The Circularity Gap Report Québec

C:GR Québec

2025
UPDATE

Closing the Circularity Gap in Québec, Canada

CIRCLE ECONOMY

We are a global impact organisation with an international team of passionate experts based in Amsterdam. We empower businesses, cities and nations with practical and scalable solutions to put the circular economy into action.

Our vision is an economic system that ensures the planet and all people can thrive. To avoid climate breakdown, our goal is to double global circularity by 2032.

La Société québécoise de récupération et de recyclage (RECYC-QUÉBEC) is a government corporation created in 1990 with the vision of being a catalyst for change toward a circular economy among all stakeholders and a hub of expertise to promote more sustainable behaviors.

Their mission is to promote a circular economy and fight against climate change by encouraging best practices in waste prevention and management.

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Executive summary

Québec is a prosperous province with ambitious goals to accelerate the circular economy. Yet despite this ambition, circularity is a practice that is struggling to emerge.. When the first *Circularity Gap Report Québec* was published in 2021, the province's Circularity Metric was 3.5%. This figure has now been recalculated at 2.5%. Critically, this downward trend underlines the need for accelerated action. Notably, the original *Circularity Gap Report Quebec* played a foundational role in shaping the province's *Circular Economy Roadmap 2024–2028*, which sets out concrete actions to close the loop. The roadmap commits to using the Circularity Metric calculated in this report to monitor progress, enabling data-driven decision-making and accountability. This is especially vital in the current landscape, as Québec's economy is particularly exposed to the risks of the linear model due to its high reliance on imported raw materials and manufactured goods. As a relatively small and open economy, Québec is more vulnerable than larger or more self-sufficient jurisdictions to global market volatility, trade shocks, and supply chain disruptions. Recent climate-related events—such as record-breaking wildfires and flooding—have further revealed the fragility of linear systems and the province's dependence on finite resources. These factors underscore the urgency of accelerating the transition to a circular economy to strengthen resilience and reduce exposure to external shocks.

With a total material footprint of 391 million tonnes—equivalent to 46 tonnes per capita—Québec is consuming nearly four times the global average. Non-metallic minerals account for the largest share, making up over half (51.1%) of virgin material use. In 2023, 19% of materials were sourced domestically, while 35% came from the rest of Canada and a further 34% from Asia and Oceania, particularly India and China. This high dependence on international supply chains underscores the province's exposure to linear risks and its limited self-sufficiency. Five key sectors—residential buildings; oil, gas and mineral exploration; highways and related infrastructure; processed and packaged food; and land transport infrastructure—are responsible for a striking 35% of Québec's consumption-based material footprint. This concentration reveals the outsized role of construction, energy, transport, and food systems in driving resource demand.

Québec's carbon footprint stands at 117 million tonnes of CO_2-equivalent,[1] or 14 tonnes per capita—double the global average of seven tonnes per capita. In 2023, 45.6% of emissions originated within Québec, while 54.4% were linked to imported goods and services, highlighting the province's carbon exposure beyond its borders. Emissions are relatively evenly distributed across sectors, with Other services (17.2%), Nutrition (16.3%), Manufactured goods (13.8%), Shelter (13.3%), and Mobility (12.4%) making up the majority of the footprint. However, Québec is a global leader in renewable electricity: over 99% of its power comes from clean sources, with hydropower accounting for approximately 94–95% and the remainder supplied by wind and solar. This nearly emissions-free electricity mix significantly lowers Québec's domestic energy-related emissions and provides a strong foundation for further decarbonisation, particularly if upstream emissions from imported goods and services can be addressed through circular economy strategies.

To accelerate circularity and reduce overall material demand, three strategic priorities must be pursued. First, Québec must set clear, sector-specific targets for reducing its material footprint, supported by robust monitoring and collaboration across sectors. Second, policy must enable businesses to adopt circular practices by removing financial and regulatory barriers, making secondary materials more cost-competitive and supporting circular business models. Lastly, the continued development of local circular value chains will be critical for resilience, especially through policies that prioritise reuse, refurbishment, and extending the lifetime of existing materials and products.

