

Fonds de recherche du Québec

Nature et Technologies Santé Société et Culture



Action Plan for Environmental Responsibility in Research

June 2019

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Introduction

The Chief Scientist of Québec and the Fonds de recherche du Québec (Fonds de recherche du Québec – Nature et technologies, Fonds de recherche du Québec – Santé and Fonds de recherche du Québec – Société et culture; hereinafter the “FRQ”) are committed to promoting sustainable development for the benefit of Québec society. As public research funding agencies, the FRQ are subject to the Québec *Sustainable Development Act*¹. As such, they must report annually on the initiatives and measures they develop and implement to meet the requirements imposed by this Act. In addition, the FRQ subscribe to the *Government Sustainable Development Strategy*². This strategy advocates, among other things, greener, low-carbon, socially responsible economic development for Québec, which encourages the use of green technologies. In 2009, each FRQ adopted a sustainable development action plan in which they affirmed their commitments to the *Government Sustainable Development Strategy* then in effect³. The Fonds de recherche du Québec – Nature et technologies (hereinafter the “FRQNT”) confirmed its interest in this issue by directly promoting research focused on sustainable development. In 2012, each FRQ also adopted an environmental management framework⁴ aimed at reducing the negative environmental impacts of their activities.

The FRQ’s commitment to sustainable development is very real when it comes to protecting the environment. For that reason, they are concerned about the environmental impacts that can result from the research activities they fund. In addition, the best practices set out in their Policy for the responsible conduct of research prescribe environmental responsibility on the part of research actors⁵.

Consequently, the FRQ wish to contribute to efforts to promote environmental protection and sustainable development in research. With their *Action Plan for Environmental Responsibility in Research* (hereinafter the “Action Plan”), they propose an approach for examining the negative impacts of research in order to minimize the environmental effects of research funded by the FRQ while boosting its positive impacts.

¹ *Sustainable Development Act*, CQLR, c. D-8.1.1.

² The *Government Sustainable Development Strategy* covers the period 2015-2020, and was adopted by the *Ministère du Développement durable, de l’Environnement et de la Lutte contre les changements climatiques* on October 28, 2015.

³ Fonds de recherche du Québec – Nature et technologies. Plan d’action de développement durable 2009-2015. Bâtir un avenir durable pour le Québec d’aujourd’hui et de demain ; Fonds de recherche du Québec – Santé. Plan d’action de développement durable 2009-2015. Investir dans la recherche en santé... une question de vie! ; Fonds de recherche du Québec – Société et culture. Plan d’action de développement durable 2009-2015. Des gestes d’avenir à poser maintenant.

⁴ Fonds de recherche du Québec – Nature et technologies. Cadre de gestion environnementale. 2012 ; Fonds de recherche du Québec – Santé. Cadre de gestion environnementale. 2012 ; Fonds de recherche du Québec – Société et culture. Cadre de gestion environnementale. 2012.

⁵ Fonds de recherche du Québec. Policy for the responsible conduct of research. 2014. C. 4, s. K.

In this Action Plan, the FRQ outline their key orientations for environmental responsibility in research and for managing the environmental impacts generated by research. Prepared under the direction of the FRQNT, this plan is in line with national and international trends in environmental responsibility and reflects the values of the FRQ.

The implementation of this Action Plan is based on four distinct, but related, steps. The first step is to promote environmental preservation and increase the community's awareness of the negative impacts their research can have on the environment. The second step is to raise awareness across the research community of the environmental responsibility inherent in research. The third step is to have the research community reduce the negative environmental impacts of research. The fourth step proposes to include the notion of sustainable development when considering environmental responsibility in research. The introduction of these steps will be a gradual process and was preceded by a pilot phase prior to implementation.

The Action Plan came into effect with a pilot phase aimed at identifying the needs for its effective and successful implementation. This pilot phase led to the following observations: the community is prepared to adhere to the introduction of a systematic declaration of the level of environmental risk posed by research projects, and a communication and implementation support plan is needed in order to improve the community's understanding of the requirements set out in the Action Plan. The FRQ revised the Action Plan following an evaluation of the pilot implementation of Steps 1 and 2.

