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Report 364

# Site Inventory and Final Waste Management

Inquiry and Public Hearing Report  
Summary  
Translated Version

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# Summary

## Context

The quantity of waste being disposed of throughout Quebec have increased over the past few years. The most recent data indicate that 724 kg/capita of waste were disposed of in 2019. The government's target for 2023 is 525 kg/capita or less. Therefore, the Quebec government considers that society will most likely continue to use disposal sites as a method of waste management for many years.

In this context, the Minister of the Environment and the Fight against Climate Change, Mr. Benoit Charette, entrusted the Bureau d'audiences publiques sur l'environnement (BAPE) with a mandate to investigate and hold a public hearing on the current status and the management of final waste. The Minister felt it was necessary for the BAPE to conduct an in-depth study that would allow the government to develop its long-term vision. The mandate began on March 8, 2021.

## The Consultation and Investigation Strategy

To begin its mandate, the Commission of Inquiry organized a meeting with key ministries and agencies involved in waste management in Quebec. These were the Ministry of the Environment and the Fight against Climate Change (MEFCC), the Ministry of Municipal Affairs and Housing (MMAH), the Ministry of Health and Social Services (MHSS), the Ministry of Energy and Natural Resources (MERN), the Société québécoise de récupération et de recyclage (RECYC-QUÉBEC), the Montreal Metropolitan Community (MMC) and the Quebec Metropolitan Community (QMC). With their collaboration, it then compiled a reference file that was made available to the public. At the same time, it developed a consultation and survey strategy consisting of five components: a public hearing, specific consultations with Aboriginal nations, a survey addressed to waste disposal site managers, discussion, and reflection workshops with stakeholders in waste management in Quebec and several national and international experts, and a citizen survey conducted among 1,000 people representative of the Quebec population.

## Current Status

The Commission of Inquiry began by presenting the main elements of the legislation and regulations concerning waste management in Quebec, while referring to various government texts such as policies, strategies, action plans, agreements and other documents used to control or influence the generation of waste and their management throughout their life cycle. The framework as well as the basis for the planning and operation of waste management are also specified.

It then conducted a status report on waste disposal, described the disposal facilities in operation, and provided a picture of the detour of waste from disposal by considering data on source reduction, reuse, recycling and recovery.

## Assessment of Waste Management

The management of waste in Quebec is based on the 3RV-E<sup>1</sup> hierarchy. In doing so, priority is given to reduction at source, then to reuse, recycling, recovery and ultimately to the elimination of waste.

The main regulations governing the management of waste disposal are the *Regulation respecting the landfilling and incineration of residual materials* (RRLIRM) and, for the control of atmospheric emissions and air quality from disposal facilities, the *Regulation respecting the purification of the atmosphere* (RRQA). The provisions of the RRLIRM govern, among other things, 199 operating disposal facilities throughout Quebec. In 2021, these facilities were broken down as follows: 38 engineered landfill sites (ELS), 27 trenched landfills (TL), 26 Northern Landfill Site (NLS), 97 isolated landfills (IL), 7 construction or demolition debris landfills (CDDL) and 4 incinerators.

In 2019, the most recent year for which complete data is available, landfill was the dominant disposal method with 96% of waste disposed while only 4% was incinerated. In addition, although ELS accounted for only 19% of disposal sites, 92% of disposed waste were landfilled in these sites.

Despite numerous efforts in recent years to reduce the quantity of waste disposed of, Quebec's performance since 2015 has regressed for each of the objectives set out in the 2011-2015 Action Plan of the Quebec Residual Materials Management Policy (QRMMP), except for the organic material recycling rate, which increased by only 2% to reach 27% in 2018, far behind the 60% objective targeted for 2015 and renewed in the 2019-2024 Action Plan. As a result, the amount of waste disposed in 2019 (724 kg/capita) was about 3% higher than the 2011-2015 Action Plan target and 38% higher than the 525 kg/capita target set for 2023 in the 2019-2024 Action Plan.

## Impacts of Waste Disposal

As landfill and incineration are the two methods of waste disposal used in Quebec, the Commission of Inquiry examined their impact on the environment and on public health.

From an environmental perspective, since the adoption of the RRLIRM, ELS have been subject to a set of requirements related to site sealing, leachate management, and surface and groundwater quality to limit the risk of contamination. However, there is still uncertainty

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<sup>1</sup>. 3RV-E is an acronym used to signify, in this order: reduction at source, reuse, recycling, recovery and disposal.

about the durability of the geomembranes used for their sealing over hundreds of years. Clearly, the engineered landfill sites are not mature enough for such an observation.