1 Introduction

The planet we live on today has been largely shaped by our world's dominant linear economy, with the extraction, transport, processing, use and disposal of materials to satisfy societal needs and wants hugely contributing to the overshoot of many planetary boundaries. This is no different for the Canadian province of Québec, which operates in a largely linear, 'take-make-waste' mode of operation. When our first *Circularity Gap Report Québec* was launched in 2021, the Circularity Metric was calculated at 3.5%, based on data from 2017 to 2019. Since then, methodological advancements and improved data availability have enabled us not only to revisit this calculation but also to provide a detailed breakdown of the full Circularity Indicator Set, shedding light on the components that make up the 'Circularity Gap'. We also provide updated figures for Québec's material and carbon footprints, which act as strong proxies for environmental impact. For Québec to achieve a truly circular economy, it must question patterns of overconsumption that drive material use in the first place, rethinking how goods are produced and consumed, and redesigning systems to minimise waste and keep materials in the loop for longer.

Québec on the global stage

Our global economy is already consuming more than the planet can sustain: we currently use resources equivalent to what 1.75 Earths could regenerate.[2] As a province in Canada, Québec exemplifies a *Shift* economy, alongside most other high-income nations in the Global North. These countries and provinces achieve exceptionally high scores on the United Nations Human Development Index (HDI), reflecting strong health, education, and living standards. However, the overconsumption linked to their affluent lifestyles places immense pressure on the planet's systems. At 46 tonnes of virgin material use per capita per year, Québec's consumption drastically exceeds both the global average of 12 tonnes and the European Union average of 14 tonnes per capita.[3 4]

Why the circular economy for québec?

Current linear production and consumption patterns require deep transformation to prevent environmental and societal breakdown. The circular economy offers a viable alternative. Historically, economic growth, resource use, and human development have been closely linked, making resource consumption a key indicator of environmental degradation. Understanding how materials are extracted and processed for essentials like food and fuel is crucial to informing and improving these processes, ultimately reducing global resource use and greenhouse gas (GHG) emissions. The circular economy—a model that minimises waste, keeps materials in use at their highest value for as long as possible, and regenerates nature—enables smarter resource management to maximise human well-being while reducing environmental harm.

Québec's economy, characterised by its integration into global value chains, faces significant vulnerabilities inherent in the linear 'take-make-waste' model. The province's reliance on finite resources and exposure to volatile commodity markets make it susceptible to supply chain disruptions, especially amid escalating geopolitical tensions and climate-induced extreme weather events. For instance, Canada's trade balance with China in minerals and metals was negative by CA$ 3.4 billion in 2023, highlighting dependencies that could pose risks if geopolitical frictions escalate.[5] At the same time, material productivity—the economic value created for each tonne of materials used in Québec's economy—fell from CA$ 1,788 per tonne in 2016 to CA$ 1,504 per tonne in 2019, a decline of approximately 16%. This decrease means that Québec has consistently created less wealth per tonne of materials used.[6]

What's more, climate change is projected to cause substantial economic damages across Canada, with estimates suggesting that climate impacts will slow economic growth by CA$ 25 billion annually from 2025, equal to half of projected GDP growth.[7] In Québec, changing weather patterns are already having a significant impact, with more frequent freeze-thaw cycles damaging roads and other infrastructure, rising sea levels, reduced ice cover, and more frequent storms causing shoreline erosion in the province's significant coastal municipalities.[8] Circular economy strategies help mitigate these risks and increase the economy's resilience in the face of these new challenges.