The implementation of the first two steps of the Action Plan began early in the process of developing the Action Plan, which allowed the FRQ to better understand the community's concerns and to refine the best approach for its deployment. These steps must be continued on an ongoing basis in order to promote collective awareness and individual recognition of the environmental responsibility incumbent on every research actor. It is this recognition that will make it possible to reduce the negative impacts of research on the environment in the long term, and to take sustainable development considerations into account as part of environmental responsibility in research.

Objectives and steps

The Action Plan aims to:

- support excellence in research, notably by fostering knowledge development with due regard for the environment and future generations;
- promote environmental preservation and sustainable development in research;
- raise awareness across the scientific community of the possible impacts of research on the environment and the environmental responsibility that entails;
- equip researchers to assess the environmental impacts of their research; and
- fit into the framework of the *Government Sustainable Development Strategy*.

Step 1: Promote environmental preservation and raise awareness in the research community of the negative environmental impacts that can be caused by research

A primary goal of the Action Plan is to raise awareness in the research community of its environmental responsibility when carrying out research activities. For the purposes of this Action Plan, “research activities” are defined as in the FRQ *Policy for the Responsible Conduct of Research*:

All steps included in the life cycle of knowledge creation through rigorous methodologies which are —or are in the process of becoming— recognized by peers, spanning from the initial project proposal to the dissemination of results, including applications for research funding and peer review. These steps also include activities related to fund management⁶.

With this Action Plan, the FRQ wish to make the research community aware of the negative impacts that can result from certain research projects they propose and carry out. To that end, the Action Plan explores mechanisms for assessing the environmental impacts associated with research. The FRQ are aware that the responsibility for identifying the possible effects of a research project on the environment and the resulting impacts lies mainly with the person who develops and carries out the research, as well as with the institution under whose aegis the research is conducted.

⁶ Fonds de recherche du Québec. Policy for the Responsible Conduct of Research. 2014. C. 2, p. 7.

FRQ actions

To help meet this objective for the projects they fund in all areas of research, the FRQ propose the establishment of a systematic process for declaring the level of risk based on the environmental impacts of the research as part of the funding application process. To do this, the FRQ ask researchers to consider the possible ways their research project could affect the environment, assess the resulting level of environmental risk and declare this to the FRQ when applying for funding. The impact declarations produced by researchers will not be included with the information provided or used for the purpose of scientific evaluation. The environmental impact declaration process is described in Section 1 below.

Aware that it can be difficult to assess the level of environmental risk, the FRQ will offer an informative web video aimed at answering the questions most likely to arise during the process of declaring environmental risk. This video will be an evolving tool that can be modified on a regular basis to address questions received from the research community.

Step 2: Raise awareness in the research community of the environmental responsibility inherent in research

Certain elements are key in defining environmental responsibility in research. The most crucial of these are the legal requirements to which research projects may be subject. For that reason, in this Action Plan the FRQ address the legislative framework in force in Québec regarding environmental responsibility in research, paying particular attention to research contexts and the legislative elements that may apply to research.

The legislative framework on the matter includes requirements from the federal and provincial governments, depending on the location and type of research involved. Currently, these requirements are primarily set out in the following acts: the *Impact Assessment Act*⁷, the *Environment Quality Act*⁸ and the *Sustainable Development Act*⁹.

They set out, among other things, the parameters that determine the contexts for which the conduct of research requires environmental authorization and the terms and conditions of such authorizations. It can be difficult and complex to determine which requirements apply in a given research context.

FRQ actions

The FRQ will therefore provide the community with popularized tools containing information on the legislative framework in force as well as tools to help understand the application of this framework in research. As the legislative framework is constantly evolving, the tools can be modified and improved over time.

⁷ Impact Assessment Act. S.C. 2019, c. 28, s. 1.

⁸ *Environment Quality Act*. CQLR, c. Q-2.

⁹ *Sustainable Development Act*. CQLR, c. D-8.1.1.

Step 3: Reduce the environmental impacts of research

With their Action Plan, the FRQ also aim to encourage the community to think about how it can reduce the environmental impacts of research. In addition to requiring principal investigators to identify and assess the risk of negative environmental impact posed by their research, they will be required, when the environmental risk exceeds a certain threshold, to indicate the mitigation measures that they will implement.

