Organisation for Economic Co-operation and Development

Survey response for Canada

OECD database of governance of public research policy

This document contains detailed responses for Canada to the survey on governance of public research policy across the OECD. It provides additional background information to the OECD database of governance of public research policy as described in Borowiecki, M. and C. Paunov (2018), "How is research policy across the OECD organised? Insights from a new policy database", *OECD Science, Technology and Industry Policy Papers*, No. 55, OECD Publishing, Paris, https://doi.org/10.1787/235c9806-en. The data was compiled by the OECD Working Party on Innovation and Technology Policy (TIP). Data quality was validated by delegates to OECD TIP Working Party the in the period between March 2017 and May 2018. Additional references that were used to fill out the questionnaire are indicated.

The data is made freely available online for download at https://stip.oecd.org/resgov.

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Abbreviations and acronyms

CCA	Council of Canadian Academies
CRCC	Canada Research Coordinating Committee
ISED	Department of Innovation, Science and Economic Development
STI	Science, Technology and Innovation
NSERC	Natural Sciences and Engineering Research Council
HEIs	Higher Education Institutions
CIHR	Canadian Institutes of Health Research
SSHRC	Social Sciences and Humanities Research Council of Canada
NRC	National Research Council of Canada
PRIs	Public Research Institutions
SBDA	Science Based Departments and Agencies
SME	Small and medium-sized enterprise
ITO	Industrial Technology Office
MRRS	Policy on Management, ReReferences and Results Structures
EOA	Evaluation and Outcome Assessment
CFI	Canada Foundation for Innovation
STIC	Science, Technology and Innovation Council

Survey of public research policy

Topic 1: Institutions in charge of priority setting, funding and evaluations

Table 1. Questions on institutions in charge of priority setting, funding and evaluations of universities and PRIs

Question	Response
Q.1.1. Who mainly decides on the **scientific, sectoral and/or thematic priorities of budget allocations** for a) HEIs and b) PRIs?	a and b) In Canada, the national ministry level decides on scientific, sectoral and/or thematic priorities of project-based funding of research and innovation for HEIs and PRIs.
c) Which are the main mechanisms in place to decide on **scientific, sectoral and/or thematic priorities of national importance**, e.g. digital transition, sustainability? Please describe who is involved and who decides on the priorities (e.g., government, research and innovation councils, sector-specific platforms including industry and science, etc.). *(This question does not refer to who sets overall science, technology and industry priorities. This is usually done by parliaments and government. The question refers to decisions taken after budgets to different ministries/agencies have been approved. Scientific priorities refer to scientific disciplines, e.g. biotechnology; sectoral priorities refer to industries, e.g. pharmaceuticals; and thematic priorities refer to broader social themes, e.g. digital transition, sustainability, etc.)*	The Department of Innovation, Science and Economic Development (ISED) decides on scientific, sectoral and/or thematic priorities of major research and innovation programmes. In 2015, with the election of a new government, Industry Canada was renamed and transformed into ISED. ISED has been established to foster a growing, competitive and knowledge-based Canadian economy. The new Minister of Innovation, Science and Economic Development has been mandated by the Prime Minister to develop an Innovation Agenda and to work with Regional Development Agencies to make strategic investments that build on competitive regional advantages (EC/OECD STI Policy Survey 2016, ***response B4***). Industry Canada and now ISED are responsible for developing major STI strategies of Canada, thus defining the scientific and thematic scope of public calls for projects by the funding agencies (EC/OECD STI Policy Survey 2016, ***response A2***).
d) From 2005-16, were any significant changes introduced as to how decisions on scientific, sectoral and/or thematic orientation of major programmes are taken (e.g. establishment of agencies that decide on content of programmes)?	c) See response to question 1.1 in the annex. d) *Changes over 2005-16* In 2015, Industry Canada turned into Department of Innovation, Science and Economic Development (ISED). In 2013, NRC became Canada's national research and technology organization (RTO). Strategy "Mobilizing Science and Technology for Canada's Advantage" was launched in 2007. Strategy "Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation" was launched in 2014 and continues and builds upon the 2007 Strategy.
References: *EC/OECD STI Policy Survey 2016 for Canada. Responses A2 and B4.*	

Q.1.2. Who allocates **institutional block funding** to a) HEIs and b) PRIs?
(Institutional block funds (or to general university funds) support institutions and are usually transferred directly from the government budget.)

c) Who allocates **project-based funding** of research and/or innovation for HEIs and PRIs?
(Project-based funding provides support for research and innovation activities on the basis of competitive bids.)

d) Is there a transnational body that provides funding to HEIs and PRIs (e.g. the European Research Council)?
e) What is the importance of such funding relative to national funding support?

f) From 2005-16, were any changes made to way programmes are developed and funding is allocated to HEIs and PRIs (e.g. merger of agencies, devolution of programme management from ministries to agencies)?

a and b) In Canada, the federal states and/or regional level allocates institutional funding to HEIs while the national agency level allocates institutional funding to PRIs. Funds for research and/or innovation projects, i.e. open calls, are allocated by national agencies.

HEIs as educational institutions are constitutionally under the jurisdiction of Canada's ten provinces and three territories. The Government of Canada's main role is to provide funding for research conducted at these institutions.

Institutional block funding to HEIs is allocated in cooperation between the government of Canada and provincial governments (CMEC, 2016). The National Research Council allocates institutional funding to PRIs (National Research Council Canada, 2012).

c) 5 major granting agencies provide funds for research and/or innovation projects: National Research Council; Canada First Research Excellence Fund; Natural Sciences and Engineering Research Council (NSERC); Canadian Institutes of Health Research (CIHR); and Social Sciences and Humanities Research Council of Canada (SSHRC) (EC/OECD STI Policy Survey 2014, response "Policy implementation A2-2-6").

Recently, new References of competitive-based funding have appeared, for instance, with the establishment of the Canada First Research Excellence Fund in 2015 (EC/OECD STI Policy Survey 2014, response "New funding and Full Cost Recovery (FCR) B3-2").

The National Research Council remains the major provider of institutional block finding though its role has been changed recently; it concentrates mostly on cooperation with industry and support of R&D projects between science and industry (EC/OECD STI Policy Survey 2016, response B4).

d and e) HEIs and PRIs do not receive significant funding from transnational bodies.

f) No major changes made.

