

Impact Analysis on GHG Emissions and the Economy

2030 Plan for a
**Green
Economy**



2025-2030 Implementation Plan



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**Green
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Impact Analysis
on GHG Emissions and
the Economy

**2025-2030
Implementation Plan**



June 2025

The Ministère des Finances du Québec and the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs produced this publication.

2030 Plan for a Green Economy – 2025-2030 Implementation Plan
Impact Analysis on GHG Emissions and the Economy

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HIGHLIGHTS

Québec has set a 37.5% greenhouse gas (GHG) emission reduction target by 2030 in relation to the 1990 level.

Every year, the government implements initiatives to further reduce Québec’s GHG emissions and make progress toward achieving this target.

To monitor progress made and pinpoint the least costly reductions that allow it to attain its climate targets, the Québec government updates its projections annually in light of the latest information available.

❑ Québec stays on course to meet its climate targets despite current economic uncertainty

In 2023, Québec made progress towards its climate objectives by reducing its GHG emissions.

- It is estimated that this level should reach 78.4 million tonnes of CO₂ equivalent, a decrease compared with 2022 and the period before the COVID-19 pandemic.

However, like the global economy, Québec is facing significant economic and political uncertainty, particularly in the wake of the new U.S. administration, an uncertainty that will influence changes in the economy and GHG emissions over the next few years.

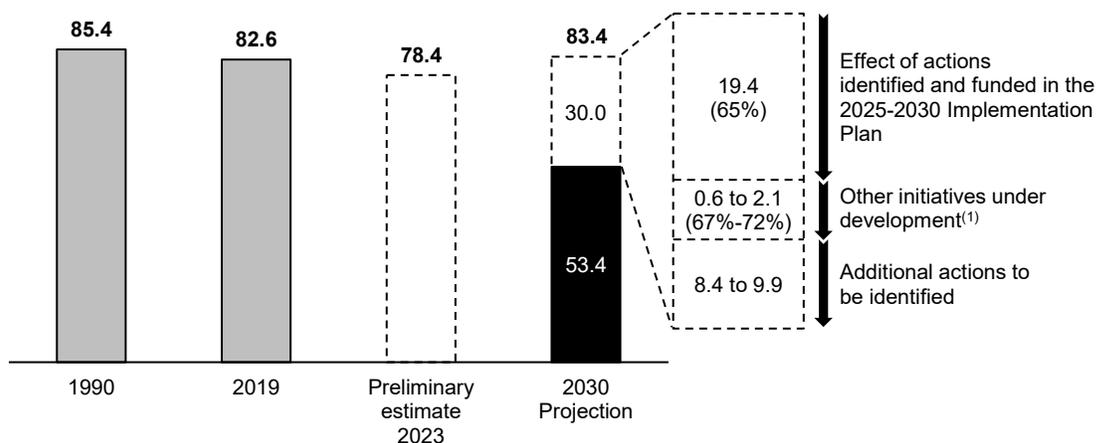
- In this context, it is estimated that actions identified and funded under the *2025-2030 Implementation Plan* of the *2030 Plan for a Green Economy* will enable Québec to achieve 65% of the 2030 target.

The *2025-2030 Implementation Plan* enables Québec to consolidate its action, despite an external political and economic context that is less conducive to reducing GHG emissions.

CHART 1

Effort required to attain the 2030 target in Québec

(millions of tonnes of CO₂ equivalent and percentage of the requisite reductions to meet the target)



Note: Totals may not add due to rounding.

(1) Estimate made by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs.
Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

INTRODUCTION

Québec is a world leader in the fight against climate change. It is determined to maintain this leadership, along with all its economic partners, in order to achieve its greenhouse gas (GHG) emission reduction objectives.

In this respect, Québec has set a GHG emission reduction target of 37.5% by 2030 compared to 1990 levels, which corresponds to an emission level of 53.4 million tonnes of CO₂ equivalent (Mt).

To meet its climate objectives, Québec has implemented the *2030 Plan for a Green Economy* (PGE), which relies on:

- the GHG emission cap-and-trade (CAT) system, which puts a price on carbon and covers 80% of Québec's GHG emissions;
- the reinvestment of revenues from the CAT system in the Electrification and Climate Change Fund (ECCF) to fund the measures in the PGE implementation plans;
- other legislation, regulations and Québec government policies and initiatives, especially in the transportation, building and industrial sectors.

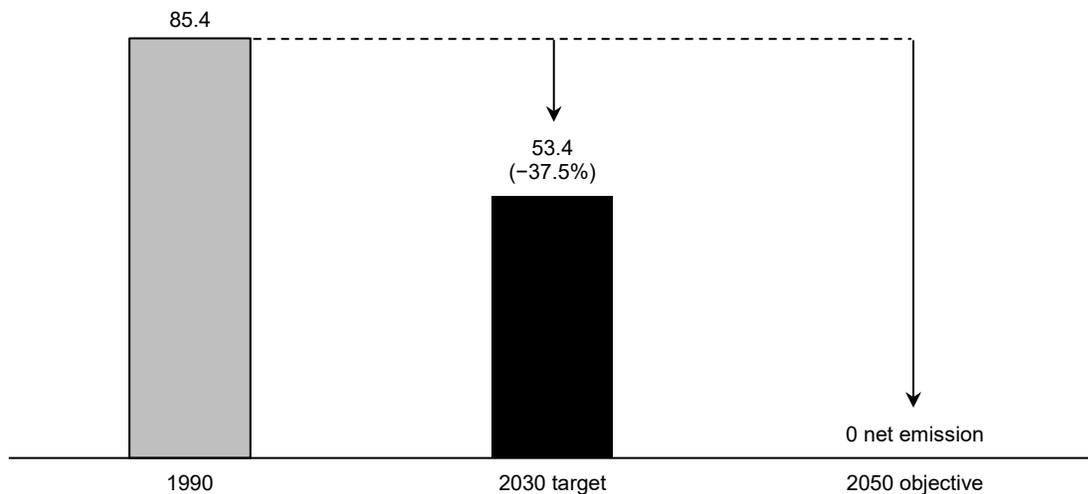
These initiatives round out those implemented by other public administrations, the private sector and the general population.

The government is also targeting carbon neutrality (zero net emissions) by no later than 2050.

To assess the progress of its efforts and identify the most effective strategies for achieving its climate objectives, the Québec government updates its GHG emissions and economic projections every year, based on the most recent information available.

CHART 2

Québec's GHG emissions in 1990 and reduction targets (millions of tonnes of CO₂ equivalent and reduction in relation to 1990)



Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

Greenhouse gas (GHG) emission projection scenarios

Three separate simulations have been produced to support the Québec government's decision-making in the realm of the fight against climate change.¹

The Ministère des Finances du Québec and the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs have elaborated the scenarios.

The reference scenario

The reference scenario considers the initiatives defined and funded to fight climate change. The projection mainly illustrates the impact in Québec of:

- the current GHG emission cap-and-trade (CAT) system price signal;
- changes in the operating rules of the CAT system currently being elaborated, which should be adopted by the end of 2025;
- budget measures in respect of which funding is planned under the *2030 Plan for a Green Economy* (PGE) implementation plans;
- new regulations that have come into force since the implementation in 2021 of the PGE, as well as the actions of other public administrations.