FRQ actions

To support researchers with this process, the FRQ have set out guiding principles for an environmentally responsible approach (see Section 3: Statement of principles to guide researchers' actions for an environmentally responsible approach). The principles described can be applied both to research that is subject to specific environmental legal requirements and to that which is not. In setting out these principles, the FRQ include in their definition of the environment everything related to the physical or geographical environments in which life exists. These principles should be considered throughout the entire life cycle of the research, including its development, conduct, dissemination and benefits.

In addition, the FRQ intend to review all of their research policies in order to properly support researchers in implementing the Action Plan, including directives concerning eligible expenses.

Step 4: Expand environmental responsibility considerations in research to include the notion of sustainable development

The FRQ would like to recall that research can also have negative impacts on the economic and social contexts in which individuals lead their lives as well as the points where these worlds intersect. For that reason, they wish to gradually expand their reflections on environmental responsibility to include the notion of sustainable development.

Planned FRQ actions

When including the notion of sustainable development, the FRQ will rely on the definition of sustainable development found in the *Sustainable Development Act*, namely: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development is based on a long-term approach which takes into account the inextricable nature of the environmental, social and economic dimensions of development activities."¹⁰ As research contributes to the development of society, it would be relevant to reflect on the importance of sustainable development considerations in environmental responsibility in research. In Step 4, the FRQ intend to further this reflection.

¹⁰ *Sustainable Development Act*. CQLR, c. D-8.1.1, s. 2.

Parameters for managing environmental responsibility in research

1. Process for declaring the environmental impacts of research to the FRQ

The FRQ's notion of environment includes everything related to physical and geographical environments, in addition to everything that stems from the social contexts in which individuals live and work. Their concept of sustainable development comprises environmental, economic and social issues in addition to those related to human and animal health. It also includes concerns with regard to the preservation, development and sharing of scientific, cultural, archaeological, historical, economic, natural and biological heritage for the benefit of future generations. Research themes stemming from these broader notions of environment and sustainable development receive a significant share of FRQ funding. These themes are among those which the FRQ are actively promoting within the research community. The FRQ decided to begin by focusing their actions on issues surrounding environmental protection, with the aim of reducing the negative impacts of research on human and environmental health.

To do this, the FRQ have adopted a set of guiding principles that support the global movement to fight climate change and protect the environment. The FRQ would like these principles to apply to all research activity conducted in Québec, starting with the research activities they fund. To that end, they are introducing a process for declaring the environmental impacts of research directly in their funding applications.

Process for declaring the environmental impacts of research

The FRQ have set environmental protection and sustainable development objectives that apply to the research they fund. The research community is expected to comply with applicable environmental laws and regulations when the situation dictates. When applying for funding, members of the research community are also expected to indicate, based on reflection and consideration, whether their projects are likely to have any negative environmental impacts.

The FRQ ask applicants to assess the risk of environmental impact associated with their research project. They propose two levels of risk researchers can assign to their project: **minimal risk** or **greater than minimal risk**. When completing their application form, applicants must indicate the level of risk associated with their project in the appropriate box.

The risk can be considered **minimal** if the foreseeable environmental impact does not exceed the impact of day-to-day human activity. A minimal environmental risk can generally be expected of most research activities funded by the FRQ. This level of risk is considered acceptable. The FRQ do not require any additional information in this case. However, they expect

members of the research community to strive at all times to reduce the environmental impacts of their research as much as possible.

When a proposed project involves activities whose foreseeable impact on the environment exceeds the impact of day-to-day human activity, the project is considered to be of **greater than minimal risk**. Such activities require the application of mitigation measures to protect the environment. The principal investigator must indicate that the project poses a greater than minimal risk using the appropriate box in the funding application. For any project with a greater than minimal risk, the principal investigator must describe, directly in the funding application, the mitigation measures to be taken to reduce the environmental impacts associated with the research project.

Projects with greater than minimal risk that raise serious concerns about the protection of human health or the environment are often subject to environmental legal requirements. Researchers who propose projects with greater than minimal risk that are subject to this type of legal requirement have the responsibility of informing the FRQ of the measures that must be taken to comply with these legal requirements. When a project selected for funding is likely to raise serious concerns about the protection of human health or the environment, the FRQ may indicate in the funding letter that a more in-depth environmental assessment by an authorized organization is recommended in order to properly identify the level of environmental risk and assess the proposed impact reduction strategy. The FRQ then invite the host institution and the principal investigator to take appropriate action.