References:
EC/OECD STI Policy Survey 2014 for Canada. Response "Policy implementation A2-2-6".
EC/OECD STI Policy Survey 2014 for Canada. Response "New funding and Full Cost Recovery (FCR) B3-2".
The Council of Ministers of Education (2016). Education in Canada: An Overview (web page). Retrieved from: http://www.cmec.ca/299/Education-in-Canada-An-Overview/index.html, accessed 8.10.2016.
EC/OECD STI Policy Survey 2016 for Canada. Response B4.
National Research Council of Canada (2012). About NRC - National Research Council Canada (web page). Retrieved from: http://www.nrc-cnrc.gc.ca/eng/about/index.html, accessed 8.10.2016.

Q.1.3. Do **performance contracts** determine funding of a) HEIs? *Institutional block funds can be partly or wholly distributed based on performance. (Performance contracts define goals agreed between ministry/agency and HEIs/PRIs and link it to future block funding of HEIs and PRIs.)* b) What is the share of HEI budget subject to performance contract? c) Do performance contracts include quantitative indicators for monitoring and evaluation? d) What are the main indicators used in performance contracts? Which, if any, performance aside from research and education is set out in performance contracts? e) Do HEIs participate in the formulation of main priorities and criteria used in performance contracts? f) Do the same priorities and criteria set in performance contracts apply to all HEIs? g) Are any other mechanisms in place to allocate funding to HEIs and PRIs? h) From 2005-16, were any changes made to funding of HEIs and PRIs? *(In case performance contracts are in place that bind funding of PRIs, please provide information about them.)*	a to f) In Canada, funding of HEIs and PRIs is not based on agreements on future performance of the institutions. In Ontario performance-based contracts are used for allocating less than two per cent of the operating funding available to universities (Council of Ontario Universities, 2014). g) The National Research Council is unique compared to other Canadian federal departments and agencies in that its enabling legislation allows it to generate revenue and the ability to expend the funds it receives through the conduct of its operations. Additionally it can license, sell or otherwise grant or make available to others, and receive royalties, fees and payment for, Canadian or other patent rights or any other rights, vested in or owned or controlled by the National Research Council, or in respect of any discovery, invention or improvement in any art, process, apparatus, machine, manufacture or composition of matter. h) No major changes made.
References: *Council of Ontario Universities (2014). Performance-based funding. Retrieved from: http://cou.on.ca/papers/performance-based-funding/, accessed 23.09.2016.*	
Q.1.4. Who decides on the following key **evaluation** criteria of HEIs and PRIs? Who is responsible for setting criteria to use when evaluating performance of a) HEIs? Who is responsible for b) evaluating and c) monitoring HEIs' performance? Who is responsible for setting criteria to use when evaluating performance of d) PRIs? Who is responsible for e) evaluating and f) monitoring PRIs' performance? h) From 2005-16, was any institution created for evaluating HEIs and PRIs or were any changes made to criteria applied for evaluations of HEIs and PRIs?	a to f) National agencies set criteria to use when evaluating performance of HEIs and PRIs and conducts evaluations and monitors performance of HEIs and PRIs. In terms of evaluation of HEIs and PRIs, the following national agencies define performance criteria to be used for evaluations of institutions and conduct the evaluations: • Industrial Technology Office (ITO); • Natural Sciences and Engineering Research Council – NSERC; • National Research Council (NRC); • Policy on Management, ReReferences and Results Structures (MRRS); • Evaluation and Outcome Assessment (EOA) team - Canada Foundation for Innovation (CFI); • Evaluation of the Knowledge Infrastructure Programme; Canadian Institutes of Health Research – CIHR; • Social Sciences and Humanities Research Council – SSHRC (EC/OECD STI Policy Survey 2014, response "Programme and project evaluation A3-2-3"). h) No major changes made.
References: *EC/OECD STI Policy Survey 2014 for Canada. Response "Programme and project evaluation A3-2-3".*	
Q.1.5. Which **recent reforms** to institutions that are in charge of priority setting, budget allocations, and evaluations of HEIs and PRIs were particularly important?	No major reforms made.

Topic 2: Policy co-ordination mechanisms

Table 2. Questions on research and innovation councils

Question	Response
Q.2.1. a) Is there a **Research and Innovation Council**, i.e. non-temporary public body that takes decisions concerning HEI and PRI policy, and that has explicit mandates by law or in its statutes to either? – provide policy advice (i.e. produce reports); – and/or oversee policy evaluation; – and/or coordinate policy areas relevant to public research (e.g. across ministries and agencies); – and/or set policy priorities (i.e. strategy development, policy guidelines); – and/or joint policy planning (e.g. joint cross-ministry preparation of budgetary allocations)? b) What is the name of the main research and/or innovation Council/Committee? Are there any other research Councils/Committees? c) Are there any other research Councils/Committees?	a and b) The Technology and Innovation Council (STIC) is the main research and innovation council; it provides policy advice and evaluation of policy implementation. The Technology and Innovation Council (STIC) was established in 2007. STIC is an important element of the Government of Canada's 2007 STI strategy "Mobilizing Science and Technology to Canada's Advantage". The 2007 STI Strategy recognized the importance of effective, independent and integrated advice on STI issues to help inform government decision-making. To meet this need, STIC was established in October 2007 to provide external advice to the federal government. STIC replaced a number of existing S&T advisory bodies to consolidate this advisory function into one council. On May 21, 2013, STIC released its State of the Nation 2012 report. The report charts progress from a baseline set in 2008 and compares Canada's performance to global STI leaders (EC/OECD STI Policy Survey 2016, response B4_2). c) The Council of Canadian Academies (CCA) is an independent, not-for-profit organization that supports independent, authoritative, and evidence-based expert assessments that inform public policy development in Canada. The CCA's work encompasses a broad definition of science, incorporating the natural, social and health sciences as well as engineering and the humanities. Assessments are conducted by multidisciplinary panels of experts from across Canada and abroad. Expert panels directly address the question and sub-questions referred to them by sponsors. Assessments may also consider emerging issues, gaps in knowledge, Canadian strengths, and international trends and practices. Assessments provide government decision-makers, academia and stakeholders with the high-quality information required to develop informed and innovative public policy. The CCA's completed assessments are published and made available to the public free of charge.
References: *EC/OECD STI Policy Survey 2016 for Canada. Response B4_2.*	
Q.2.2. With reference to Q.2.1, does the Council's **mandate** explicitly include a) policy coordination; b) preparation of strategic priorities; c) decision-making on budgetary allocations; d) evaluation of policies' implementation (including their enforcement); e) and provision of policy advice?	a to e) STIC has a dual mandate. First, STIC provides the government with confidential, timely and evidence-based advice on STI policy issues that advance Canada's economic development and societal well-being. Advice is provided on specific issues ("charges") referred to the Council by the government. Second, STIC produces biennial, public State of the Nation reports that assess and benchmark Canada's STI progress and performance, particularly against that of international jurisdictions. The reports track trends in Canada's performance and identify areas of Canada's STI strengths and vulnerabilities. The reports provide a common evidence base for decision-making by governments, industry, and academia (Mandate – STIC, 2016).
References: *Science, Technology and Innovation Council (2016). Mandate – STIC (web page). Retrieved from: http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h_00005.html, accessed 8.10.2016.*	