The models used notably consider the interplay between the CAT system and the other initiatives implemented, thereby avoiding double counting in GHG emission reductions.

The choice of technologies illustrates the most probable outcome projected by the modeling following optimization according to the entire array of economic and financial assumptions formulated, anticipated behaviour changes, and the solutions available, e.g., energy efficiency, additional electrical capacity, and reduced output.

The reduction potential scenario

The reduction potential scenario illustrates, according to current knowledge, the least costly emissions reductions that allow for the attainment of Québec's 2030 target (optimization).

This theoretical scenario suggests the best way to reduce GHG emissions in Québec according to parameters such as the cost of current and future technologies, changes in household behaviour, and the possible adaptation of the structure of the economy in a future low-carbon Québec.

It also considers constraints linked to growth by 2030 in electricity supply.

The disengagement scenario

The disengagement scenario presents the GHG emissions level in the absence of government actions to combat climate change (e.g., CAT system, measures, and regulations) starting in 2021, and according to forecast economic growth as well as technological improvement trends.

This theoretical scenario illustrates the effort to be made to attain the reduction targets, and does not correspond to a scenario that Québec could follow. This scenario includes the emission reductions that would have occurred without government intervention.

¹ Estimates throughout this document are based on the information available on April 18, 2025, and on the Québec government's Budget 2025-2026 economic and financial forecasts. Appendix 2 indicates the main risks linked to the projection scenarios.

1. WHERE DO WE STAND WITH THE 2030 TARGET?

Québec is ahead of a number of jurisdictions with regard to decarbonization. This situation is due, in particular, to its production of electricity from renewable sources, and the implementation of significant initiatives to reduce GHG emissions.

However, the projection scenarios of the *2025-2030 Implementation Plan* of the 2030 PGE have been produced in a context of significant economic and political uncertainty, which will greatly influence anticipated results. This includes:

- the United States initiating a trade dispute, which will have a deep and permanent impact in Québec, Canada and the United States, including a slowdown in decarbonization investments;
- the abolition of the federal carbon tax, making Québec the only Canadian province to charge for household and SMB GHG emissions through its carbon market;¹
 - Since the revenues from this carbon pricing are reinvested in the economy, this contributes positively to Québec's economic development.
 - However, it can also create a competitive disadvantage for Québec businesses against their competitors in the rest of Canada.
- a break in U.S. climate change policies, leading to a slowdown in investment in the development of emission reduction technologies, which could contribute to higher climate transition costs.

Trade dispute: key assumptions linked to the economic scenario

At the beginning of 2025, the United States triggered a trade dispute that will have a deep and permanent impact on the Québec, Canadian and U.S. economies, through tariffs imposed on the goods of several trading partners.

The impacts of imposing these tariffs and the uncertainty surrounding their nature, scope and duration are already being felt. They could eventually lead to a reduction in the economic potential of Québec and Canada, and notably reduce business investment.

The impact analysis provided as part of the *2025-2030 Implementation Plan* is based on the economic and financial assumptions of the Québec government's 2025-2026 budget.

The budget assumes that tariffs would be imposed by the United States to several trade partners, including Canada.

The Ministère des Finances du Québec makes the basic assumption that these tariffs could be adjusted these coming months, that the effects would be on average equivalent to 10% tariffs, and that they could be in place for a transitional period of around two years.

- The baseline scenario assumes that the United States will not pursue a generalized trade dispute over a long period, as these tariffs will have a negative impact on their economy.

¹ GHG emission pricing for large industrial enterprises is still in effect elsewhere in Canada.

1.1 Considerable progress was achieved in 2023 toward attaining the target

GHG emissions in Québec are expected to be 78.4 Mt in 2023,² a decrease of 4.2 Mt compared to the 2019 level, that is, prior to the COVID-19 pandemic (82.6 Mt).³

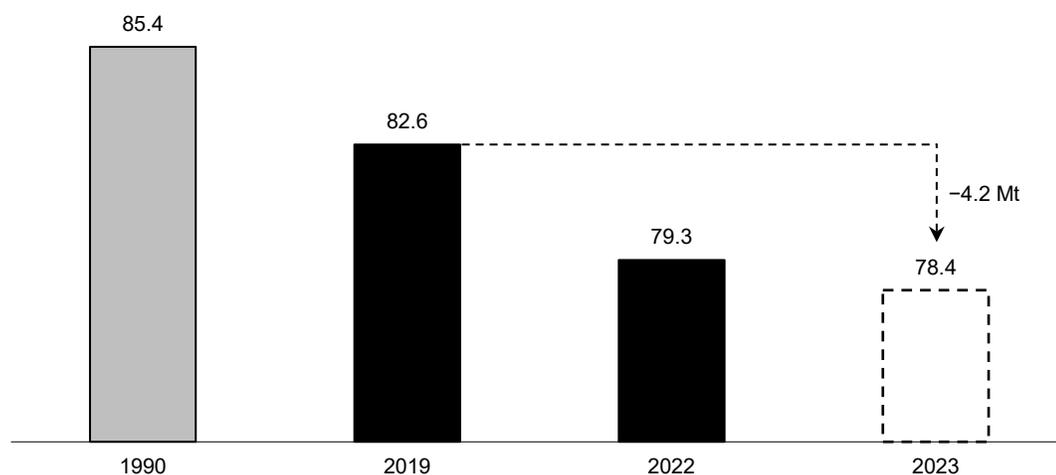
The anticipated decrease compared to 2022 (-0.9 Mt) is mainly due to an increase in regulatory requirements concerning the integration of renewable fuels, and an increase in the number of electric vehicles of close to 78 000 between 2022 and 2023.

According to the most recent information, the level of GHG emissions is expected to decrease slightly in 2024, before continuing its downward trend by 2030, due to the cumulative effect of the various actions currently in place in Québec to reduce GHG emissions.

— Thus, in the coming years, the level of emissions is not expected to return to its pre-pandemic level.

CHART 3

Estimated GHG emission level anticipated for 2023 (millions of tonnes of CO₂ equivalent)



Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

² Estimates for 2023 and 2024 are preliminary. They were produced using information available on April 18, 2025. The Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs will publish, in late 2025, the Québec inventory of greenhouse gas emissions for 2023.

³ The year 2019 has been used as a benchmark throughout this document since data for 2020 and 2021 include the adverse effects on GHG levels of the COVID-19 pandemic.

1.2 Actions to maximize emissions reduction in Québec

Economic and population growth is usually accompanied by increased household consumption and business production, which can lead to higher GHG emissions.

— However, the effect of this increase in emissions is mitigated by advances in energy efficiency and economic practices, as well as by equipment replacement.

According to the anticipated economic growth and technological change trends (disengagement scenario),⁴ it is estimated that, in the absence of government actions to fight climate change, GHG emissions in Québec would have been 83.4 Mt in 2030.