For incinerators, the RRQA requirement to conduct at least one source sampling per year of air contaminants released if their capacity is equal to or greater than 1 t/h is clearly insufficient to ensure compliance with the standards. The Commission of Inquiry believes that the regulation should be revised to allow for a reliable and representative assessment of emission fluctuations. In addition, the MEFCC should examine the relevance of reviewing the emission standards for certain air contaminants emitted by an incinerator, notably particulate matter, carbon monoxide and hydrogen chloride, to harmonize them with those of other jurisdictions where they are more severe.

From a public health perspective, the proximity of waste disposal sites to homes is central, if not critical, to the public's concerns about the risks associated with contaminant emissions from these disposal facilities.

Regarding waste disposal sites and based on a review of the international scientific literature, the Commission of Inquiry agrees with the MHSS that no clear causal link has been established between physical health problems and living near these sites. However, considering the specificities of the waste generated in Quebec and the particularities of landfilling compared to what is done elsewhere, it would be appropriate for the MHSS to decide on the relevance of documenting the exposure levels of the neighbouring populations as well as the psychological and social effects of these activities.

Considering the potential effects of several contaminants emitted into the atmosphere by waste incinerators on public health, the Commission of Inquiry is of the opinion that it is essential that the MHSS verify the presence or absence of causal links between the exposure of the neighbouring populations and health problems by carrying out recurrent evaluations until evidence is obtained that is deemed scientifically sufficient.

Furthermore, in 2018, excluding emissions associated with the collection and transportation of waste, Quebec landfills governed by the RRLIRM emitted nearly 2.5 Mt CO<sub>2</sub>e, or 3% of Quebec's total greenhouse gas (GHG) emissions. The MEFCC data does not allow us to distinguish these emissions according to the type of biogas capture or recovery system in place, or whether these sites are closed or in operation. There is also no specific accounting of emissions associated with the transportation of waste materials. These gaps must be filled by the MEFCC to orient and prioritize the actions to be taken to optimize the reduction of GHG emissions.

## **Economic Issues**

The total gross costs of waste management by municipal organizations in Quebec amounted to \$1.046 billion in 2019. Factoring in the Program on the redistribution to municipalities of charges payable for the disposal of residual materials and the Compensation Plan for municipal services provided to ensure the recovery and reclamation of residual materials,

the net costs amounted to approximately \$785 million, or an average of \$93/capita. For the municipal sector, excluding collection and transportation costs, disposal is more expensive overall (\$137/t) compared to sorting and packaging recyclables (\$93/t) or processing organics (\$62/t), but there are significant differences between regions.

Considering that the redistribution program (charges payable for the disposal of waste) returns to the municipalities the amounts they have paid to the operators of the disposal sites as charges, the Commission of Inquiry is of the opinion that this limits the dissuasive effect of the cost of disposal for the municipalities and, indirectly, for the citizens and the industries, businesses, and institutions (IBI) benefiting from municipal collections.

In addition, the costs of waste management do not systematically reflect the externalities associated with it. Consequently, the Commission of Inquiry believes that it would be important for the MEFCC to establish the planned increase in the waste management charges by considering a complete evaluation of both social and environmental externalities. The money collected by the charges should be limited to financing actions aimed at reducing the quantities of waste disposed of, both in the municipal sector and in the IBI and construction, renovation, and demolition (CRD) sectors. Various eco-fiscal measures, such as incentive pricing for household waste and the various extended producer responsibility programs, make it possible to internalize these costs and should be encouraged. Moreover, the economic measures in force and those announced are essentially part of a linear economic model (i.e.: extract, transform, consume, and then throw away) which has shown its limits.

It should be noted that waste management costs vary significantly by region in Quebec. Thus, regional municipalities with a lower economic vitality index are characterized by generally higher disposal costs. For this reason, the Commission of Inquiry is of the opinion that the program for redistributing the charges to municipalities should integrate criteria based on economic vitality in addition to the performance (in terms of waste diverted from disposal) of the municipalities.