Q.2.3. With reference to Q.2.1, **who formally participates** in the Council? a) Head of State, b) ministers, c) government officials (civil servants and other representatives of ministries, agencies and implementing bodies), d) funding agency representatives, e) local and regional government representatives, f) HEI representatives, g) PRI representatives, h) private sector, i) civil society, and/or j) foreign experts	a to j) The Council is comprised of 18 members from the business, research, education, and Government communities (EC/OECD STI Policy Survey 2016, ***response B4_2***). The STIC consists of a Chair, Vice-Chair and 17 members (at full complement). STIC members are appointed by the government to serve for three-year, renewable terms. Members include leaders from the private sector, public sector and academia with representation from across Canada. The Chair of STIC is appointed through an Order-in-Council to provide leadership and guidance on STIC's ongoing work. In November 2017, the Hounourable Kirsty Duncan, Minister of Science and Minister of Sport and Persons with Disabilities, publicly expressed her support for replacing the Science, Technology and Innovation Council with a more nimble, public-facing advisory body. In the coming months, Minister Duncan will announce her plans to move forward with a new, more open and transparent science and innovation council so that government can benefit from independent experts working in these fields.
References: *Science, Technology and Innovation Council (2016). Mandate – STIC (web page). Retrieved from: http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h_00005.html, accessed 8.10.2016.*	
Q.2.4. With reference to Q.2.1.b., does the Council have its own a) **staff** and/or its own b) **budget**? If so, please indicate the number of staff and the amount of annual budget available.	a and b) The Science, Technology and Innovation Council (STIC) is supported by a secretariat that is resourced by the department of Innovation, Science and Economic Development Canada (ISED).
c) From 2005-16, were any **reforms** made to the mandate of the Council, its functions, the composition of the Council, the budget and/or the Council's secretariat? Was the Council created during the time period?	c) The Technology and Innovation Council was established in 2007. STIC replaced a number of existing S&T advisory bodies to consolidate this advisory function into one council (EC/OECD STI Policy Survey 2016, ***response B4_2***).
References: *EC/OECD STI Policy Survey 2016 for Canada. Response B4_2.* *Mandate - STIC (2016). Retrieved from: http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h_00005.html, accessed 8.10.2016.*	

Table 3. Questions on national STI strategies

Question	Response
Q.2.5. a) Is there a national non-sectoral **STI strategy** or plan? b) What is the name of the main national STI strategy or plan?	a and b) Canada's Innovation and Skill Plan for the period 2017 - 2025; and the "Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation" (2014) (EC/OECD STI Policy Survey 2016, ***response A2***).
References: *EC/OECD STI Policy Survey 2016 for Canada. Response A2.* *Government of Canada (2014). Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation 2014 - Innovation, Science and Economic Development Canada (web page). Retrieved from: http://www.ic.gc.ca/eic/site/icgc.nsf/eng/h_07472.html, accessed 23.09.2016.*	
Q.2.6. Does the national STI strategy or plan address any of the following priorities? a) Specific themes and/or **societal challenges** (e.g. Industry 4.0; "green innovation"; health; environment; demographic change and wellbeing; efficient energy; climate action) - Which of the following themes and/or societal challenges are addressed? – Demographic change (i.e. ageing populations, etc.) – Digital economy (e.g. big data, digitalisation, industry 4.0) – Green economy (e.g. natural reReferences, energy, environment, climate change) – Health (e.g. Bioeconomy, life science) – Mobility (e.g. transport, smart integrated transport systems, e-mobility) – Smart cities (e.g. sustainable urban systems urban development) b) Specific **scientific disciplines** and **technologies** (e.g. ICT; nanotechnologies; biotechnology) - Which of the following scientific research, technologies and economic fields are addressed? – Agriculture and agricultural technologies – Energy and energy technologies (e.g. energy storage, environmental technologies) – Health and life sciences (e.g. biotechnology, medical technologies) – ICT (e.g. artificial intelligence, digital platforms, data privacy) – Nanotechnology and advanced manufacturing (e.g. robotics, autonomous systems) c) Specific **regions** (e.g. smart specialisation strategies) d) **Supranational** or transnational objectives set by transnational institutions (for instance related to European Horizon 2020) e) **Quantitative targets** for monitoring and evaluation (e.g. setting as targets a certain level of R&D spending for public research etc.) f) From 2005-16, was any STI strategy introduced or were any changes made existing STI strategies?	a and b) The strategy Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation" addresses four societal challenges: Natural resources and energy; environment and agriculture; health and life sciences; and demographic changes. Further, the strategy identifies three specific scientific research, technologies and economic fields: ICTs; advanced manufacturing; health and life sciences. With regard to supranational or transnational objectives it identifies: Global leadership and societal challenges. "Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation" introduced in December 2014 builds upon the strategy "Mobilizing Science and Technology for Canada's Advantage" from 2007 (EC/OECD STI Policy Survey 2016, ***response A2***). See annex for additional strategies that address societal challenges. c) Regarding the specific regional priorities, the Atlantic Canada Opportunities Agency works to building a strong and innovative Atlantic economy (EC/OECD STI Policy Survey 2016, ***response F3***). See annex for additional strategies that address key technologies. d) Missing answer. e) The STI strategy includes the following targets that address HEIs and PRIs: – Grow up to 5 world-leading superclusters in Canada by 2025 – Increase Canadian business expenditures in research and development (R&D) to $30 billion by 2025; – Double the percentage of companies engaged in collaborations with higher education institutions by 2025 – Increase Canada's ranking for Average Relative Citation (ARC) in natural sciences, engineering, and life sciences to the top 10 of OECD countries by 2025 – Program simplification f) "Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation" introduced in December 2014 continuing and building upon the strategy "Mobilizing Science and Technology for Canada's Advantage"; the new STI strategy Canada's Innovation and Skill Plan was passed in 2017 for the period to 2025