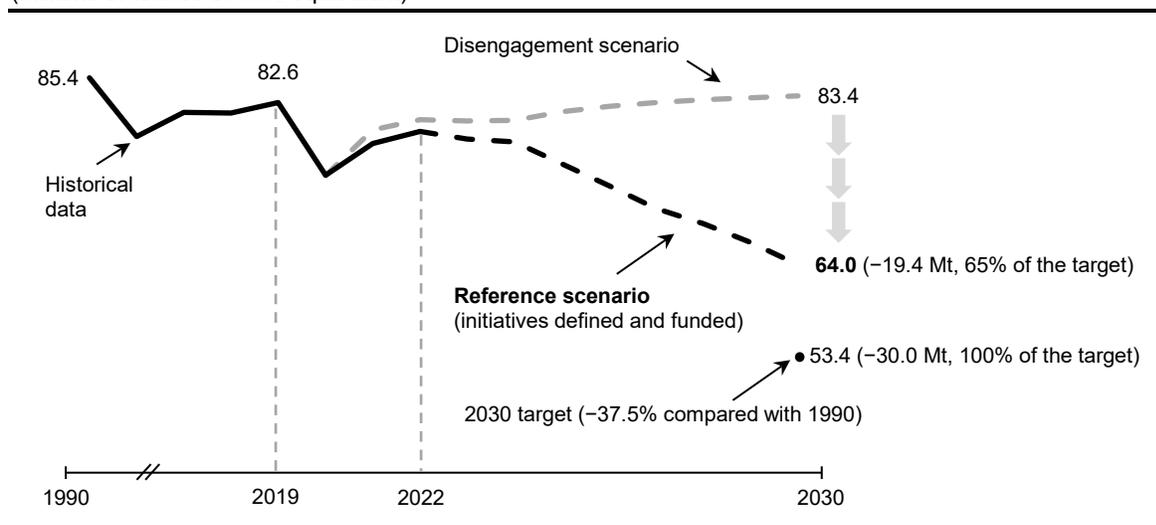
— This is a downward revision compared with the scenario in the *2024-2030 Implementation Plan* (84.0 Mt), which is due to lower projected economic growth by 2030.

The attainment in Québec of the 2030 target would require a GHG emission level of 53.4 Mt. This would require a 30.0 Mt emission reduction in 2030.

The modeling carried out reveals that the initiatives defined and funded in 2025-2026⁵ (reference scenario) would lead to reductions of 19.4 Mt in 2030, i.e., 65% of the effort required.

CHART 4

Québec GHG emissions trajectory according to the initiatives defined and funded (millions of tonnes of CO₂ equivalent)



Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

⁴ The box on page 4 describes the scenarios. Appendix 3 provides details of the disengagement scenario and the tables of the detailed results of the simulations are available on the [publications page of the Ministère des Finances du Québec](#).

⁵ Appendix 4 lists the initiatives defined and funded.

1.3 Measures defined and funded: 65% of the target

It is estimated that the actions defined and funded will bring the target attainment rate to 65% in 2030. These reductions would result from:

- the effect of the CAT system price signal on changes in household and business behaviour in Québec (7.3 Mt);
- budgetary measures, regulations and other initiatives already defined and funded (12.1 Mt).

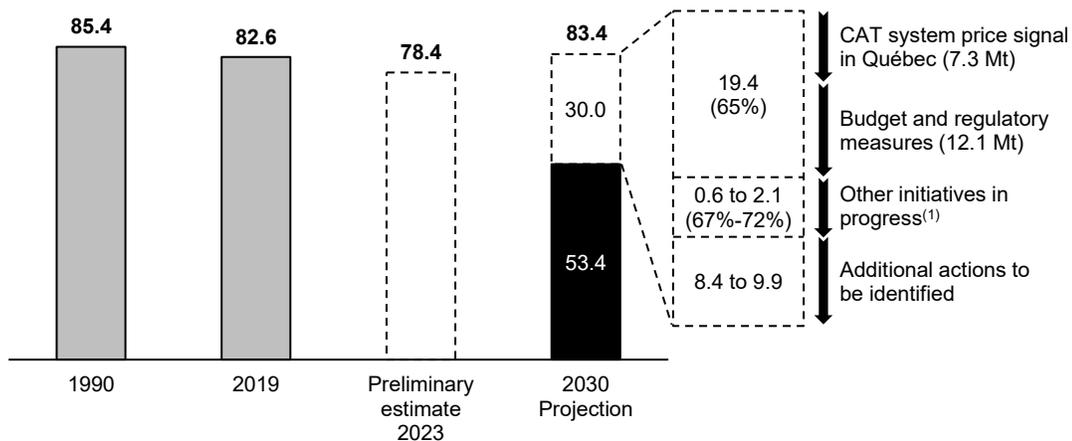
The *2025-2030 Implementation Plan* notably includes a tightening of the regulation on methane reclamation and destruction at engineered landfills.⁶

The remaining reductions to reach the 2030 target in Québec could come from other initiatives currently being developed or to be identified.

- For example, according to estimates of the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs, the prospective measures examined could, under certain assumptions, help achieve 67% to 72% of the effort required by 2030.

CHART 5

Changes in GHG emissions and reductions necessary to achieve the 2030 target
(millions of tonnes of CO₂ equivalent and percentage of the reductions necessary to achieve the target)



Note: Totals may not add due to rounding.

(1) Estimate produced by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs.

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

⁶ An engineered landfill is a site where waste is buried while limiting contamination of air, soil and waters, in particular by capturing the pollutants emitted.

1.4 Reduced GHG emissions by sector

It is estimated that the actions identified and funded will engender a 19.4 Mt reduction in Québec's total GHG emissions in 2030.

The breakdown of such reductions can vary from one sector to the next, depending on their weight in the total emissions and the available possibilities for reductions.

▣ **Transportation: 54% of the estimated reductions for 2030**

Emissions in the transportation sector are expected to fall by 10.4 Mt compared with the disengagement scenario (54% of the reductions of 19.4 Mt projected in 2030), to stand at 26.2 Mt in 2030.

Aside from the incentive effect of the CAT system price signal, the anticipated fall in GHG emissions in this sector appears to be mainly due to:

- the target of two million electric vehicles on Québec roads in 2030 (the zero-emission vehicles [ZEV] standard);
- the *Regulation respecting the integration of low-carbon intensity fuel content into gasoline and diesel fuel*, which sets a 15% minimum share of renewable fuel for gasoline and 10% for diesel in 2030.

Other actions, such as the Écocamionnage program, will promote the gradual electrification of Québec's vehicle fleets.

▣ **Industry: 24% of the estimated reductions for 2030**

Emissions in the industrial sector should stand at 21.6 Mt in 2030, 4.6 Mt lower than than in the disengagement scenario (24% of the reductions of 19.4 Mt anticipated for 2030).

Such reductions would result primarily from:

- ongoing measures relating to the industrial sector, including the Défi GES, ÉcoPerformance and Bioénergies programs;
- regulations, in particular the regulation governing the increase in the share of renewable natural gas (RNG) in Québec natural gas supplies and the regulation governing halocarbons;
- the gradual reduction in the allocation of emission rights free of charge for large industrial enterprises under the CAT system by 2030.

