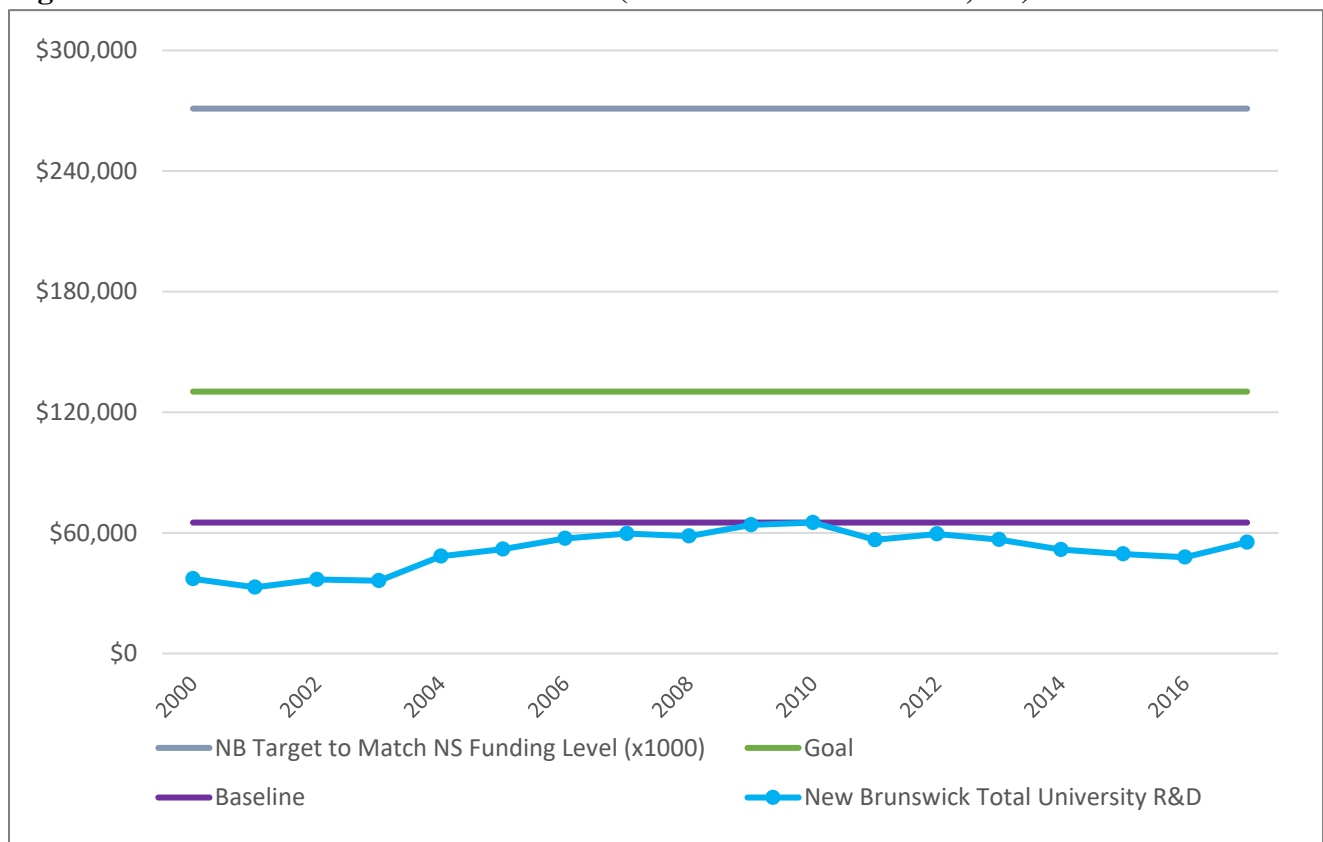
Different sources show varying levels of funding in New Brunswick. According to the most recent data from Statistics Canada, university and community college research and development (R&D) in New Brunswick followed an overall upward trend from 2000-2016, increasing by 2.6% over a 3-year period from 2013 to 2016 from \$146.7 million to \$165.6 million. Meanwhile Data from the Canadian Association of University Business Officers (CAUBO) and the Financial Information of Universities and Colleges (FIUC) (which exclude sponsored R&D funding at the New Brunswick Community College) shows that New Brunswick university sponsored research has peaked in 2010 with \$65.1 million, decreasing to \$47.9 million in 2016, however rising back up to \$55.3 million in 2017.

The province of Nova Scotia has set a goal of doubling post-secondary education (PSE) research funding through a combination of government support and additional funding secured through researcher collaborations and initiatives (see *OneNS*). If New Brunswick adopts the same goal (with a 2010 baseline of \$65.1 million), it will aim to increase research funding for New Brunswick universities to \$130 million by the year 2028. To close the gap between funding in the province and Nova Scotia with regards to per capita funding, New Brunswick will aim to reach a total post-secondary R&D funding of \$271 million^{1, 2, 3}.