Finally, the Commission of Inquiry believes that the government's strategy to reduce the use of plastics and single-use products currently under development would be effective if it were accompanied by measures to monitor specific indicators and data collection procedures as recommended by the United Nations Environment Programme. It should also be at least as ambitious as the federal government's strategy, which includes a goal of zero plastic waste by 2030.

## Technology Choices

Various technologies and practices for waste disposal and treatment were examined. Since 96% of the materials disposed of in Quebec are landfilled, ELS have been subject to numerous requirements for several years and are a mature and relatively safe technology.

Vertical expansion of landfills (*piggy-back*) may be of interest. This is an extension technique whereby new landfill cells are built on top of closed cells. However, this technique should

only be considered by MEFCC as a last resort because of the risks to cell stability and groundwater quality.

Several thermal processes used in Quebec and around the world were also analyzed. For example, incineration of municipal waste is a technology that is widely selected in Europe, mainly for energy recovery and for reducing the volume of waste to be landfilled. Based on European realities and experiences with waste incinerators in urban centers, and after evaluating the contexts of their insertion and considering economic, operational, and environmental considerations, the Commission of Inquiry is of the opinion that this technology is mature and can be of interest in certain contexts. As for the gasification of waste, although this process is advantageous from an environmental point of view, it involves too great a technological risk to be used in the short term.

The treatment of organic materials using biological processes is promising. It is clear that composting is a technology with many environmental, operational, and economic advantages and its use should be further encouraged. As for bio-methanization, there are several considerations that call for its careful examination to allow the government to clearly decide on its real contribution to the reduction of waste disposal, given its complexity and the costs associated with it.

The mechanical-biological treatment (MBT) process aims to reduce the organic matter contained in waste intended for disposal. It isolates the recoverable elements and then treats the fermentable fraction. Some municipal organizations are interested in this process, but it is not recognized by the MEFCC under the Program for the Treatment of Organic Matter through Bio-methanization and Composting (PTMOBC). *A priori*, the compost resulting from a mechanical-biological treatment process is of lesser quality than the one resulting from a selective collection of organic materials because it would contain a too large fraction of foreign bodies and contaminants. Therefore, the quality of its compost would benefit from being well-established on the basis of recognized standards before this process can be extended throughout Quebec.

## **Social Acceptability and Social Concerns**

Combined with the interventions of the participants at the public hearing, the briefs submitted, the citizens' survey and the discussion and reflection workshops organized by the Commission of Inquiry with stakeholders shed interesting light on the conditions of social acceptability of the measures, solutions or requirements aimed at ensuring better waste management.

The "not in my backyard" syndrome that was widely used a few years ago to justify citizens' reluctance to develop new disposal sites is simplistic and does not allow for a good understanding of all the social dynamics surrounding the social acceptability of waste disposal projects. In fact, the social acceptability of projects is influenced by multiple factors

presented in this report and which are notably related to social, financial, landscape, environmental and public health dimensions.

Overall, the people surveyed during the citizen survey are more in favour of the presence of a disposal site in their region if it serves them exclusively. Moreover, the transfer of waste for disposal is often experienced by the host community as a social injustice because it obscures the efforts that the community may have made to reduce disposal on its territory. The Commission of Inquiry also notes a clear social preference for disposal sites whose size would meet local or regional needs. The Commission is of the opinion that the interest observed in Quebec over the last few years in large waste treatment and disposal facilities, which result in an increasingly extensive territorial coverage, deserves to be considered, and that this interest is compatible with the principle of proximity, which underlies the management of waste close to the place where it is generated, and which favours social acceptability.

In addition, considering that projects to expand or establish treatment and disposal facilities will undoubtedly see the light of day in the next few years and that social acceptability will be at the heart of the concerns, the Commission is of the opinion that it would be essential for the government to develop guidelines aimed at better planning of the development of the host territories to promote the cohabitation between these facilities and their hosting environments.

It should also be noted that most respondents to the citizen survey consider that waste management is a societal issue that must be addressed quickly and that they are willing to devote more effort to reducing the quantities of waste disposed of. The Commission of Inquiry therefore sees an opportunity for RECYC-QUÉBEC to develop new strategies and to adopt stronger measures aimed primarily at reduction at source and reuse.