□ **Other sectors would account for approximately 23% of the estimated reductions for 2030**

In the other sectors (buildings, residual materials and agriculture), emissions should decline by 4.4 Mt in 2030 in relation to the disengagement scenario.

The initiatives targeting the residential, commercial and institutional **buildings** sector should lead to a 3.1 Mt emission reduction in 2030. Such a reduction would stem primarily from:

- the ongoing ÉcoPerformance (the section devoted to commercial and institutional buildings), Chauffez vert and waste heat recovery programs, and the support measure to convert natural gas to electricity and dual energy for peak demand management;
- the regulation that prohibits the use of fuel oil for residential heating and the regulation on existing RNGs and the anticipated rollout in the coming years of reporting, rating, and energy performance system in commercial, institutional, and multi-residential buildings;
- the gradual decarbonization of the government's building inventory, in particular through electrification.

It is also estimated that the measures planned will lead to a 1.0 Mt reduction in GHG emissions in the **residual materials** sector in 2030 in relation to their anticipated level in the disengagement scenario.

- This result is mostly attributable to the measures stemming from the *Organic Matter Development Strategy*, including the organic matter treatment program by biomethanization and composting.

Lastly, 0.4 Mt reductions should be observed in the **agriculture** sector, in particular through the enhanced management of nitrogenous fertilizers and the implementation of agricultural biomethanization projects.

TABLE 1

GHG emissions projection – Reference scenario(millions of tonnes of CO₂ equivalent, unless otherwise indicated)

	Level					Anticipated reductions in 2030 ⁽¹⁾	
	2019	2022	2023 ^P	2025 ^P	2030 ^P	(Mt)	(%)
Transportation							
Light-duty vehicles	17.7	16.6	15.8	15.4	10.7	6.0	31.0
Heavy-duty vehicles	8.0	8.3	7.9	7.0	5.9	2.0	10.4
Other transportation ⁽²⁾	10.2	9.4	9.9	9.9	9.5	2.4	12.1
Subtotal – Transportation	35.8	34.3	33.6	32.4	26.2	10.4	53.5
Industry							
Pulp and paper	1.4	1.4	1.6	1.4	1.0	0.5	2.7
Chemicals and refineries	3.4	3.3	3.4	3.2	2.6	1.3	6.5
Mines, pelletization, metallurgy, and aluminum	8.9	9.6	9.3	8.9	8.1	1.6	8.0
Cement and lime	3.9	3.5	3.9	3.9	3.9	0.3	1.4
Other industries ⁽³⁾	7.9	7.1	7.3	7.0	6.1	1.0	5.0
Subtotal – Industry	25.5	25.0	25.5	24.5	21.6	4.6	23.6
Other sectors							
Buildings	8.4	7.6	6.8	6.3	4.9	3.1	16.0
Residual materials	4.7	4.5	4.5	4.4	3.5	1.0	5.1
Agriculture	8.1	8.0	8.0	8.0	7.8	0.4	1.9
Subtotal – Other sectors	21.2	20.0	19.3	18.7	16.2	4.4	22.9
TOTAL	82.6	79.3	78.4	75.6	64.0	19.4	100.0

P: Projection.

Note: Totals may not add due to rounding.

(1) These are reductions in millions of tonnes in relation to the disengagement scenario in 2030 and the percentage breakdown of the reductions in relation to the total estimated reductions in the reference scenario. The emissions reductions that would have been achieved without government intervention (disengagement scenario) are thus not included in the reductions presented.

(2) Other transportation includes mainly off-road vehicles as well as rail, maritime, and air transportation.

(3) Other industries include the electricity, construction, forestry, non-ferrous metals (except aluminum) production and processing sectors, and other manufacturing sectors such as electronics, glass, plastic and rubber manufacturing.

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

2. REDUCTION POTENTIAL

The budget and regulatory measures defined and funded in Québec include a series of actions aimed at reducing GHG emissions across all sectors of the economy.

Such measures will be gradually reinforced in the coming years in the context of the annual update of the PGE implementation plans, in order to maximize Québec's GHG emission reductions.

□ Reduction potential: a tool to guide government action

The reduction potential illustrates, in light of current knowledge, the least costly solutions for reducing GHG emissions and attaining the 2030 target in Québec.⁷

This potential theoretically represents the various mechanisms which households, businesses and governments can use to optimally reduce their GHG emissions, while minimizing the cost to the economy.

For example, it can include:

- the adoption of new technologies, such as electric vehicles and more efficient equipment, or the conversion of equipment to less emissive energy sources;
- behaviour change and the adaptation of the economy to a new low-carbon reality.

Consequently, it reveals the best path to follow to achieve the reduction targets at the lowest cost and facilitate the identification of decarbonization-related obstacles and constraints.

In this sense, it is a decision-support tool. However, the government also takes a number of other factors into consideration when making a decision, such as:

- social acceptability, the carbon dioxide footprint and the maturity of technologies;
- the impact on the most vulnerable populations and benefits for health, society and the economy (e.g., climate change adaptation measures);
- the economic, legal and political context in Québec and abroad.

The governments can subsequently establish various initiatives to promote the attainment of such potential.

- In the context of the updates of the PGE implementation plans, such initiatives can, for example, take the form of reduced purchase prices for household technologies (e.g., the Chauffez vert program), investments (e.g., recharging infrastructure) or regulations (e.g., regulation respecting the integration of biofuels).

⁷ The reduction potential scenario is a theoretical estimate subject to high variability. Indeed, despite recent technological advances, considerable uncertainty remains concerning their future development, especially as regards their accessibility. The reduction potential presented in this section is updated regularly to reflect changes in the level of maturity of such technologies. Such potential can vary between sectors and over time, depending, in particular, on the cost of the reduction technologies available and the capacity of businesses and households to adopt them.

2.1 A path toward the attainment of the 2030 target

□ **Transportation sector: half of the reduction potential**

In a scenario in which the 2030 target is achieved at the lowest cost in Québec, the transportation sector would account for 50% of the total reduction effort, i.e., a reduction in 2030 of 15.0 Mt in relation to the disengagement scenario.

The reductions in this sector would chiefly stem from:

- the presence of two million electric vehicles on Québec roads;
- greater use of biofuels (ethanol and bio-based diesel);
- reduced automobile travel because of broader recourse to sustainable mobility.

□ **Industrial sector: 29% of the potential reductions**

The technological potential in the industrial sector as a whole should represent an 8.7 Mt reduction in GHG emissions in 2030, or 29% of the total effort necessary in relation to the disengagement scenario.

According to the estimates produced, the reductions would primarily stem from:

- energy efficiency gains;
- the use of bioenergy, including RNG, and the conversion of equipment to renewable energies;
- changes in manufacturing processes and the use of disruptive technologies (e.g., gradual introduction of inert anodes in the aluminum sector);

□ **Other sectors: approximately 21% of the potential**

The reduction potential of the other sectors (buildings, residual materials and agriculture) would represent 6.2 Mt, i.e., approximately 21% of the total effort necessary in Québec in 2030.