References: *EC/OECD STI Policy Survey 2016 for Canada. Response A2.* *EC/OECD STI Policy Survey 2016 for Canada. Response F3.* *Government of Canada (2014). Seizing Canada's Moment: Moving Forward in Science, Technology and Innovation 2014 - Innovation, Science and Economic Development Canada (web page). Retrieved from: http://www.ic.gc.ca/eic/site/icgc.nsf/eng/h_07472.html, accessed 23.09.2016.*	
Q.2.7. What **reforms** to policy co-ordination regarding STI strategies and plans have had particular impact on public research policy?	No recent reforms to policy co-ordination having impact on research policy. Canada's Minister of Science, launched an independent review of federal support for fundamental science in 2016. The review was designed to assess the programs and structures that are in place to support fundamental research in Canada to ensure that they are strategic, effective and meet the needs of scientists. The review will give the federal government advice on how to strengthen Canada's international standing in fundamental science and how to ensure that Canada's scientists have the tools, training and support needed to excel globally. The Panel consulted with the research community and to solicit input from relevant stakeholders—including universities, colleges and polytechnics, research hospitals, research institutes, individual researchers, industry, civil society and the general public, The review is being led by an independent panel of distinguished leaders and innovators, and is chaired by Dr. David Naylor, former president of the University of Toronto.

Table 4. Questions on inter-agency programming and role of agencies

Question	Response
Q.2.8. Does **inter-agency joint programming** contribute to the co-ordination of HEI and PRI policy? *(Inter-agency joint programming refers to formal arrangements that result in joint action by implementing agencies, such as e.g. sectoral funding programmes or other joint policy instrument initiatives between funding agencies.)*	"Mobilizing Science and Technology to Canada's Advantage" 2007 strategy encouraged co-operation and co-ordination on S&T-related regulatory issues among federal, provincial, and territorial governments (EC/OECD STI Policy Survey 2016, ***response A2***). Inter-agency programming exists between the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), the Social Sciences and Humanities Research Council of Canada (SSHRC), and the Canada Foundation for Innovation (CFI) (Canada, G. of, 2010).
References: *EC/OECD STI Policy Survey 2016 for Canada. Response A2.* *Government of Canada (2010). Science.gc.ca - Collaboration between Federal Research Funding Organizations (web page). Retrieved from: http://www.science.gc.ca/default.asp?Lang=En&n=A0A2F2CB-1, accessed 8.10.2016.*	
Q.2.9. a) Is co-ordination within the **mandate of agencies**? b) From 2005-16, were any changes made to the mandates of agencies tasked with regards to inter-agency programming? Were new agencies created with the task to coordinate programming during the time period?	a) On behalf of the federal government, the Minister of Industry (ISED) is responsible for cross-cutting S&T policy coordination and frameworks. b) Missing answer.
Q.2.10. What **reforms** of the institutional context have had impacts on public research policy?	No major reforms made.

Topic 3: Stakeholders consultation and institutional autonomy

Table 5. Questions on stakeholder consultation

Question	Response
Q.3.1. a) Do the following stakeholders participate as formal members in **Research and Innovation Councils**? *(i.e. Formal membership as provided by statutes of Council)* – Private Sector – Civil society (citizens/ NGOs/ foundations) – HEIs/PRIs and/or their associations b) Do stakeholders participate as formal members in **council/governing boards of HEIs**? *(i.e. Formal membership as provided by statutes of Council)* – Private Sector – Civil society (citizens/ NGOs/ foundations)	a) The Technology and Innovation Council and/or governing bodies of funding agencies consist of representatives from private sector, civil society and HEIs/PRIs. The STIC consists of a Chair, Vice-Chair and 17 members (at full complement). STIC members are appointed by the government to serve for three-year, renewable terms. Members include leaders from the private sector, public sector and academia with representation from across Canada. The Chair of STIC is appointed through an Order-in-Council to provide leadership and guidance on STIC's ongoing work. In November 2017, the Hounourable Kirsty Duncan, Minister of Science and Minister of Sport and Persons with Disabilities, publicly expressed her support for replacing the Science, Technology and Innovation Council with a more nimble, public-facing advisory body. In the coming months, Minister Duncan will announce her plans to move forward with a new, more open and transparent science and innovation council so that government can benefit from independent experts working in these fields. b) Representatives from private sector, civil society and HEIs/PRIs participate in governing boards of HEIs and PRIs taking decisions on strategic issues informing thematic and scientific priorities of HEIs and PRIs. Typically, a significant proportion of the members of governing boards/councils at Canadian universities are external to the university, in accordance with composition requirements set out in provincial legislation. The specific requirements vary by province and/or by individual institution, but external members can make up roughly half or more of board members and can include alumni of the institution as well as members appointed either by the provincial government or by the board itself. These external board members represent a broad cross-section of stakeholders, including senior leaders from private sector companies of all sizes, industry associations, the non-profit sector and NGOs, as well as Canadian media personalities. For example, the boards of some of Canada's leading research-intensive universities currently include representatives from some of Canada's largest banks, large firms in the communications, energy and transportation sectors, leading Canadian law firms, non-profit business accelerator programs, airport authorities, and Indigenous organisations.