## **Planning for the Disposal of Waste**

### **Reducing the Amount of Waste Disposed of**

The government has adopted a series of measures to improve the management of waste structured around the Organic Matter Development Strategy (OMDS) and the 2019-2024 QRMMP Action Plan. These measures target the main sources of waste that can be recycled or recovered, i.e., organic matters, residual materials from IBI and the CRD sector, as well as alternative cover materials. Several enforcement mechanisms are planned to support them. In addition to diverting significant quantities of waste from disposal, they should lead to qualitative gains in terms of consolidating sorting, packaging, and recycling channels, improving the quality of recovered materials, supporting local recycling, and reducing dependence on external markets. The Commission of Inquiry believes that their quantitative and qualitative effects will be all the stronger if the government determines sufficient targets and penalties to force stakeholders to act. It should also not hesitate to use or add to the enforcement mechanisms available to it to achieve the desired results.



Based on the analysis of the Commission of Inquiry and the innovative approaches implemented in Quebec and elsewhere, several avenues for improvement could increase the scope of these measures. First, separate collection of recyclable materials should be favoured. For CRD waste, regulatory measures for both gypsum and asphalt roofing must be adopted quickly because of the problems raised by these materials. In addition to the charge on alternative cover materials, MEFCC should examine ways to avoid excessive use of daily cover. The MEFCC should also clarify the place of the use of certain residual materials as alternative cover materials in landfills within the 3RV-E hierarchy. The MEFCC should also quickly specify, by regulation, the criteria for energy recovery to allow, in compliance with the 3RV-E hierarchy and while taking care not to promote the marketing of non-recyclable products, a form of recovery for final waste that could not be reused or recycled. In certain contexts, and conjunctures, incineration with energy recovery of such final waste could be considered as energy recovery.

However, at the top of the 3RV-E hierarchy, source reduction and reuse have been secondary in government actions to date. An adjustment of the regulations, codes and standards surrounding construction and buildings, the banning of the marketing of certain non-recyclable, single-use or short-lived products, the enshrinement by regulation of a right to repair and tools to fight against programmed obsolescence, the supervision of advertising solicitation, improving consumer support through clear labelling and display of environmental impacts, as well as financial incentives to support the repair and reuse sectors are all strong measures that could have a direct impact on eco-design, reuse and reduction at source. More broadly, the Commission of Inquiry is of the opinion that RECYC-QUÉBEC should identify the key sectors and initiatives that are conducive to reducing at source and promoting reuse. The Crown corporation should also continue to refocus its messages from the right recycling gesture to responsible consumption.

The government must assume an exemplary and leadership role in the implementation of these measures within public organizations, but also as a funder, purchaser, and contractor. To this end, the current regulatory and operational obstacles should be removed to be able to fully integrate requirements such as the integration of recycled content or the systematic requirement of CRD waste management plans. For example, the State and its institutions could be at the forefront of the implementation of recyclable and organic material collections, the fight against food waste, the rehabilitation or change of use of buildings, or the reduction of its purchases.

## **Disposal Requirements and Capacities**

The Commission of Inquiry is of the opinion that waste management planning must continue to be the responsibility of the regional municipalities, but that cooperation between them must be encouraged by a mechanism that should be implemented by RECYC-QUÉBEC to improve the alignment of their requirements. In addition, to help municipal organizations have access to the information they need for their planning, reuse, sorting and packaging,

recycling and recovery facilities should be required to produce annual declarations and RECYC-QUÉBEC should be responsible for monitoring, compiling, analyzing, and disseminating all data relating to the management of waste, including disposal.

Based on the forecasts of the quantities of waste to be disposed of by 2041, as carried out by the MEFCC, the Commission of Inquiry is of the opinion that the objective of 525 kg/capita for 2023 in the QRMMP is unlikely to be reached. Moreover, the Ministry estimates that this objective would still not be reached in 2041 according to one of its scenarios, which it describes as realistic, despite the reforms that are in place or being implemented.

If landfilling of waste and the use of daily cover were to continue at the 2019 rate, of the 38 ELS in operation in Quebec, 9 would have reached their maximum authorized capacity before 2030, 13 others would reach it between 2030 and 2041, while 16 would have a residual capacity after 2041. It is therefore clear that new disposal sites or expansions of existing ones will have to be authorized in Quebec over the next 20 years.

Considering that it is unlikely that the 525 kg/capita disposal rate target will be met by 2023, Quebec needs to realign its strategy to achieve this rate as soon as possible. The strategy based on the 3RV-E hierarchy must be maintained. However, it must be noted that recycling has been the centerpiece of efforts to date. Furthermore, the performance of the IBI and CRD sectors has not been up to expectations.