It is important to note that both CAUBO and FIUC exclude sponsored R&D performed at NBCC, whereas Statistics Canada data on R&D in the higher education sector provides additional insight on the various funding sources impacting trends in New Brunswick.

Section One: New Brunswick R&D Funding Gap

Figure 1: New Brunswick Universities R&D (2007 constant dollars x 1,000)



Interpreting the Data

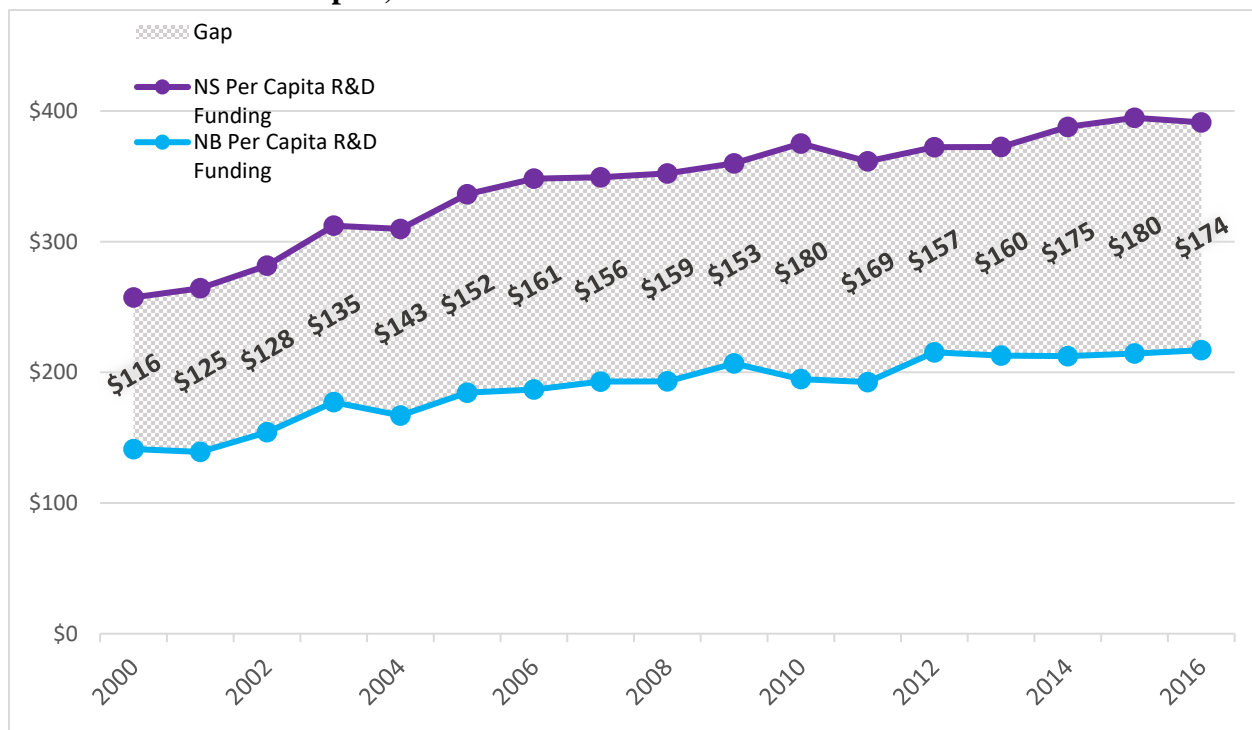
According to data from CAUBO and the FIUC, it appears that New Brunswick post-secondary education R&D funding is increasing, with progress made in the last year towards closing the gap in post-secondary R&D funding between the province and Nova Scotia. Similarly, Statistics Canada, which measures broader sources including R&D from non-university institutions, also shows funding increasing on an annual basis.

Data: Figure 1 (2007 Constant Dollars)	Actual (thousands)	Baseline (2010) (thousands)	Target (2028) (thousands)	Target to Match NS Funding (thousands)
2000	\$37,181.92	\$65,137.87	\$130,276	\$271,067
2001	\$32,927.78	\$65,137.87	\$130,276	\$271,067
2002	\$36,819.15	\$65,137.87	\$130,276	\$271,067
2003	\$36,217.71	\$65,137.87	\$130,276	\$271,067
2004	\$48,400.12	\$65,137.87	\$130,276	\$271,067
2005	\$51,946.22	\$65,137.87	\$130,276	\$271,067
2006	\$57,211.46	\$65,137.87	\$130,276	\$271,067
2007	\$59,664.00	\$65,137.87	\$130,276	\$271,067
2008	\$58,425.62	\$65,137.87	\$130,276	\$271,067