Our first edition of the *Circularity Gap Report Québec* indicates that implementing circular solutions could significantly mitigate environmental impacts: we found that six combined solutions across key societal needs—including housing, nutrition and mobility—could reduce material use by 48.2% while bolstering circularity. In 2024, we authored a spotlight chapter as part of the *Circularity Gap Report Québec—The circular economy as a means to stay within planetary boundaries*—which found that circular solutions could bring key planetary boundaries—such as those for climate change and marine eutrophication—significantly closer to a safe operating space, while bringing freshwater use well within the safe operating space.[9] What's more, the circular economy presents a powerful economic opportunity for governments, unlocking new avenues for innovation, job creation, and sustainable growth. By prioritising resource efficiency, reuse, and regeneration, the Government of Québec can reduce dependence on volatile global supply chains and finite raw materials. This shift not only helps decouple economic development from environmental degradation but also enhances resilience to external shocks, whether from geopolitical tensions, climate impacts, or market fluctuations. In an increasingly uncertain world, circularity is not just an environmental imperative but a strategic economic advantage.

Québec then and now: four years of progress

Québec is well-positioned to take on the challenge of transitioning to a circular economy: boasting almost entirely renewable electricity production and being home to nearly 50% of zero-emission vehicles in Canada, the province is taking tangible steps to combat climate change.[10] While our 2021 report noted progress on climate change—through the *2030 Plan for a Green Economy*, for example—it also called attention to the lack of a concrete circular economy action plan, highlighting the ample space for circular initiatives to be incorporated in Québec's strategies and policies moving forward.

Since then, the *Québec Government Sustainable Development Strategy 2023–2028* has outlined a comprehensive plan to integrate sustainability across all government operations, aiming to address environmental, social, and economic challenges with a strong emphasis on the circular economy. The *Strategy* set the ambition of accelerating circular economy development, culminating in the launch of the *Circular Economy Roadmap 2024–2028:*[11] a governance framework bringing together several ministries and organisations to accelerate the implementation of structural and strategic measures. It prioritises five economic sectors—biofood, construction, manufacturing, mining, and energy—each with its own objectives and goals. The *Roadmap* emphasises the importance of monitoring progress, with a range of impact indicators—including the Circularity Metric calculated by this report—set to assess the acceleration of circularity in the province. The first *Implementation Plan*, set for 2025–2028, includes 132 actions across 21 ministries to kick off the Roadmap's implementation.

In June 2025, RECYC-QUÉBEC released its Strategic Plan for the 2025–2028 period. At the core of this plan is a renewed vision that positions RECYC-QUÉBEC as both a catalyst for circular economy transformation across all sectors and a hub of expertise driving more sustainable behaviours.[12]

Québec has made significant strides in embedding circularity into its policy landscape over the past four years. This report aims to quantify that progress, highlighting where momentum is building, where gaps remain, and how the province can continue to lead in advancing a more circular, resilient, and sustainable economy.

Aims of the *Circularity Gap Report Québec: progress report 2025*

1. Map the flow of materials through Québec's economy, including associated carbon emissions.
2. Update Québec's Circularity Metric and calculate the full Circularity Indicator Set to provide insight into the province's progress, as per the *Circular Economy Roadmap*.
3. Identify hotspots where the circular economy can be most effectively leveraged.

2 Québec's circularity baseline

The resource reality of meeting societal needs

In the first *Circularity Gap Report Québec* (2021), the province's Circularity Metric stood at 3.5% using data from 2017, 2018 and 2019. Using updated 2023 data, this figure has been recalculated using two different methodologies:

1. **Using the original (comparable) methodology: The updated Circularity Metric is 2.5%, allowing for direct comparison with the 2021 figure.**
2. **Using an updated methodology: The Circularity Metric is 1.9%, reflecting improvements in data quality and analytical methods. This version establishes a new baseline for future circularity monitoring.**

Since 2021, methods for analysing material flows and calculating circularity have been refined, resulting in enhanced accuracy and consistency.13 While the 3.5% and 2.5% figures are methodologically comparable, the 1.9% reflects a revised approach that incorporates these improvements. For more information on the methodological changes made, please refer to the Methodology Document and Project Annexe.