For **buildings**, the technological reduction potential would be on the order of 3.3 Mt as a result of energy efficiency gains and the additional conversion of fossil energy heating systems to electricity and dual energy.

In the case of the **residual materials** sector, the 1.5 Mt reduction potential in 2030 would stem from more extensive disposal of organic material from landfill sites through composting and biomethanization, as well as improved methane capture in landfill sites.

In **agriculture**, the 1.5 Mt reduction potential in 2030 would result principally from the destruction or the recovery of methane from manure and the adoption of agricultural practices that reduce the use of nitrogenous fertilizer and enteric fermentation emissions.

TABLE 2

GHG emissions projection – Reduction potential scenario
(millions of tonnes of CO₂ equivalent, unless otherwise indicated)

	Level					Potential reductions in 2030 ⁽¹⁾	
	2019	2022	2023 ^P	2025 ^P	2030 ^P	(Mt)	(%)
Transportation	35.8	34.3	33.6	31.4	21.5	15.0	50.1
Industry⁽²⁾	25.5	25.0	25.5	22.9	17.5	8.7	29.0
Other sectors							
Buildings	8.4	7.6	6.8	6.2	4.7	3.3	10.9
Residual materials	4.7	4.5	4.5	4.0	3.0	1.5	5.1
Agriculture	8.1	8.0	8.0	7.6	6.7	1.5	4.9
Subtotal – Other sectors	21.2	20.0	19.3	17.7	14.4	6.2	20.8
TOTAL	82.6	79.3	78.4	72.0	53.4	30.0	100.0

P: Projection.

Note: Totals may not add due to rounding

(1) These are reductions in millions of tonnes in relation to the 2030 disengagement scenario and the percentage breakdown of the potential reductions in relation to the total estimated reductions. The emission reductions that would have been achieved without government intervention (the disengagement scenario) are thus not included in the reductions presented.

(2) This sector includes emissions related to electricity generation and distribution.

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

□ A gradual approach to better harness technological development

The Québec government is gradually improving its approach in the context of the annual update of the PGE implementation plans.

Indeed, the initiatives implemented to reduce GHG emissions reflect uncertainty surrounding future technological changes and economic conditions.

Most of the initiatives defined and funded rely on technologies whose estimated costs by 2030 for society will be less than \$500 per tonne of reduced emission. Such costs include:

- all public and private investments and operating expenses to adopt technologies and use them for their useful life;
- other costs (e.g., increased electricity supply) and benefits (e.g., reduced running costs and improved efficiency of production processes).

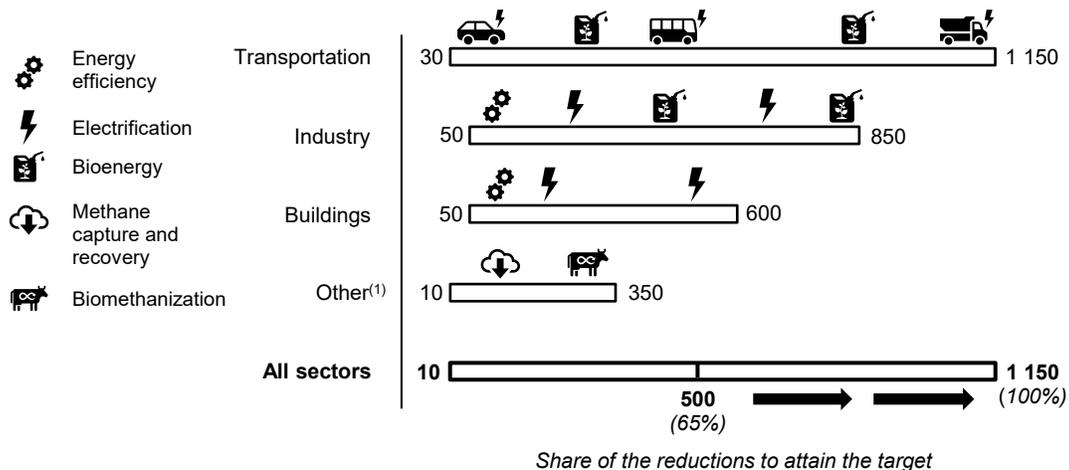
However, the impending stages in the realm of GHG emission reduction will require the adoption of higher-cost technologies.

Indeed, it is estimated that the attainment in Québec of the 2030 target will require technologies whose cost could reach up to \$1 150 per reduced tonne for 2030.

The gradual enhancement of the actions to fight climate change thus facilitates the evaluation of the best ways to effectively reduce GHG emissions in the long term, to support progress toward the 2030 target and to adjust actions as technologies and the context evolve.

ILLUSTRATION 1

GHG emission reduction costs and examples of technologies for 2030 (2023 dollars per tonne of CO₂ equivalent reduced, unless otherwise indicated)



Note: Reduction costs are presented in relation to the disengagement scenario for the year 2030.

(1) Includes the residual materials and agriculture sectors.

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

2.2 An approach aligned with reduction potential

In the context of the PGE implementation plans, the Québec government has adopted a gradual approach that allows for the attainment of 65% of the reductions necessary to meet the 2030 target in keeping with the evaluation of reduction potential.

Indeed, it is estimated that the entire array of actions defined and funded in Québec to fight climate change will mainly generate reductions in the sectors with the most significant technological potential, namely:

- the transportation sector, which accounts for 54% of the anticipated reductions in the reference scenario, while the reduction potential in this sector represents 50% of the total;
- the industrial sector, which accounts for 24% of the estimated reductions, compared with 29% in the reduction potential scenario.

These variations result from changes in the external economic and political context, which are notably driving up the cost of decarbonization in the industrial sector.

Reductions in the other sectors account for an overall 23% of the total, compared with 21% in the reduction potential scenario. This variability is explained by:

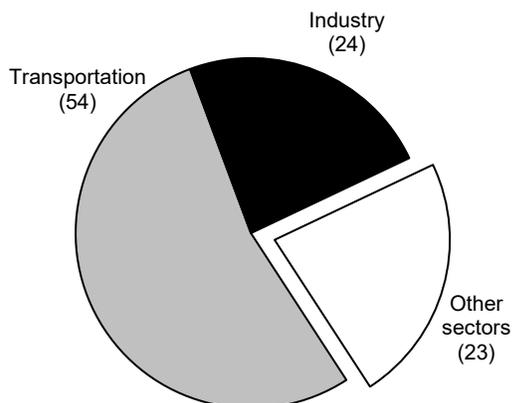
- greater reductions concerning the buildings sector in the reference scenario, notably due to the adoption of additional regulatory requirements;
- smaller reductions pertaining to the residual materials and agriculture sectors in the reference scenario than in the technological potential scenario, due to the coordination efforts required for these actions, making results more difficult to achieve in the short term.

This approach maximizes the impact of the various measures to fight climate change on GHG emission reduction in Québec, bearing in mind decarbonization-related obstacles and other factors.