2009	\$63,994.07	\$65,137.87	\$130,276	\$271,067
2010	\$65,137.87	\$65,137.87	\$130,276	\$271,067
2011	\$56,526.49	\$65,137.87	\$130,276	\$271,067
2012	\$59,446.97	\$65,137.87	\$130,276	\$271,067
2013	\$56,644.46	\$65,137.87	\$130,276	\$271,067
2014	\$51,706.34	\$65,137.87	\$130,276	\$271,067
2015	\$49,496.55	\$65,137.87	\$130,276	\$271,067
2016	\$47,922.38	\$65,137.87	\$130,276	\$271,067
2017	\$55,344.60	\$65,137.87	\$130,276	\$271,067

Source: Financial Information of Universities and Colleges (FIUC) _1980-2017; Statistics Canada, CANSIM table 326-0021: Consumer Price Index, annual average, not seasonally adjusted

Figure 2: Per Capita Funding for Post-Secondary Education R&D in NB and NS (2007 Constant Dollar Per Capita)



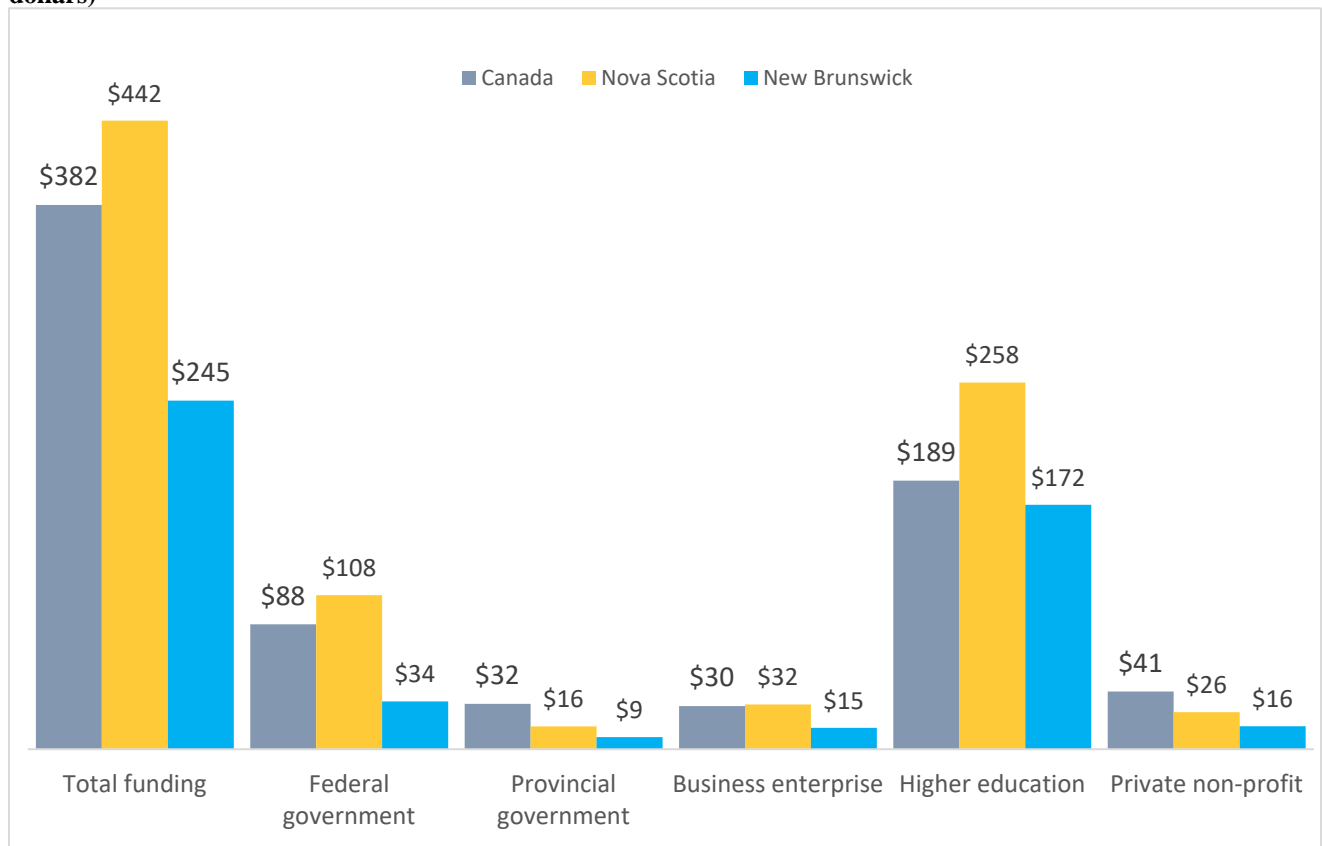
Interpreting the Data

According to data from Statistics Canada, the gap in per capita funding levels between New Brunswick and Nova Scotia has remained steady, however decreasing slightly from a gap of \$180 per person in 2015 to \$174 in 2016. The gap shown in 2016 has been used to estimate the funding level New Brunswick would need to reach in order to match Nova Scotia's Per Capita funding level (as seen in Figure 1).