References:
National Research Council Canada (2016). Corporate overview (web page). Retrieved from: http://www.nrc-cnrc.gc.ca/eng/about/corporate_overview/index.html, accessed 10.10.2016.
NSERC (2016). Council Members (web page). Retrieved from: http://www.nserc-crsng.gc.ca/NSERC-CRSNG/Council-Conseil/Members-Membres_eng.asp, accessed 10.10.2016.
Social Sciences and Humanities Research Council (2016). Retrieved from: http://www.sshrc-crsh.gc.ca/home-accueil-eng.aspx, accessed 23.09.2016.
Social Sciences and Humanities Research Council (2016). Council Members (web page). Retrieved from: http://www.sshrc-crsh.gc.ca/about-au_sujet/governance-gouvernance/committees-comites/council-conseil-eng.aspx, accessed 10.10.2016.
STIC (2016). Membership (web page). Retrieved from: http://www.stic-csti.ca/eic/site/stic-csti.nsf/eng/h_00008.html, accessed 10.10.2016.
University of Toronto (2016). Membership Information (web page). Retrieved from: http://www.governingcouncil.utoronto.ca/Governing_Council/bac/gc/Membership_Information.htm, accessed 10.10.2016.
OICR (2016). Leadership (web page). Retrieved from: http://oicr-iorc.ca/en/leadership.html, accessed 10.10.2016.

Q.3.2. a) Are there **online consultation** platforms in place to request inputs regarding HEI and PRI policy? b) Which aspects do these online platforms address (e.g. e.g. open data, open science)? c) From 2005-16, were any reforms made to widen inclusion of stakeholders and/or to improve consultations, including online platforms?	a and b) It would be up to Canada's provinces and territories to seek such input where HEIs as educational institutions are concerned. Regarding federal government support for research, there are no continuously operating consultation platforms, although during 2016 the Government of Canada did conduct two major consultations, each of which included online components. The first was to gather input for the Fundamental Science Review, which examined how the government provides support for fundamental science in Canada. The second was for the development of a national Inclusive Innovation Agenda, of which research undertaken at HEIs is a component. *Science Based Departments and Agencies* The Government of Canada is committed to Open Government which means giving greater access to government data and information to the Canadian public and the business community. To this end, the Government of Canada has consulted with Canadians through online platforms on the development of Open Government Action Plans. These plans set out the government's commitments to Canadians as well as to the Open Government Partnership, which it will achieve over three-year time periods through the effective and prudent use of reReferences. It is structured along the three streams of Canada's Open Government Strategy: Open Information, Open Data, and Open Dialogue Online consultation tools are relatively new in the area of federal science in Canada. Open Science initiatives support opening access to scientific publications and the data collected in researching them and to engaging the public in disseminating research results, commenting on the interpretation of the science, and even engaging the public in the data collection (citizen science). Open Science is a commitment found in the Government of Canada's Open Government Action Plan. It is, as well, a priority for the Minister of Science, to ensure that government science is "fully available" to the public, that scientists are able to speak freely about their work, and that scientific analyses are considered when the government makes decisions. An example of an online consultation platform that required inputs from the research community regarding a new public policy is Canada's three federal granting agencies Open Access Policy. The Natural Sciences and Engineering Research Council of Canada (NSERC), Social Sciences and Humanities Research Council (SSHRC) of Canada and Canadian Institutes of Health Research (CIHR) launched (February 2015) a new Tri-Agency Open Access Policy on Scientific Publications under which grant recipients are required to ensure that any peer-reviewed journal publication arising from Agency-supported research is freely available online within 12 months of publication.

National Research Council

The National Research Council conducts consultations with both internal and external stakeholders as required. For example, the National Research Council conducted an external consultation in 2015 with 2500 invited participants using an on-line dialogue platform to develop a deeper understanding of some of the challenges Canada will face in the coming decades and the technologies needed to meet these challenges. The consultation focused on "game changing technologies" and was used to inform the development of future programs to support NRC's emerging technologies strategy.

c) *Canada's Innovation and Skills Plan*

The Innovation and Skills Plan is a multi-year partnership-driven approach to supporting innovation. The Government of Canada launched the development of the Plan in June 2016, which was followed by an extensive engagement exercise to hear from Canadians. The Government used a number of online platforms where over 110,000 Canadians participated and provided more than 1,700 ideas on how to make Canada a global leader in innovation. To complement these efforts, 10 Innovation Leaders from outside government led 28 round-table discussions across the country. These roundtables included a wide range of business sectors, civil society and knowledge institutions, as well as young people and members of Indigenous communities. The Plan also incorporated additional engagement mechanisms at later stages, including the creation of six industry-led, sector-specific Economic Strategy Tables, as well as National Digital and Data Consultations.

Fundamental Science Review

In June 2016, the Government of Canada launched a comprehensive review of federal support for fundamental science to ensure that federal support for research is strategic and effective. The review was led by an independent panel, formed of distinguished research leaders and innovators, who sought input from the Canadian research community and Canadian citizens on how to optimize support for fundamental science in Canada. The review involved a broad online consultation as well as targeted roundtables across the country. The panel also surveyed international best practices for funding science, looked at the challenges facing women and other under-represented groups, considered ways to make current support more accessible and inclusive, and considered what more could be done to encourage Canada's scientists to take on bold new research challenges.

As a result, on April 10, 2017 the Fundamental Science Review (FSR) report was released and made 35 recommendations in three broad categories: measures to improve system-wide coordination, measures to improve coordination among the granting councils and the Canada Foundation for Innovation, and measures to reinvest in the research ecosystem.

In response to the Fundamental Science Review, in 2018 the Government of Canada proposed a historic investment of nearly $4 billion in Canada's research system, including the single largest investment in fundamental research in Canadian history.