CHART 6

Breakdown of the reductions in the reference scenario

(percentage of the reductions in this scenario in relation to the disengagement scenario)

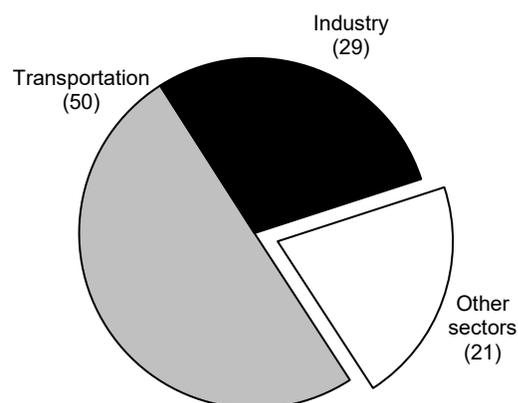


Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

CHART 7

Breakdown of the reductions in the reduction potential scenario

(percentage of the reductions in this scenario in relation to the disengagement scenario)



Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

3. DEFINED AND FUNDED ACTIONS THAT CONTRIBUTE TO ECONOMIC DEVELOPMENT

In addition to reducing Québec's GHG emissions, defined and funded actions to fight climate change will have a generally positive impact on the economy stemming from two separate mechanisms.

- The CAT system engenders a price signal on carbon, which reduces real GDP but also hydrocarbon imports.
- Revenues from the CAT system are reinvested in the Québec economy through the measures stipulated in the PGE implementation plans.

Accordingly, it is estimated that these actions will have a beneficial impact of \$0.7 billion on Québec's real GDP in 2030, compared to a scenario in which no action would have been taken to fight climate change. This impact will result from:

- a slight decrease of \$0.1 billion in business investments;
- a \$0.8 billion increase in net exports.
 - Indeed, the investments made under the *2025-2030 Implementation Plan* are supporting business competitiveness in the current climate of economic uncertainty.

TABLE 3

Economic impact in 2030 of the 2030 Plan for a Green Economy implementation plans – Reference scenario
(billions of 2023 dollars)

	Actions defined and funded in Québec	CAT system price signal	Total
Consumption	1.1	-1.1	—
Investment	0.9	-1.0	-0.1
Net exports	0.8	—	0.8
Government spending	—	—	—
TOTAL – GDP	2.9	-2.1	0.7
<i>Household disposable income</i>	<i>1.4</i>	<i>-1.5</i>	<i>-0.1</i>

Note: Totals may not add due to rounding. Impacts in relation to the disengagement scenario.

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

3.1 Impacts on energy productivity

The investments made under the PGE will notably enable businesses to bolster their productivity by replacing their equipment with more efficient systems and by relying on renewable energy sources such as electricity and bioenergy.

The entire array of actions defined and funded to fight climate change will enhance the Québec economy's productive capacity, which will have a positive effect on energy productivity, i.e., the level of economic growth created per energy unit in the coming years.

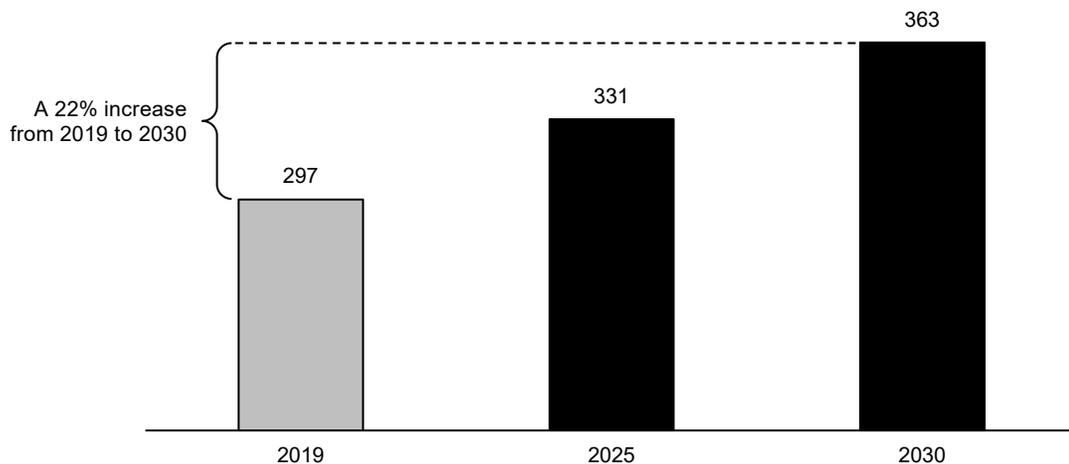
Indeed, it is estimated that Québec produced \$297 per gigajoule of energy consumed in 2019, compared with the Canadian average of \$288.

This level should rise gradually in the coming years to reach \$363 per gigajoule in 2030, an increase of 22%.

This improvement will stem from the combined impact of the PGE on growing business productivity and reduced reliance of fossil fuels.

CHART 8

Energy productivity in Québec (2023 dollars per gigajoule of energy consumed)



Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

CONCLUSION

The Québec government wishes to attain the GHG emission reduction target of 37.5% in 2030 in relation to the 1990 level by maximizing the reductions achieved in Québec.

In this respect, the *2025-2030 Implementation Plan* of the PGE enables Québec to consolidate its action, despite an external economic and political context less conducive to emissions reduction, marked in particular by a trade dispute between the United States and the rest of the world.

Indeed, the actions defined and funded in Québec to fight climate change will make it possible to attain 65% of this objective.

— These actions support the competitiveness of Québec businesses and boost their productivity.

As a leader in the fight against climate change, the Québec government is committed to pursuing its actions to reduce GHG emissions, and will continue to demonstrate its leadership in this regard.

However, growing efforts will be required in the coming years to meet Québec's targets, as the costs of further reducing GHG emissions grow ever greater.

What is more, Québec cannot achieve decarbonization without the full participation of society as a whole.

Indeed, the Québec government is implementing actions to foster low-carbon practices, but the climate transition will also require the implementation and support of behavioural changes in businesses, households and municipalities alike.

APPENDIX 1: KEY MODELS

❑ **An integrated vision of the economic analysis of climate change**

The Ministère des Finances du Québec and the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs rely on a combination of models to estimate changes in greenhouse gas (GHG) emissions, reduction potentials and the economic impacts of the fight against climate change.

- The general equilibrium model of the Ministère des Finances du Québec for the environment (MEGFQ-E) provides a macroeconomic perspective of the fight against climate change and considers the impact of the GHG emission cap-and-trade (CAT) system, the investments made and regulations on Québec's economy and GHG emissions.
- The energy system for Québec, the environment, climate and electricity model (SEQUENCE) provides a technical perspective of the various technological and energy choices that can be made to reduce GHG emissions.

The MEGFQ-E and SEQUENCE models are linked to thoroughly study interplay between the economy and the fight against climate change.

Moreover, a simulation model based on the Low Emissions Analysis Platform (LEAP) is also used in the various simulations conducted.

These tools are supplemented by a partial equilibrium model representing the CAT system in detail, which reflects the effect of various specific changes in system parameters on the equilibrium price of carbon.