Key methodological and data source improvements in the *Circularity Gap Report Québec 2025 Update*

- **Material Flow Accounting (MFA):** Now applies a more consolidated version of the extended economy-wide MFA (EW-MFA) framework.[14] This is implemented via a structured model aligned with Eurostat and UNEP EW-MFA guidelines, replacing the earlier, more simplified approach.
- **System integrity:** Dataset consistency has been improved by applying harmonised system boundaries, ensuring more coherent and reliable results across all material flow categories.
- **Improved data sources:** For example, the input-output analysis has transitioned from EXIOBASE v3.7 to the OpenIO project developed by CIRAIG,[15] providing more granular and context-relevant data.

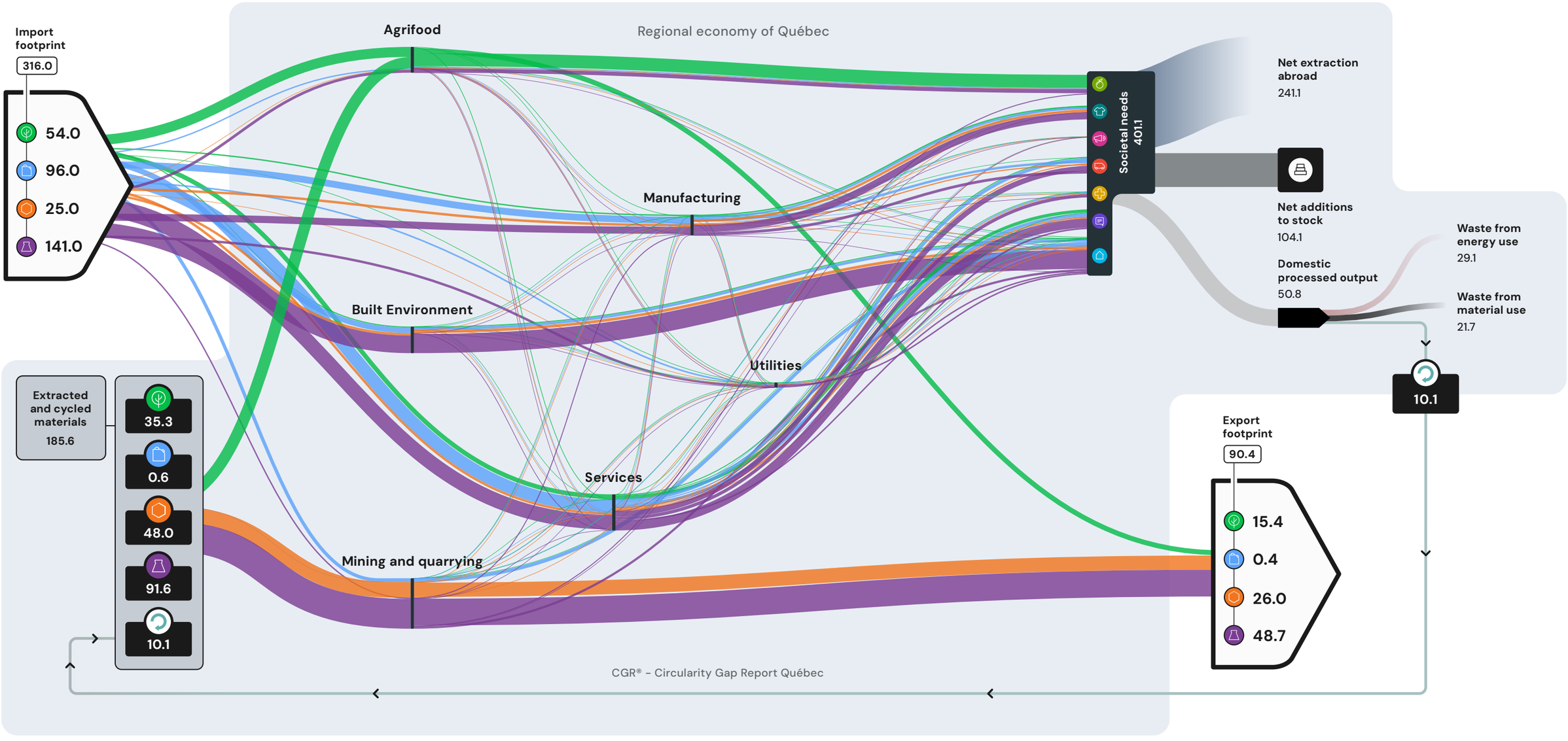
2.1 Sizing Québec's material flows and footprints