	'Made-in-Canada' Athena Swan program Canada is engaging stakeholders through several different mechanisms in the creation of its made-in-Canada Athena SWAN program, including consultation roundtables with the Minister of Science, an online platform, informal meetings with key stakeholders, and cross-country technical workshops. *CRCC Consultations on Tri-Council Research Funding* The Canada Research Coordinating Committee (CRCC) was established by Canada's Minister of Science and Minister of Health in October 2017, to achieve greater harmonization and coordination of research-related programs and policies and to address issues of common concern to Canada's three federal granting agencies (in natural sciences and engineering, social sciences and humanities, and health) and the Canada Foundation for Innovation, which supports research infrastructure. Among the key principles of the CRCC's work are to ensure that the perspectives of Canada's research community, other stakeholders and Indigenous communities are taken into account, and to proactively communicate the CRCC's actions, progress and outcomes. During summer 2018, the CRCC undertook its first series of consultations with Canada's postsecondary research community to present its work, and to consult on three main issues: design of a new tri-agency fund to support research that is interdisciplinary, international, fast-breaking and higher-risk; enhancing equity, diversity and inclusion outcomes in academia in Canada; and improving research support for early career researchers. Consultations were undertaken via a cross-country series of roundtables, complemented by an online portal. The CRCC is expected to undertake additional consultation and communication activities, with a view to effectively fulfilling its mandate. *Digital Research Infrastructure Strategy* The Government of Canada has set out an ambitious vision for a world-leading science and research ecosystem that enables discovery and innovation, delivering social, environmental and economic benefits to Canadians. To support this vision and informed by input from key stakeholders, the government has developed a proposed Digital Research Infrastructure Strategy that will ensure Canada's academic researchers have the advanced digital tools and services they rely on to remain at the forefront of their disciplines. In spring and summer 2018, the government has conducted consultations with key stakeholders, including organizations that provide digital research infrastructure and services to Canada's research community; DRI funding partners including provincial/territorial governments; and research institutions in order to validate the proposed Strategy.
References: *EC/OECD STI Policy Survey 2014 for Canada. Responses "Open data B6-1" and "Open data B6-2".*	
Q.3.3. Which **reforms** to consultation processes have proven particularly important?	While not "reforms" per se, the consultation processes used for the Fundamental Science Review and Inclusive Innovation Agenda will be important with regard to future policy and programming for research and innovation in Canada. *National Research Council* The consultation processes used at the National Research Council are important tools used to inform future policy and programming for research and innovation at the National Research Council.

Table 6. Questions on autonomy of universities and PRIs

Question	Response
Q.3.4. Who decides about **allocations of institutional block funding** for teaching, research and innovation activities at a) HEIs and b) PRIs? *(National/regional level: If HEIs face national constraints on using block funds, i.e. funds cannot be moved between categories such as teaching, research, infrastructure, operational costs, etc. This option also applies if the ministry pre-allocates budgets for universities to cost items, and HEIs are unable to distribute their funds between these.* *Institutions themselves: If HEIs are entirely free to use their block grants.)*	a and b) HEIs and PRIs decide about internal allocations of institutional block funding for teaching, research and innovation activities. Canada's provinces and territories are responsible to provide base funding to HEIs, and how this is allocated internally for teaching and other purposes varies from province to province, territory to territory and institution to institution. The Government of Canada provides funding for research on a competitive basis. This funding is usually awarded to researchers or teams of researchers who must abide by grant terms and conditions, although sometimes grants are made to institutions themselves (and also with terms and conditions).
Q.3.5. Who decides about **recruitment** of academic staff at a) HEIs and b) PRIs? *(National/regional level: If recruitment needs to be confirmed by an external national/regional authority; if the number of posts is regulated by an external authority; or if candidates require prior accreditation. This option also applies if there are national/regional laws or guidelines regarding the selection procedure or basic qualifications for senior academic staff.* *Institutions themselves: If HEIs are free to hire academic staff. This option also applies to cases where laws or guidelines require the institutions to publish open positions or the composition of the selection committees which are not a constraint on the hiring decision itself.)* Who decides about **salaries** of academic staff at c) HEIs and d) PRIs? *(National/regional level: If salary bands are negotiated with other parties, if national civil servant or public sector status/law applies; or if external authority sets salary bands.* *Institutions themselves: If HEIs are free to set salaries, except minimum wage.)* Who decides about **reassignments** and **promotions** of academic staff at e) HEIs and f) PRIs? *(National/regional level: If promotions are only possible in case of an open post at a higher level; if a promotion committee whose composition is regulated by law has to approve the promotion; if there are requirements on minimum years of service in academia; if automatic promotions apply after certain years in office, or if there are promotion quotas.* *Institutions themselves: If HEIs can promote and reassign staff freely.)*	a) HEIs decide about recruitment of academic staff. Institutions' administrators and hiring committees. Where federal funding is provided to support the hiring of academic staff, for example through the Canada Research Chairs and Canada Excellence Research Chairs programs among others, researchers nominated for positions undergo peer review to ensure they satisfy program criteria before funding is approved and released. b) PRIs decide about recruitment of academic staff. *The National Research Council* The National Research Council's General Managers authorise recruitment activities for their research portfolios. Directors R&D and/or Team Leaders are responsible for conducting all activities pertaining to the hiring process with assistance from Human ReReferences, and then bringing forward hiring recommendations to the General Manager. The National Research Council has formal recruitment programs to bring in post-graduates (Research Associate Program & Post-doctoral Fellowships program). These programs provide promising scientists and engineers with the opportunity to work in a challenging research environment during the early stages of their career. *Science Based Departments and Agencies* Each Science Based Departments and Agency has a departmental human resource (HR) strategic plan and the hiring manager of each sector or division in the department is responsible for the development and implementation of the HR plan which includes recruitment, career progression, retention, student recruitment, etc. Within available financial reReferences, departments are able to recruit research staff using merit-based hiring in accordance with the guidelines and staffing processes set out by the Public Service Commission of Canada

c) Wages of employees at HEIs are set at the national/regional level.

d) PRIs decide about salaries of academic staff.

The National Research Council
Salaries of the National Research Council's researcher officers (ROs) are determined by way of a review of their state of professional development compared with the requirements that define each of the established levels (5) of the RO career progression framework. A specific pay range applies to each of the 5 levels. Pay revisions occur through collective bargaining.

Science Based Departments and Agencies
The Treasury Board Secretariat of Canada oversees the collective agreements of public servants, including scientists who are salaried employees paid by the Government of Canada. Within the collective agreements for federal research scientists, decisions on specific levels and salaries are made by a departmental career progression committee based on an interdepartmental career progression framework (available at: https://www.tbs-sct.gc.ca/pubs_pol/hrpubs/coll_agre/re/re06-eng.asp#toc233610912).

Even though federal research scientists (RES – level 1-5) don't receive performance pay, they are eligible to receive awards linked to their scientific work or achievements throughout their careers. For example at Health Canada, there are awards for "most promising scientist" (this award recognizes the work of a relatively new scientist to Health Canada and the potential for them to attain sizeable recognition by the scientific community at large) and "most distinguished scientist" (this award is presented to a scientist whose had an illustrious career with numerous accolades to his/her name).

e and f) HEIs and PRIs decide about reassignments and promotions of academic staff.