❑ **The MEGFQ-E provides a macroeconomic perspective of the fight against climate change**

The MEGFQ-E represents the key interrelationships in Québec's economy through a fine-tuned system of equations.

- The model describes in detail the entire structure of the economy and the CAT system and therefore takes into account interactions between economic agents such as households, businesses and governments, as well as feedback effects between markets.
- Prices and quantities adjust to ensure simultaneous balance between all markets, such as the labour and goods and services markets. Households and businesses adjust their habits to changes in the economy.

❑ **The SEQUENCE model considers technological developments and their long-term costs**

The SEQUENCE model is a highly detailed energy optimization tool that notably projects long-term GHG emissions and measures technological reduction potential to meet the 2030 target.

- It primarily considers anticipated technological change, efficiency in manufacturing processes, the anticipated level of economic activity in different sectors and the prices of different forms of energy.

The model is based on The Integrated MARKAL-EFOM System (TIMES) model generator, sponsored by the International Energy Agency.

❑ **Carbon market equilibrium model: reflecting the effect of different parameters on the price of carbon in Québec**

The carbon market equilibrium model is used to project the long-term price of GHG emission units.

It is based on Hotelling's rule, which essentially assumes that the price increases at the same pace as the interest rate, and on the costs of reducing GHG emissions.

It takes into account the evolution of various system parameters, such as annual caps on emission units, the total quantity of allowances available on the market, emissions covered by the system in Québec and California, the use of offset credits and the prices of government emission unit reserves.

The model also reflects the financial dimension of the CAT system, as businesses subject to the system and investors trade emission units according to their expectations of future growth in the price of carbon.

The model is linked to the SEQUENCE model and the MEGFQ-E, enabling the three models to fuel each other and build on their respective strengths.

❑ **A combination of models to capture the interplay between the economy and GHG emission reduction**

The link between the SEQUENCE and the MEGFQ-E models allows the tools to communicate to better capture the interplay between the economy and GHG emissions.

This methodology enables the Québec government to conduct thorough, complete analyses of scenarios to fight climate change by simultaneously providing economic, climatic and energy-related perspectives.

This exercise, conducted between a TIMES-type model and a computable general equilibrium model, represents a methodological innovation that has few equivalents worldwide.

The models are continually enhanced to carefully consider changes in the structure of the economy and continue to improve their projection capacity.

❑ **The key sources of data that sustain the models**

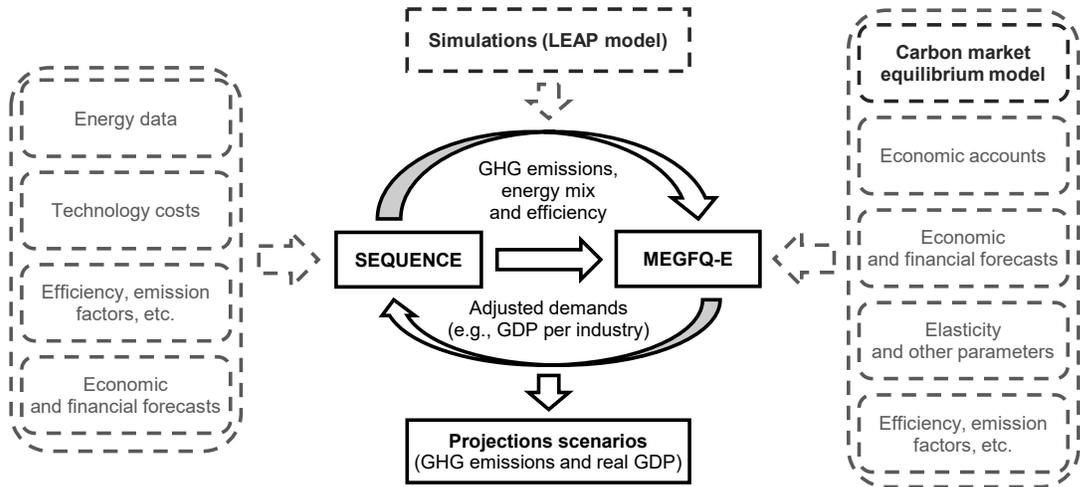
The models are updated annually in light of information such as:

- the economic and financial forecasts produced by the Ministère des Finances du Québec;
- the Québec inventory of GHG emissions and the mandatory reporting by businesses of contaminants in the atmosphere;
- the scientific literature pertaining, in particular, to innovative technologies and their costs;
- other information sources such as Statistics Canada, Environment and Climate Change Canada, Natural Resources Canada, and the Société de l'assurance automobile du Québec.

Over 20 different data sources are integrated into the models to provide a coherent and as accurate a reading as possible of the estimated level of emissions and economic activity in Québec.

ILLUSTRATION 2

Representation of the models used



Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

APPENDIX 2: KEY RISKS THAT CAN AFFECT ACTUAL EMISSION TRENDS

The models used to produce the GHG emission projection scenarios and the economic impact analyses hinge on several assumptions, which are associated with risks that could influence actual GHG emission trends.

□ A different economic growth trend

The simulations are based on information available as of April 18, 2025, on economic and financial projections produced as part of the Québec government's 2025-2026 budget concerning various sectors of the economy, and on the actions defined and funded in Québec to fight climate change.

A different trend in economic growth or the anticipated financial variables could affect economic impacts and Québec's GHG emission levels.

This trend could be affected by a number of factors, including:

- sustained high inflation or higher-than-anticipated population growth;
- more substantial acceleration or downturn than anticipated in economic growth and business investment;
- excess demand for, or limited supply of, raw materials;
- continued disruption of supply chains;
- changes in the geopolitical context, such as a worsening or easing of the trade dispute between the United States and the rest of the world.

Moreover, the simulations are based on a GHG emission allowance price scenario that is consistent with private-sector projections.

The price trend will depend, in particular, on technological innovations, the possible addition of new partners to the carbon market and the measures adopted by the participating governments.

- For example, the pace of the development and adoption of new GHG emission reduction technologies will greatly affect the cost of meeting the targets.
- What is more, the addition of new partners to the carbon market could affect the price depending on how readily they are able to reduce their GHG emissions to meet their climate targets.

Accordingly, a higher or lower price would amplify or mitigate the impact of all measures to tackle climate change in Québec.

Following the example of the price of emission allowances in the context of the carbon market, the projections presented in this document also hinge on assumptions concerning trends in other prices in the economy by the year 2030, such as those of raw materials.

❑ **High uncertainty associated with U.S. economic policies**

Since the beginning of 2025, Québec, like many jurisdictions elsewhere in the world, is facing an environment of great uncertainty marked by the protectionist trade policies introduced by the U.S. administration.

For example, the introduction of tariffs exceeding those forecast would disrupt supply chains, further dampen trade and, in turn, global economic slowdown would be more pronounced.

Conversely, lower tariffs and less uncertainty would lead to higher economic growth in Québec.

❑ **The external context**

Changes in the external environment can have a significant impact on GHG emissions and economic spin-offs in Québec.