The FRQ recognize that projects that raise serious concerns about the protection of human health or the environment may be necessary for society. Such projects may be acceptable when the expected benefits of the research outweigh the environmental impacts minimized by the planned mitigation measures. In particular, these projects can contribute essential knowledge for environmental protection or sustainable development on the long term. The fact that a research project raises serious concerns about the protection of human health or the environment does not disqualify the research from receiving funding from the FRQ. Assessing the level of environmental risk, identifying mitigation measures and planning measures to comply with legal requirements allow researchers to demonstrate a responsible environmental approach.

2. Legislative framework for the environmental assessment of research

2.1 The *Impact Assessment Act* (federal)

First, research projects that may change components of the environment that are under federal jurisdiction could be subject to the *Impact Assessment Act*¹¹ and be assessed by the Impact Assessment Agency. This Act provides a regulatory framework for changes to the environment that occur on federal lands (e.g. lands that belong to Canada, and all waters on and airspace above those lands). It also covers activities that may have an environmental effect on fish and fish habitat, aquatic species or migratory birds. In addition, research projects that may impact Aboriginal peoples and projects whose environmental effects cross provincial boundaries or the Canadian border may also require an environmental assessment under the Act. Federal authorization may also be necessary under the *Fisheries Act*¹² or the *Species at Risk Act*¹³.

2.2 The *Environment Quality Act*¹⁴ (provincial)

In Québec, the environmental legislative framework is primarily based on the *Environment Quality Act*. The *Ministère de l'Environnement et de la Lutte contre les changements climatiques* is responsible for its administration. The regulation respecting the application of this Act should be consulted to determine the extent to which it may be applicable to research activities.

The FRQ will offer tools to help better understand the framework of this Act and its application as it evolves over time. These tools will be accessible on the Web.

2.3 The *Sustainable Development Act*¹⁵ (provincial)

The *Sustainable Development Act* sets out sixteen principles for the implementation of sustainable development. The FRQ must take these into account in their activities. The Action Plan builds on many of these principles. These include the precautionary principle, which is an important ethical principle for decision-making. In the *Sustainable Development Act*, this principle states that “When there are threats of serious or irreversible damage, lack of full scientific certainty must not be used as a reason for postponing the adoption of effective measures to prevent environmental degradation.”¹⁶ The application of this principle underscores the importance for organizations to put in place mechanisms to adequately assess and manage the environmental impacts of their activities. At the FRQ, these activities are closely linked to research funding.

¹¹ *Impact Assessment Act*. S.C. 2019, c. 28, s. 1.

¹² *Fisheries Act*. R.S.C., c. F-14.

¹³ *Species at Risk Act*. S.C. 2002, c. 29.

¹⁴ *Environment Quality Act*. CQLR, c. Q-2.

¹⁵ *Sustainable development Act*. CQLR, c. D-8.1.1.

¹⁶ Section 6 j).

Other sustainable development principles that are particularly relevant to the Action Plan include: the protection of “health and quality of life”, “social equity and solidarity”, “environmental protection”, “prevention” of known risk, “protection of cultural heritage”, “biodiversity preservation” and “respect for ecosystem support capacity”.¹⁷ These principles are closely linked to the impacts that are likely to arise from the environmental effects of research, whether for humans, future generations, ecosystems or biodiversity. Compliance with these principles therefore calls for the establishment of management mechanisms at the organizational level with the aim of minimizing negative impacts.

3. Statement of principles to guide researchers’ actions for an environmentally responsible approach

In setting out these principles, the main objective of the FRQ is to help members of the research community to reduce the environmental impacts of research on populations and environments. As such, this statement of principles serves as a guide for researchers who plan to apply for funding for a research project.

The principles for environmental responsibility in research to which the FRQ propose to adhere are largely based on the principles of sustainable development, as well as the philosophy of the three Rs: reduce, reuse and recycle. They will therefore encourage researchers to reflect on ways of reducing the quantity of resources used and how these resources could be reused or recycled. The application of these principles cannot be a substitute for compliance with the laws in force. Nonetheless, this statement provides a useful reflection guide for the environmentally ethical and responsible conduct of research that goes beyond legal considerations. These principles are of particular concern when considering negative impacts on human, animal and environmental health. The negative impacts of research do not necessarily imply harm in the legal sense of the word, but rather effects that could influence health in a broader sense, including physical, psychological and social well-being.