The National Research Council
The National Research Council's compensation system for NRC's researchers has 5 levels and this forms a complete career continuum, reflecting successively higher levels of achievement, impact and recognition. As indicated above, advancement/promotion requires an assessment of the state of professional development which is then compared with the professional development indicators of the career progression framework. Dossiers for promotions to the higher echelons of the pay system are reviewed by a Committee comprised of General Managers and Directors of Research.

Science Based Departments and Agencies
There are approximately 259,000 federal public servants in Canada. The SBDA community of research personnel consists of about 22,300 full-time equivalents. A small proportion of the SBDA community is made up of federal research scientists. Research scientists have a unique situation within the federal government as their career progression is based on the incumbent's achievement, rather than competitive staffing processes. The Career Progression Management Framework for Federal Researchers is a system (set of guidelines) to evaluate and encourage career progression within the federal research community. The Framework sets out requirements for departmental career progression committees that

	determine advancement and salary levels based on factors such as innovation, impact, and recognition and client service.
Q.3.6. Who decides about the **creation of academic departments** (such as research centres in specific fields) and functional units (e.g. **technology transfer offices**) at a) HEIs and b) PRIs? *(National/regional level: If there are national guidelines or laws on the competencies, names, or governing bodies of internal structures, such as departments or if prior accreditation is required for the opening, closure, restructuring of departments, faculties, technology offices, etc.* *Institutions themselves: If HEIs are free to determine internal structures, including the opening, closure, restructuring of departments, faculties, technology offices, etc.)* Who decides about the creation of legal entities (e.g**. spin-offs**) and **industry partnerships** at c) HEIs and d) PRIs? *(National/regional level: If there are restrictions on legal entities, including opening, closure, and restructuring thereof; if restrictions apply on profit and scope of activity of non-profit organisations, for-profit spin-offs, joint R&D, etc.* *Institutions themselves: If HEIs are free to create non-profit organisations, for-profit spin-offs, joint R&D, etc.)*	a and b) HEIs and PRIs decide about the creation of academic departments (such as research centres in specific fields). The decision to create legal entities in HEIs is made at the institutional level. Some HEIs in Canada have policies for the creation, restructure and dissolution of entities which are owned or controlled by the HEI but have a separate legal existence. In general, an HEI's Board of Governors has the sole authority to approve the creation of a new non-profit or for-profit legal entity which the university in whole or in part owns or controls. c) HEIs decide about the creation of functional units (e.g. technology transfer offices). With respect to industry partnerships, these decisions are also made at the institutional level, possibly involving a mélange of professors and administrators in conjunction with the institution's technology transfer office (should one exist). In some cases, researchers must inform HEI administrators of a pending partnership and seek their approval. In some cases, the technology transfer office is involved to ensure partnership agreements comply with the HEI's policies. d) PRIs decide about the creation of functional units (e.g. technology transfer offices). *The National Research Council* The National Research Council President provides leadership and strategic management together with seven Vice Presidents who are responsible for a number of areas composed of research sub-programs, initiatives, centres, the Industrial Research Assistance Program, and corporate branches. These senior executives are charged with approving decisions regarding the creation of legal entities and industry partnerships.

Q.3.7. Who earns what **share of revenues** stemming from IP (patents, trademarks, design rights, etc.) created from publicly funded research at a) HEIs and b) PRIs? – HEI – Research unit / laboratory within HEI – Researchers c) From 2005-16, were any reforms introduced that affected the institutional autonomy of HEIs and PRIs?	a) Researchers receive 50% and HEIs/departments 50%. *HEIs* Canada's three federal granting agencies do not claim any right to the IP (or associated revenues) supported with granting agency funds. In Canada, IP ownership and the allocation of revenues from publicly funded research in HEIs are typically determined at the institutional level. Canada does not have a single policy governing the ownership of IP developed in HEIs. The provinces have jurisdiction to determine university IP policies, which may be institution-owned, inventor-owned or jointly owned by the institution and the inventor. The majority of provinces defer to the institution's policy. Regardless of who owns the IP, the net revenues from the commercialization of the IP are typically distributed between the institution and the inventor. The share of revenues largely depends on the type of ownership policy (inventor- or institution-owned) and who is responsible for the IP's commercialization. In many cases, if the IP is commercialized by the institution, the institution retains 50% of revenue (regardless of the ownership policy). In cases where the IP is commercialized by the inventor, revenue to the HEI ranges from 0% (usually when the IP is inventor-owned) to 50% (when the IP is institution-owned). Some institutions also allow for negotiation of revenue sharing. Ownership of the IP can also be assigned to industry partners, particularly in cases where a company has been involved in the funding of the research. *PRIs* Canadian Federal Departments and Agencies held a total of 2,948 patents in 2015-16. From these patents, there were 2,004 licences. Federal departments and Agencies collected $31.8M in revenue stemming from IP in 2015/16. *The National Research Council* NRC is responsible for managing its IP to drive socio economic benefits for Canada. NRC will strive to extract maximum value from the IP that it develops and co-develops, and to ensure that the chosen IP protection and commercialization strategies support the current and future needs of Canada and of NRC. As every partnership/client engagement the National Research Council enters is different to develop IP, the National Research Council negotiates revenue percentages and royalties etc. on a case-by-case basis. There are guiding principles for these transactions, in practice however, each of these deals has to be negotiated and they differ from client to client. For more information view the following link: http://www.nrc-cnrc.gc.ca/eng/about/intellectual_property/index.html. b) Missing answer. c) Missing answer.
Q.3.8. Which **reforms** to institutional autonomy have been important to enhance the impacts of public research?	Missing answer.

Annex. Additional notes on institutions in charge of setting priorities and national STI strategies

This annex provides additional information to question 1.1.c on mechanisms in place to decide on scientific, sectoral, and/or thematic priorities of national importance in Canada. It also describes additional STI strategies that address societal challenges and scientific disciplines and technologies, providing additional information to question 2.6.a and 2.6.b.

*Which are the main mechanisms in place to decide on scientific, sectoral and/or thematic priorities of national importance, e.g. digital transition, sustainability? Please describe who is involved and who decides on the priorities (e.g., government, research and innovation councils, sector-specific platforms including industry and science, etc.). (Question **1.1.c**)*

The Science, Technology and Innovation Council (STIC)

The Science, Technology and Innovation Council (STIC) is an independent advisory body mandated by the Government of Canada to provide confidential advice on science, technology and innovation (STI) policy issues. This advice helps inform government policy development and decision making. STIC is also mandated to produce biennial, public State of the Nation reports that benchmark Canada's STI performance against international standards of excellence. These reports provide a common evidence base for understanding Canada's STI system.