For example, the withdrawal of climate change policies in many parts of the world, including the United States, could slow the development of certain technologies, increasing their cost and limiting their availability and uptake.

In addition, more or less significant carbon pricing outside Québec, or the introduction of border adjustment mechanisms for carbon, would have an effect on the economy and the level of GHG emissions.

❑ **Updates of statistical data**

The analyses hinge on the best statistical data available when the projection scenarios are produced.

The historic data used to estimate the GHG emissions are based on information from statistics agencies and other organizations.

- A high level of uncertainty surrounds such information despite significant advances in the accuracy of the data published in recent years.
- Accordingly, the data is revised frequently, which can greatly affect the estimates produced.

Moreover, data pertaining to technologies and their costs come from various sources of information such as specialized agencies and scientific articles.

- Knowledge respecting future technologies is changing very quickly, which demands the regular adjustment of GHG emission projections and the evaluation of the anticipated reductions.

❑ **Technological breakthroughs**

The GHG emission projections and the economic impacts presented hinge on assumptions concerning technological advances by the year 2030.

For example, in the reference scenario, the adoption of less emissive technologies occurs when they become economically advantageous considering the decreasing cost of the technologies, higher carbon pricing and government financial support.

However, a high degree of uncertainty can be linked to them.

- Accordingly, new technologies could emerge and engender more pronounced emission reductions by 2030.
- Conversely, delays in the development of certain technologies could engender lower-than-anticipated emission reductions.

Furthermore, in the models, electricity generation is adjusted to optimize the entire array of technological choices in the economy, in particular according to their costs.

- However, a lower level of electricity generation in Québec could also impact the various scenarios carried out.

❑ **Public and business support for the fight against climate change**

The models used hinge on assumptions respecting the structure of the economy and household and business behaviour.

The fight against climate change requires all economic sectors and the public to contribute.

Accordingly, support to a greater or lesser degree for the fight against climate change from households and businesses could affect emission levels.

❑ **The full use of the budgets allocated to the fight against climate change**

The projections presented hinge on the assumption that all the budgets earmarked for fighting climate change are used.

- GHG emissions could thus be higher if certain programs implemented by the various governments are not used to their full potential.

What is more, some degree of uncertainty persists concerning the measures that the federal government and the municipalities will define and fund to fight climate change.

- For example, the abolition of the federal carbon tax for consumers and SMBs, and the absence in the short term of an equivalent measure, is likely to increase GHG emissions.

APPENDIX 3: DISENGAGEMENT SCENARIO

According to the anticipated economic growth and technological change trends, it is estimated that in the absence of government action to fight climate change (the disengagement scenario), Québec's GHG emissions could increase by nearly 0.8 Mt between 2019 and 2030 to reach 83.4 Mt.

This increase would stem, in particular, from:

- increased emissions in the transportation sector (0.7 Mt) at a time when the impact of an increase in the number of motor vehicles appears to be mitigated by greater reliance on increasingly affordable, accessible electric vehicles;
- increased GHG emissions in the industrial sector (0.6 Mt) due to growth in output in several sectors;
- reduced emissions in the other sectors, primarily the buildings sector (−0.4 Mt), where ongoing conversion to electric residential heating is anticipated.

TABLE 4

GHG emissions projection – Disengagement scenario (millions of tonnes of CO₂ equivalent)

	Level					Change
	1990	2019	2022	2025 ^P	2030 ^P	2019-2030
Transportation	27.3	35.8	34.3	35.2	36.6	0.7
Industry ⁽¹⁾	33.0	25.5	25.0	25.7	26.2	0.6
Buildings	11.3	8.4	7.6	8.0	8.0	−0.4
Residual materials	6.8	4.7	4.5	4.5	4.5	−0.2
Agriculture	7.1	8.1	8.0	8.2	8.1	—
TOTAL	85.4	82.6	79.3	81.5	83.4	0.8

P: Projection.

Note: Totals may not add due to rounding. The disengagement scenario illustrates potential changes in GHG emissions without government intervention starting in 2021, bearing primarily in mind economic growth and trends in technological advances.

(1) This sector includes emissions related to electricity generation and distribution.

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

APPENDIX 4: ACTIONS MODELED IN THE REFERENCE SCENARIO

TABLE 5

Key actions modeled in the reference scenario and that are defined and funded

Global	GHG emission cap-and-trade (CAT) system ⁽¹⁾
Transportation	<p>Programs</p> <ul style="list-style-type: none"> – Roulez vert – Transportez vert – Écocamionnage – Programme d'aide gouvernementale à l'amélioration de l'efficacité du transport maritime, aérien et ferroviaire (PETMAF) <p>Regulations</p> <ul style="list-style-type: none"> – Zero-emission vehicles (ZEV) standard: 2 million vehicles in 2030 – Regulation respecting the integration of low-carbon-intensity fuel content into gasoline and diesel fuel <p>Other initiatives</p> <ul style="list-style-type: none"> – Electrification by 2030 of 65% of the school bus fleet and 55% of urban buses – Electrification of the government vehicle fleet – Improved transit services
Industry	<p>Programs⁽²⁾</p> <ul style="list-style-type: none"> – ÉcoPerformance – ÉcoPerformance – Large emitters – Bioénergies – Bioénergies – Large emitters – Défi GES – Québec industrial sector decarbonization assistance measure (MADI) – Federal Strategic Innovation Fund <p>Regulations</p> <ul style="list-style-type: none"> – Regulation respecting the quantity of gas from renewable sources to be delivered by a distributor (10% in 2030) – Regulation respecting halocarbons – The 2024-2030 free allowance rules for large industrial enterprises under the CAT system, including the consignment of emission allowance units <p>Other initiatives</p> <ul style="list-style-type: none"> – Renewable energy supply of 80% for Hydro-Québec's off-grid systems in 2025

(1) Includes the effect of optimizing the CAT system.

(2) Includes changes to the normative frameworks of certain programs to encourage the implementation of energy management systems in the industry.

TABLE 5

Key actions modeled in the reference scenario and that are defined and funded (cont.)

Buildings	<u>Programs</u>
	– Chauffez vert
	– ÉcoPerformance (commercial and institutional components)
	– Programme en efficacité énergétique d'Energir
	– Waste heat recovery
	<u>Regulations</u>
– Regulation respecting oil- and natural gas-fired heating appliances for the residential market	
– Reporting, rating and energy efficiency system in commercial, institutional and multi-residential buildings	
	<u>Other initiatives</u>
	– Carbon-neutral government buildings in 2040
	– Support to convert from natural gas to electricity and dual energy to manage peak demand
Other	<u>Agriculture</u>
	– Plan d'agriculture durable
	– Develop, make operational and broaden the use of practices and technologies that reduce methane emissions from cattle breeding operations
	– Renewable Natural Gas Production Support Program (impact of agricultural biomethanization)
	<u>Residual materials</u>
	– Organic Matter Development Strategy
	– Programme de traitement de la matière organique par biométhanisation et compostage
	– Amendment to the Regulation respecting landfill methane reclamation and destruction

Sources: Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs and Ministère des Finances du Québec.