Data: Figure 2 (2007 Constant Dollars)	NS Per Capita Funding	NB Per Capita Funding	Gap Between NS and NB (NS - NB)
2000	\$257	\$141	\$116
2001	\$264	\$139	\$125
2002	\$282	\$154	\$128
2003	\$312	\$177	\$135
2004	\$310	\$167	\$143
2005	\$336	\$184	\$152
2006	\$348	\$187	\$161
2007	\$349	\$193	\$156
2008	\$352	\$193	\$159
2009	\$360	\$207	\$153
2010	\$375	\$195	\$180
2011	\$361	\$193	\$169
2012	\$372	\$215	\$157
2013	\$372	\$213	\$160
2014	\$388	\$212	\$175
2015	\$395	\$214	\$180
2016	\$391	\$217	\$174

Source: Statistics Canada, CANSIM Table 358-0162: Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (dollars x 1,000,000); Statistics Canada, CANSIM Table 051-0001: Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons)

Figure 3: 2016 Per Capita Funding for Higher Education Sector R&D by Source (current dollars)



Interpreting the Data

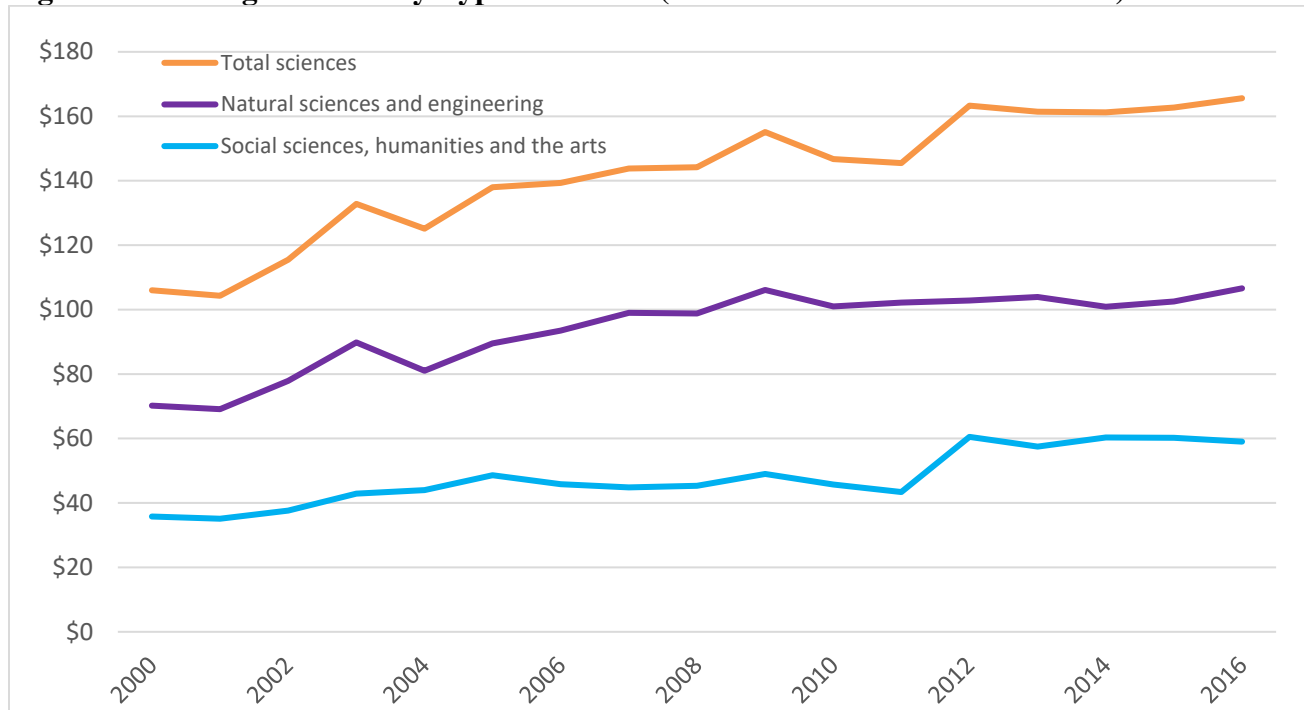
At \$245 per person, New Brunswick's higher education sector has a lower per capita R&D value than the national average (\$382 per person) and Nova Scotia (\$442 per person). This gap in investment is consistent across all funding sources.