In November 2017, the Hounourable Kirsty Duncan, Minister of Science and Minister of Sport and Persons with Disabilities, publicly expressed her support for replacing the Science, Technology and Innovation Council with a more nimble, public-facing advisory body. In the coming months, Minister Duncan will announce her plans to move forward with a new, more open and transparent science and innovation council so that government can benefit from independent experts working in these fields.

Mandate Letters

The Prime Minister of Canada has issued mandate letters to each Minister, of which some letters provide direction on scientific and thematic priorities of national importance. For example, in the Minister of Science's mandate letter, the following priorities were included:

- Create a Chief Science Officer mandated to ensure that government science is fully available to the public, that scientists are able to speak freely about their work, and that scientific analyses are considered when the government makes decisions.
- Support the Minister of Employment, Workforce Development and Labour in efforts to help employers create more co-op placements for students in science, technology, engineering, mathematics, and business programs.
- Support your Ministerial colleagues as they re-insert scientific considerations into the heart of our decision-making and investment choices.
- Lead the establishment of new Canada Research Chairs in sustainable technologies, working with the Minister of Innovation, Science and Economic Development.

- Work in collaboration with the Minister of Fisheries, Oceans and the Canadian Coast Guard and the Minister of Environment and Climate Change to examine the implications of climate change on Arctic marine ecosystems.
- Examine options to strengthen the recognition of, and support for, fundamental research to support new discoveries.

Cabinet Committee

Any major policy changes enacted throughout the Federal Government of Canada, including for example new strategies, policies and programs requires approval by a Federal Cabinet Committee.

*Does the national STI strategy address any of the following themes and/or societal challenges? (Question **2.6.a**)*

- *Demographic change (i.e. ageing populations, etc.)*
- *Digital economy (e.g. big data, digitalisation, industry 4.0)*
- *Green economy (e.g. natural reReferences, energy, environment, climate change)*
- *Health (e.g. Bioeconomy, life science)*
- *Mobility (e.g. transport, smart integrated transport systems, e-mobility)*
- *Smart cities (e.g. sustainable urban systems urban development)*

*Does the national STI strategy address any of the following scientific disciplines and technologies? (Question **2.6.b**)*

- *Agriculture and agricultural technologies*
- *Energy and energy technologies (e.g. energy storage, environmental technologies)*
- *Health and life sciences (e.g. biotechnology, medical technologies)*
- *ICT (e.g. artificial intelligence, digital platforms, data privacy)*
- *Nanotechnology and advanced manufacturing (e.g. robotics, autonomous systems)*

Economic Strategy Tables

The Government of Canada's 2017 Federal Budget called for the creation of economic growth strategies. Working with leading Canadian innovators, the Department of Innovation, Science and Economic Development Canada has developed Economic Strategy Tables to identify innovation opportunities in six key priority areas: advanced manufacturing, agri-food, clean technology, digital industries, health/bio-sciences and clean reReferences. The Economic Strategy Tables will set ambitious growth targets for Canadian innovators, identify sector-specific challenges and "bottlenecks" to innovation as well as barriers to greater participation across gender lines, and lay out specific strategies to help innovators achieve their targets. The Economic Strategy Tables will help guide the Government in its efforts to provide relevant and effective programs for Canada's innovators.

Innovation and Skills Plan/Innovation Superclusters Initiative

The Government of Canada 2017 Federal Budget put forward the Innovation and Skills Plan—an agenda to spark growth and help Canada realize its potential as a global leader in innovation. To advance this agenda, a new funding initiative with a budget of up to $950 million was launched to accelerate innovation through clusters, called the Innovation Superclusters Initiative.

Following a rigorous assessment process, the Government of Canada announced Canada's five Innovation Superclusters on February 15, 2018:

- **Digital Technology Supercluster -** Based in British Columbia, the Digital Technology Supercluster will use bigger, better datasets and cutting-edge applications of augmented reality, cloud computing and machine learning to improve service delivery in the natural reReferences, precision health and manufacturing sectors. Employing digital technologies will save time and money and improve the health and lives of Canadians.
    - Technology focus: Virtual, mixed and augmented reality; data collection and analytics; quantum computing
- **Protein Industries Supercluster –** Based in the Prairies, the Protein Industries Supercluster will use plant genomics and novel processing technology to increase the value of key Canadian crops, such as canola, wheat and pulses that are coveted in high-growth foreign markets, such as China and India, as well as to satisfy growing markets in North America and Europe for plant-based meat alternatives and new food products. Building on Canada's worldwide reputation as a leader in agricultural production, this supercluster will make Canada a leading source for plant proteins and, ultimately, feed the world.
    - Technology focus: Agri-food enabling technologies, including genomics, processing, and information technology (IT)
- **Advanced Manufacturing Supercluster -** Based in Ontario, the Advanced Manufacturing Supercluster will build up next-generation manufacturing capabilities, incorporating technologies like advanced robotics and 3D printing. By focusing on training and technology adoption, this supercluster will help make the words “Made in Canada” synonymous with “innovative” and “value added.”
    - Technology focus: Internet of Things, machine learning, cybersecurity, additive manufacturing (3D printing)
- **AI-Powered Supply Chains Supercluster (SCALE.AI) -** Based in Quebec, the SCALE.AI supercluster will bring the retail, manufacturing, transportation, infrastructure, and information and communications technology sectors together to build intelligent supply chains through artificial intelligence and robotics. This supercluster will help Canadian small and medium-sized businesses scale up and help ensure Canada is a globally competitive export leader.
    - Technology focus: Artificial intelligence and supply chain technology
- **Ocean Supercluster -** The Ocean Supercluster will harness emerging technologies to strengthen Canada's ocean industries—industries like marine renewable energy, fisheries, aquaculture, oil and gas, defence, shipbuilding, and transportation. This supercluster will ensure Canada's future prosperity as a source of jobs and solutions to global challenges, such as how to meet the energy demands of the 21st century.
    - Technology focus: Digital sensors and monitoring, autonomous marine vehicles, energy generation, automation, marine biotechnology and marine engineering technologies