To truly understand an economy's environmental footprint, it's essential to consider not only local impacts but also those beyond its borders. For this reason, this study takes a consumption-based approach to calculate Québec's material and carbon footprints. Instead of just looking at where materials are extracted or goods are produced, the material footprint reflects the total raw materials used to meet Québec's consumption needs, no matter where those resources come from.[16] Similarly, the carbon footprint is measured by considering the GHG emissions tied to the consumption of goods and services in Québec. This includes both direct emissions, such as those from heating homes, and the emissions embedded in the trade of goods, like imports. By adopting this perspective, we gain a clearer and more comprehensive picture of Québec's true contribution to Canadian and global resource consumption and GHG emissions.

We apply the concept of socioeconomic metabolism to track the flows of materials and energy through Québec's economy, recognising that economies function like living systems, continuously transforming resources into goods, services, and waste. The Sankey diagram pictured in Figure one allows us to visualise how materials—both virgin and secondary—are extracted or imported, processed by various industries, and eventually consumed by sectors of final demand, which correspond to societal needs such as housing and mobility. This image highlights that Québec's import footprint (315.9 million tonnes) is more than three times that of its export footprint (100.5 million tonnes), pointing to the province's high reliance on Canadian and foreign supply chains to meet domestic demand. This imbalance suggests that Québec consumes far more than it produces in terms of material-intensive goods, making its economy vulnerable to global supply disruptions and price volatility.

It's important to note that in this Figure, the material consumption of the societal needs includes both virgin and secondary materials. In the following sections, material footprints for various societal needs include only virgin material consumption. This is why you may notice a discrepancy between the values presented in Figure one and those reported in the rest of this Chapter.

Québec's Socioeconomic Metabolism



Material groups				
Biomass	Fossil fuels	Metal ores	Non-metallic minerals	Cycled materials
73.9	96.3	47.0	183.9	10.1

Societal needs							
Nutrition	Manufactured goods	Communication	Mobilty	Healthcare and education	Services	Housing and infrastructure
58.5	55.4	4.1	64.6	21.5	68.7	128.2

All units are in **million tonnes**

Version 2.0, 2025

Figure one depicts Québec's material flows in a Sankey diagram.

Domestic material extraction

Domestic extraction measures the raw materials physically removed from the natural environment to fuel an economy, expressed in weight and excluding water and air.[17] While it serves as a foundation for economic activity, this process comes at a steep environmental cost, driving pollution, biodiversity loss, and the depletion of natural carbon sinks. These impacts occur regardless of whether the extracted resources are consumed domestically or exported for use abroad.

In Québec, domestic extraction totalled 175.5 million tonnes in 2023. On a per capita basis, this amounted to 20 tonnes per person. The extraction profile in 2023 was dominated by non-metallic minerals—largely stone, sand, gravel, clay, and refractory minerals—which accounted for 52% of the total. Metal ores—almost entirely represented by iron—comprised 27% of the total extraction. Biomass, including logs and bolts, fuel wood, cattle, and grain, made up 20%. Fossil fuels represented a small portion of domestic extraction, totalling just 0.6 million tonnes, dominated by peat. Figure two provides a detailed breakdown of the material groups and their respective shares in total domestic extraction.