Data: Figure 3 (Current Dollars)	CANADA	NOVA SCOTIA	NEW BRUNSWICK
Total Funding Sectors	\$382	\$442	\$245
Federal Government	\$88	\$108	\$34
Provincial Government	\$32	\$16	\$9
Business Enterprise	\$30	\$32	\$15
Higher Education	\$189	\$258	\$172
Private Non-Profit	\$41	\$26	\$16

Source: Statistics Canada, CANSIM Table 358-0162: Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (dollars x 1,000,000); Statistics Canada, CANSIM Table 051-0001: Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons)

Section Two: New Brunswick R&D Funding for Types of Science and Funding Sources

Figure 4: Funding for R&D by Type of Science (2007 Constant Dollar in Millions)



Interpreting the Data

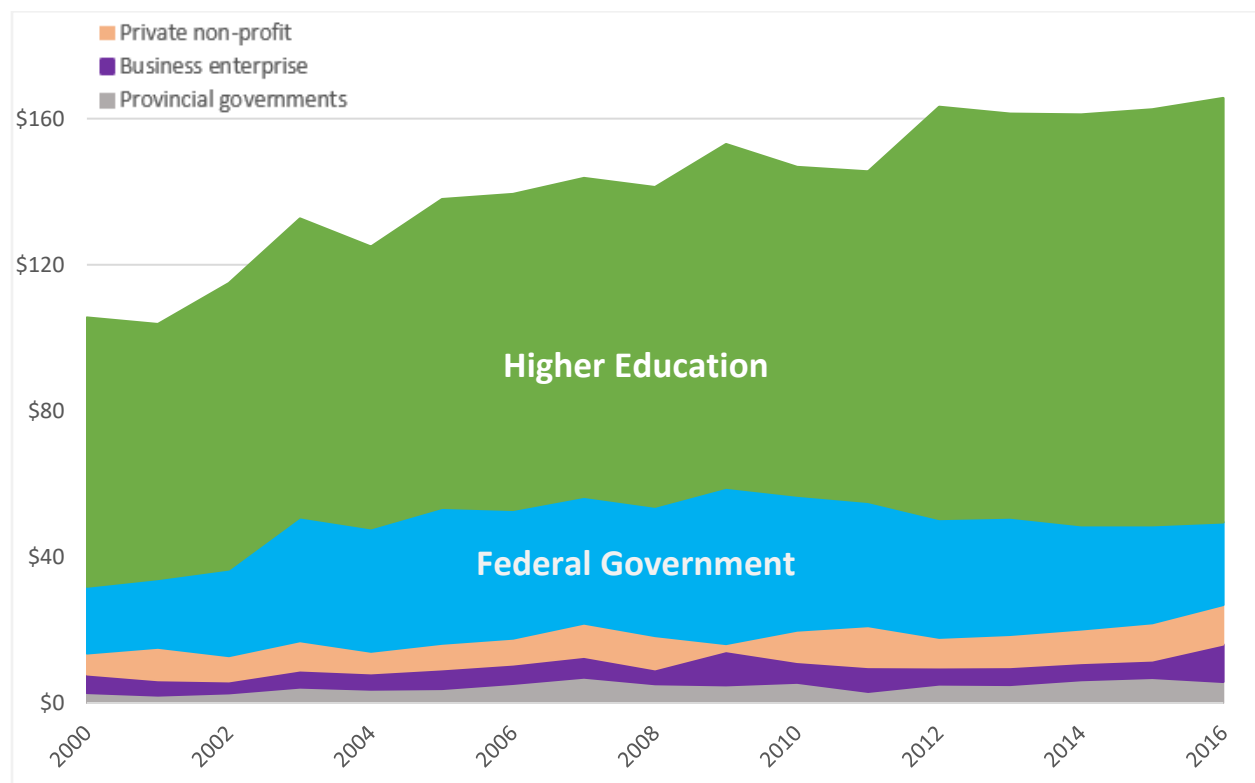
Based on data from Statistics Canada, the overall funding for R&D in New Brunswick is divided into two groups: 1) R&D in Natural Sciences and Engineering and (2) R&D in Social Sciences and Humanities. Of the \$165.6 million of R&D performed in New Brunswick during 2016/2017, \$106.6 million (64.4%) went toward Natural Sciences and Engineering, and \$59 million (35.6%) went to Social Sciences and Humanities. R&D funding in both categories has been steadily growing since 2005, with Social Sciences and Humanities seeing a large increase in R&D spending between 2011 and 2012, and then stabilizing at around \$60 million for 2014-2016.

Data: Figure 4 (2007 Constant Dollars)	Total Sciences (millions)	Science and Engineering (millions)	Social Sciences and Humanities (millions)
2000	\$106.0	\$70.2	\$35.8
2001	\$104.3	\$69.1	\$35.1
2002	\$115.5	\$77.9	\$37.6
2003	\$132.8	\$89.8	\$42.9
2004	\$125.1	\$81.0	\$44.0
2005	\$138.0	\$89.5	\$48.6

2006	\$139.3	\$93.5	\$45.8
2007	\$143.8	\$99.0	\$44.8
2008	\$144.2	\$98.8	\$45.3
2009	\$155.1	\$106.1	\$49.0
2010	\$146.7	\$101.0	\$45.7
2011	\$145.5	\$102.2	\$43.4
2012	\$163.3	\$102.8	\$60.5
2013	\$161.4	\$103.9	\$57.5
2014	\$161.2	\$100.9	\$60.3
2015	\$162.7	\$102.5	\$60.2
2016	\$165.6	\$106.6	\$59.0