The reinforcement, acceleration and, above all, the realignment of efforts to achieve the objectives of the 2019-2024 Action Plan and the desire to move increasingly towards a zero waste and zero waste society also requires the implementation of robust actions by the MEFCC and RECYC-QUÉBEC. In addition, the circular economy, already recognized by RECYC-QUÉBEC as part of its mission, should be put to effective use and actually applied, and this model would even benefit from being invited on the political agenda.

## **Requirements in Territories Under Agreements**

Waste management in the Territories Under Agreements, where the Naskapi, Inuit and Cree live, presents many challenges, mainly because of their remoteness from urban centers and the infrastructures adapted for waste management. The infrastructures in place in these territories are, for the most part, limited to the disposal of waste, making the application of the 3Rs-E hierarchy complex. In addition, several communities are faced with infrastructures that will reach their full capacity in the near future.

The remoteness of these populations often requires the transportation of certain waste to the southern regions of Quebec, which considerably increases the costs that the communities have difficulty absorbing. Without additional and adequate financial support, large quantities of waste will continue to be stockpiled in many villages while waiting for sustainable solutions. Support from the Quebec government would also allow for the

implementation of measures adapted to regional realities and aimed at improving waste management and reducing final waste.

Open burning is required in Northern Landfill Sites (NLS), which are present in many Aboriginal villages. In the absence of data, it is imperative that the MHSS document the exposure of neighbouring populations to contaminants emitted by such burning. It is also of great importance that the MEFCC proceed with the characterization of the environmental contamination.

Furthermore, the Commission of Inquiry is of the opinion that open burning is a practice incompatible with sustainable development. Therefore RECYC-QUÉBEC should make every effort to identify, in a consensual manner, with local and regional communities, alternatives that would improve waste management.

## Strategic Guidelines

Waste management is an important issue in terms of sustainable development and societal responsibility. Although regulations increasingly emphasize extended producer responsibility, it is also the responsibility of citizens and the overall responsibility of all stakeholders in the sector. Governance must therefore involve all actors and stakeholders likely to influence or be affected by decisions.

The Commission of Inquiry has issued numerous findings and opinions throughout its report. Several of them converge with the 2015-2020 Government Sustainable Development Strategy and particularly with Guidelines 1 and 2 which aim respectively to strengthen the governance of sustainable development in the public administration and to develop a prosperous economy in a sustainable - green and responsible - manner. These guidelines aim, among other things, toward the exemplarity of the State in the eco-responsible management of its activities, the development of eco-responsible industries and goods and services, and assistance to consumers in making responsible choices.

The findings and opinions of the Commission of Inquiry led to the identification of eleven strategic guidelines that should assist the government in making informed decisions about waste management. These guidelines have been grouped into three themes: the structural approach to be prioritized, effective implementation, and improving governance:

- Structural approach
  - Guideline 01: the circular economy as a priority model;
  - Guideline 02: the necessary review of our consumption patterns;
- Effective implementation
  - Guideline 03: the State as an exemplary model;
  - Guideline 04: eco-fiscality as a central lever for action;
  - Guideline 05: information and awareness: essential tools;

- Guideline 06: data accessibility and transparency;
- Guideline 07: innovation to achieve the objectives;
- Improving governance
  - Guideline 08: legislative and regulatory strengthening;
  - Guideline 09: the inevitable regionalization;
  - Guideline 10: sustainable solutions for remote areas;
  - Guideline 11: the essential optimization of governance.

RECYC-QUÉBEC is a key player in waste management. To fully assume its pivotal and reference role and to enable it to meet the new challenges that await it, it would benefit considerably from reviewing its vision by placing reduction, reuse, and the circular economy at the heart of its objectives and by developing centres of excellence that are of strategic importance. For its part, the government should focus on expanding and strengthening the Crown corporation's responsibilities and leadership.

To achieve its objectives, the Crown corporation will have to succeed in creating a sense of individual and collective responsibility. Moreover, regulatory, and political actions to reduce the quantities of waste disposed of should be based on the unavoidable participation of agencies, organizations, businesses, and municipalities, which will have to increase the degree of their effective participation. It is thus necessary to stimulate a kind of synergy of action around the same cause where environmental and ethical values converge. This does not exclude the implementation of restrictive and even coercive measures to regulate actions.