The principles to be considered with respect to environmental responsibility in research are as follows¹⁸:

3.1 What we are aiming for

- **A reduction in the likelihood, frequency and duration of the environmental impacts of research** – Measuring the probability that an environmental impact will occur and preparing accordingly. Determining the frequency at which the impact

¹⁷ *Sustainable development Act*. CQLR, c. D-8.1.1, s. 6.

¹⁸ The FRQ drew heavily on provincial, national and international policies and guidelines in identifying their guiding principles, including the *Guide pour la considération des principes de développement durable dans les travaux des commissions d’enquête du Bureau d’audiences publiques sur l’environnement* (2009), the Ministère de l’Environnement, du Développement durable et de la Lutte contre les changements climatiques *Guide de réalisation d’une étude d’impact sur l’environnement* (updated in 2005), the *Canadian Environmental Assessment Act* (2012) and the *EU Framework Programme for Research and Innovation* (2014).

could occur and for how long it could affect the environment, including the lifespan of substances that may end up in the ecosystem during research activities. Estimating the effects that could impact human, animal or environmental health.

- **A reduction in the magnitude or intensity of the environmental impacts of research** – Any research activity is likely to have an impact on the environment. When the expected environmental impact requires mitigation measures, the principal investigator must ensure that the magnitude and intensity of the environmental impacts of the research have the least possible effect on the ecosystem in which the research is taking place and the affected species. In particular, he or she must make sure that the negative impacts on human, animal and environmental health are minimized.
- **A better understanding of the possible interactions between research context and the environment** – Using available knowledge to evaluate the interactions that may occur between the conduct of the research and the physical or geographical environment. For example, determining whether certain elements or products of the research could have a ripple effect on the environment or ecosystems.
- **The use of alternative measures to reduce the environmental impacts of research** – Proposing research methods that minimize the impacts of research on the environment and ecosystems. Using measures that reduce the use or storage of toxic products. Reducing the effects on human, animal or environmental health.
- **Compliance with legal requirements and standards prescribed for research, especially those relating to the environment** – Ensuring that the necessary authorizations, permits, licences or certificates are obtained before undertaking research. A non-exhaustive list of these requirements is provided in the *Politique d'éthique en recherche* adopted by the FRQNT ¹⁹.

3.2 What we are protecting

- **Human health, population safety and well-being** – Reducing the impact of research activities on the health, safety and well-being of communities.
- **The fauna and flora of the environments in which research activities are carried out** – Taking the necessary steps to ensure that research activities have the least possible effect on the survival of the animal and plant species that inhabit the land on which the activities take place. Reducing the adverse effects of research on ecosystems, the biotic community and the physical environment.

¹⁹ Fonds de recherche du Québec – Nature et technologies. *Politique d'éthique en recherche*. 2016.

- **Air, water and soil during research activities** – Reducing the risk of air, water or soil pollution in all research. Ensuring that materials, solvents and other elements used in research activities are stored properly and come into contact with the air, water or soil as little as possible. Reducing the quantity of research by-products that end up in the air, water or soil.
- **Climate and landscape** – Minimizing the contribution of research activities to climate change and reduce negative effects on the landscape. Reducing the use of all products that increase greenhouse gases, either directly or indirectly. Protecting the landscape from becoming inhospitable for animal and plant species or humans, which may include the preservation of material assets on a research site.
- **Historical, cultural and archaeological heritage** – Ensuring that research activities do not produce changes in the environment that pose a threat to the conservation of historical monuments, works of art, traditional customs or archaeological sites. In particular, research activities must ensure access to historical, cultural, artistic and scientific knowledge for future generations.

3.3 What we hope to achieve

- **A balance between the benefits and the environmental impacts of research in different settings** – Ensuring that the expected benefits of research exceed the environmental effects and impacts on natural environments and populations. While taking into account the benefits of research, reducing its negative environmental impacts to a minimal level.

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