Source: Statistics Canada, CANSIM Table 358-0162: Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (dollars x 1,000,000);

Figure 5: Funding for R&D Performed by the Higher Education Sector, by Funding Source (2007 Constant Dollars in Millions)



Interpreting the Data

Funding for R&D comes from six major sources: federal government, provincial government, private businesses, private non-profits, the higher education sector, and the foreign sector. Over half of the funding for R&D activity in New Brunswick comes from the higher education sector

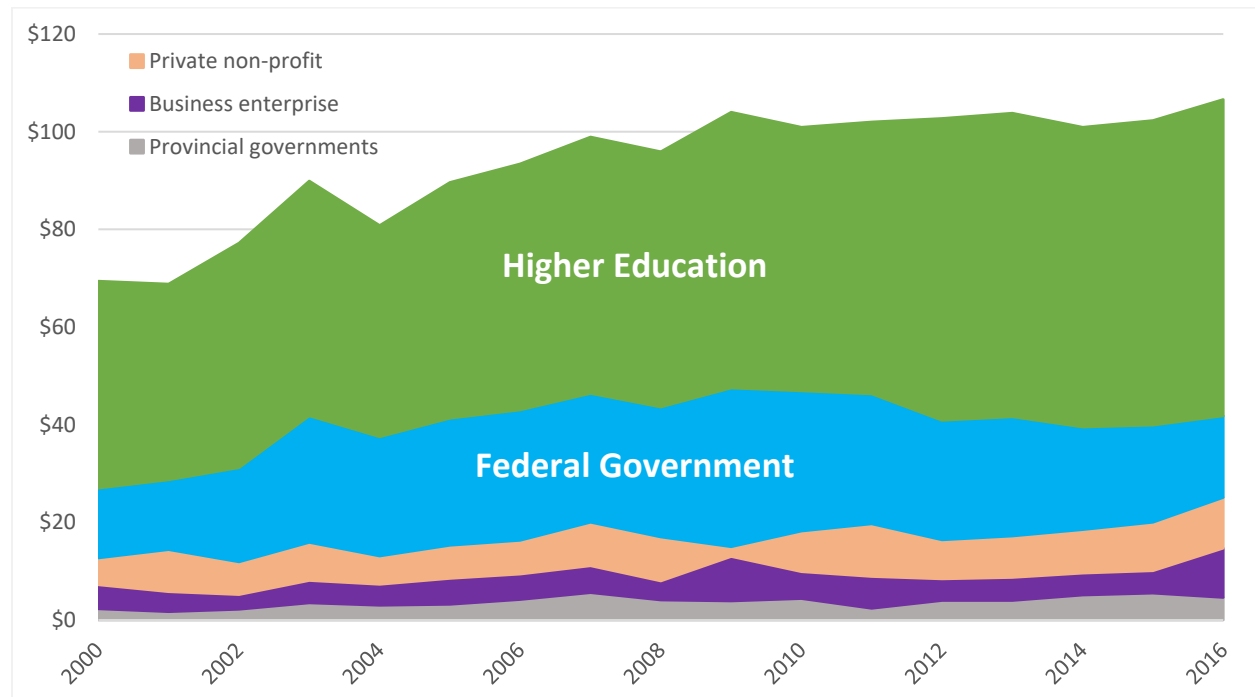
itself, which provided \$116.1 million in 2016. This sector is not only the most important source of funding for R&D, but it is also the fastest-growing, as other sources have flattened in recent years. The federal government is the second-largest source of funding, producing \$22.6 million in 2016.

Most of the PSE R&D activity funded by the provincial government, private businesses, and non-profit organizations is in Natural Sciences and Engineering. In 2016, these three sources collectively funded \$25.1 million of R&D in Natural Sciences and Engineering in New Brunswick, and \$1.8 million in Social Sciences and Humanities.

Data: Figure 5 (2007 Constant Dollars)	FEDERAL GOVERNMENT (millions)	PROVINCIAL GOVERNMENT (millions)	BUSINESS ENTERPRISE (millions)	HIGHER EDUCATION (millions)	PRIVATE NON-PROFIT (millions)	FOREIGN SECTOR (millions)
2000	\$18.3	\$2.8	\$5.0	\$73.6	\$5.8	\$0.7
2001	\$18.8	\$2.1	\$4.1	\$69.7	\$9.0	\$0.5
2002	\$23.7	\$2.7	\$3.2	\$78.3	\$7.0	\$0.7
2003	\$33.9	\$4.3	\$4.6	\$81.7	\$8.1	\$0.1
2004	\$33.8	\$3.7	\$4.4	\$77.0	\$6.0	\$0.2
2005	\$37.2	\$3.9	\$5.3	\$84.4	\$7.1	\$0.1
2006	\$35.2	\$5.3	\$5.2	\$86.4	\$7.2	\$0.0
2007	\$34.7	\$7.0	\$5.6	\$87.2	\$9.2	\$0.1
2008	\$35.4	\$5.2	\$4.0	\$87.4	\$9.2	\$2.9
2009	\$42.8	\$4.9	\$9.3	\$94.0	\$2.0	\$2.0
2010	\$36.9	\$5.6	\$5.6	\$89.9	\$8.7	\$0.0
2011	\$34.0	\$3.1	\$6.7	\$90.4	\$11.3	\$0.1
2012	\$32.5	\$5.1	\$4.6	\$112.8	\$8.2	\$0.1
2013	\$32.1	\$5.0	\$4.8	\$110.5	\$8.9	\$0.0
2014	\$28.5	\$6.3	\$4.6	\$112.4	\$9.3	\$0.0
2015	\$26.8	\$6.9	\$4.7	\$113.8	\$10.3	\$0.1
2016	\$22.6	\$5.8	\$10.2	\$116.1	\$10.9	\$0.0

Source: Statistics Canada, CANSIM Table 358-0162: Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (dollars x 1,000,000);

Figure 6: Funding for Natural Sciences and Engineering R&D performed by NB's Higher Education Sector, by Funding Source (2007 Constant Dollars in Millions)



Interpreting the Data

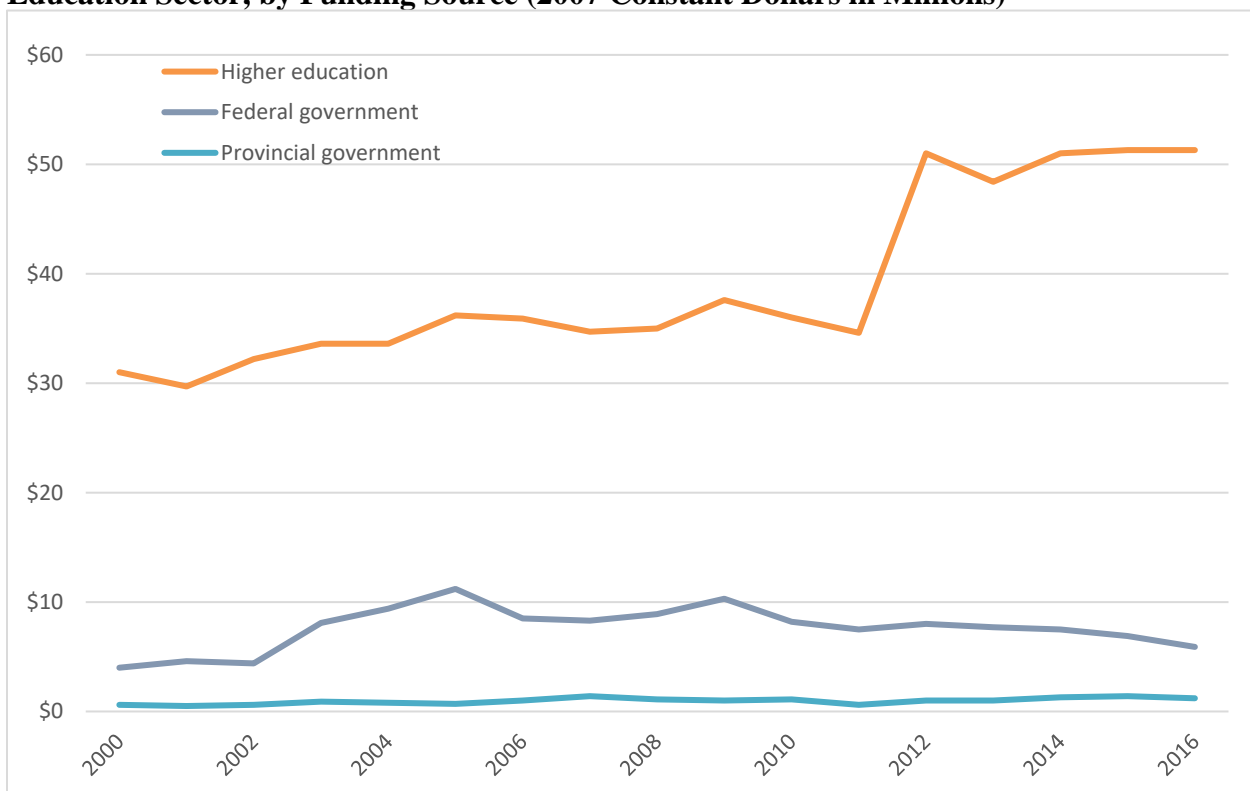
A comparison of Figures 6 and 7 shows that both Natural Sciences and Engineering and Social Sciences and Humanities saw a significant increase in R&D funding from the higher education sector from 2011 to 2012. (Figure 2 registers this increase much more dramatically for Social Sciences and Humanities, likely because this category has fewer funding sources than Natural Sciences and Engineering.) Since the *OneNS* report on the same topic shows a similar spike for the Social Sciences and Humanities category in Nova Scotia during the same time period, it seems likely that the higher education sector in New Brunswick was responding to broader trends in PSE investment.

Data: Figure 6 (2007 Constant Dollars)	FEDERAL GOVERNMENT (millions)	PROVINCIAL GOVERNMENT (millions)	BUSINESS ENTERPRISE (millions)	HIGHER EDUCATION (millions)	PRIVATE NON-PROFIT (millions)	FOREIGN SECTOR (millions)
2000	\$14.3	\$2.3	\$4.9	\$42.4	\$5.5	\$0.7
2001	\$14.3	\$1.7	\$4.1	\$40.1	\$8.6	\$0.5
2002	\$19.3	\$2.2	\$3.0	\$46.0	\$6.7	\$0.7
2003	\$25.9	\$3.5	\$4.6	\$48.1	\$7.8	\$0.1
2004	\$24.4	\$3.0	\$4.3	\$43.3	\$5.8	\$0.2
2005	\$26.0	\$3.2	\$5.3	\$48.3	\$6.8	\$0.1
2006	\$26.7	\$4.2	\$5.2	\$50.4	\$6.9	\$0.0

2007	\$26.4	\$5.6	\$5.5	\$52.5	\$8.9	\$0.1
2008	\$26.6	\$4.1	\$3.9	\$52.3	\$9.0	\$2.9
2009	\$32.5	\$3.9	\$9.1	\$56.5	\$2.0	\$2.0
2010	\$28.7	\$4.4	\$5.5	\$54.0	\$8.3	\$0.0
2011	\$26.6	\$2.4	\$6.5	\$55.7	\$10.8	\$0.1
2012	\$24.5	\$4.0	\$4.4	\$61.8	\$8.0	\$0.1
2013	\$24.4	\$4.0	\$4.7	\$62.2	\$8.5	\$0.0
2014	\$21.0	\$5.1	\$4.5	\$61.4	\$8.9	\$0.0
2015	\$19.9	\$5.5	\$4.6	\$62.4	\$9.9	\$0.1
2016	\$16.7	\$4.6	\$10.1	\$64.8	\$10.4	\$0.0

Source: Statistics Canada, CANSIM Table 358-0162: Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (dollars x 1,000,000);

Figure 7: Funding for Social Sciences and Humanities R&D Performed by NB's Higher Education Sector, by Funding Source (2007 Constant Dollars in Millions)



Data: Figure 7 (2007 Constant Dollars)	FEDERAL GOVERNMENT (millions)	HIGHER EDUCATION (millions)	Provincial (millions)
2000	\$4.0	\$31.0	\$0.6
2001	\$4.6	\$29.7	\$0.5
2002	\$4.4	\$32.2	\$0.6

2003	\$8.1	\$33.6	\$0.9
2004	\$9.4	\$33.6	\$0.8
2005	\$11.2	\$36.2	\$0.7
2006	\$8.5	\$35.9	\$1.0
2007	\$8.3	\$34.7	\$1.4
2008	\$8.9	\$35.0	\$1.1
2009	\$10.3	\$37.6	\$1.0
2010	\$8.2	\$36.0	\$1.1
2011	\$7.5	\$34.6	\$0.6
2012	\$8.0	\$51.0	\$1.0
2013	\$7.7	\$48.4	\$1.0
2014	\$7.5	\$51.0	\$1.3
2015	\$6.9	\$51.3	\$1.4
2016	\$5.9	\$51.3	\$1.2

Source: Statistics Canada, CANSIM Table 358-0162: Provincial estimates of research and development expenditures in the higher education sector, by funding sector and type of science, annual (dollars x 1,000,000);

Notes and Changes to Goal Target

- This goal assumes to measure the value of R&D in constant dollars (as opposed to current prices, which are used in the similar *OneNS* goal). The values presented are in 2007 constant dollar prices in order to represent more accurate purchasing power across the years. The exception to this is Figure 3 which measures in current dollars due to examining only one year of data.
- This goal has changed targets in the summer 2019 revision from doubling post-secondary R&D funding in New Brunswick to closing the gap between the province and Nova Scotia.
 1. This target contains funding for community college R&D therefor may be overstated when compared to values from CAUBO and FIUC which do not account for community college R&D funding. The difference, however, is minimal as NBCC does not receive a substantial amount of R&D funding.
 2. This target has been extrapolated from the Statistics Canada *Provincial estimates of research and development expenditures in the higher education sector* source. The Per Capita R&D funding of Nova Scotia is multiplied by the population of New Brunswick in order to reach a similar funding level.
 3. As New Brunswick has no medical schools, the funding towards health research from Health Canada and Canadian Institutes of Health Research (CIHR) has been subtracted from the target to represent a more accurate comparison between the two provinces.