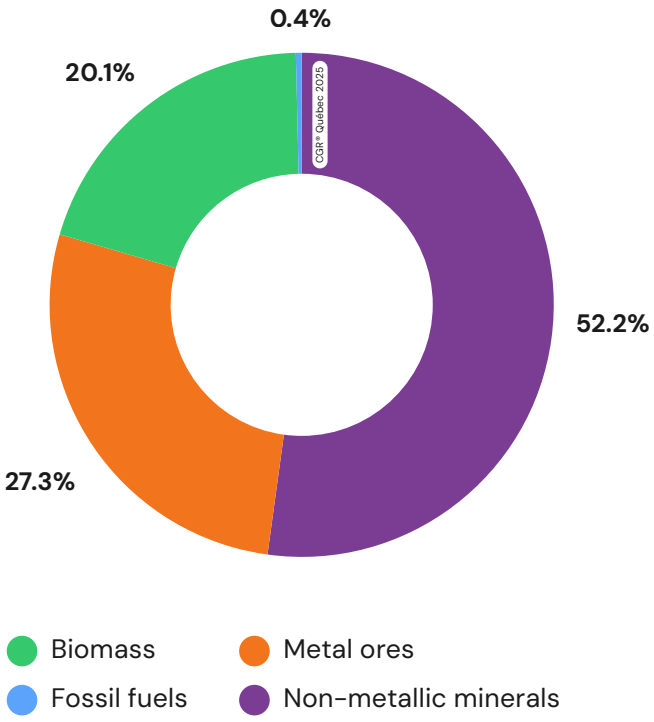


Figure two displays domestic extraction by material group in 2023.

Material footprint

The material footprint captures the total raw materials required throughout the entire supply chain to meet an economy's demand for goods and services, regardless of where extraction, processing, or disposal occurs. As a consumption-based indicator, it reflects the environmental impact of an economy's consumption habits, both domestically and beyond its borders.

Québec's material footprint in 2023 was **391 million tonnes**, or roughly **46 tonnes per capita**, leagues beyond the estimated sustainable material footprint of eight tonnes per capita.[18] From a consumption-based perspective, non-metallic minerals claim the greatest portion of this, at 199.6 million tonnes or 51.1% of virgin material consumption. Fossil fuels take second place at 95.9 million tonnes (24.5%), followed by biomass at 69.1 million tonnes (17.7%) and metal ores at 26.3 million tonnes (6.7%). This breakdown is depicted in Figure three below.

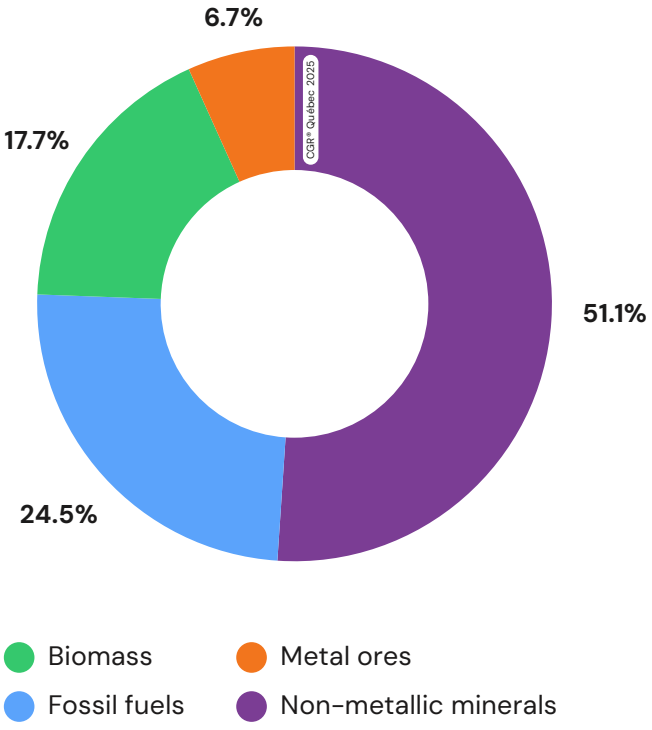


Figure three breaks down Québec's material footprint by material group for 2023.

In 2023, 19% of Québec's material footprint was sourced within its borders, while 35% came from the rest of Canada and 34% from the Asia & Oceania region (largely India and China). Other world regions—the rest of the Americas (10%), Europe (1%), and Africa (0.7%)—contributed significantly smaller shares. As depicted in Figure four, the bulk of Québec's fossil fuel footprint (75%) originates from within Canada, while non-metallic minerals were largely sourced domestically and from Asia & Oceania.

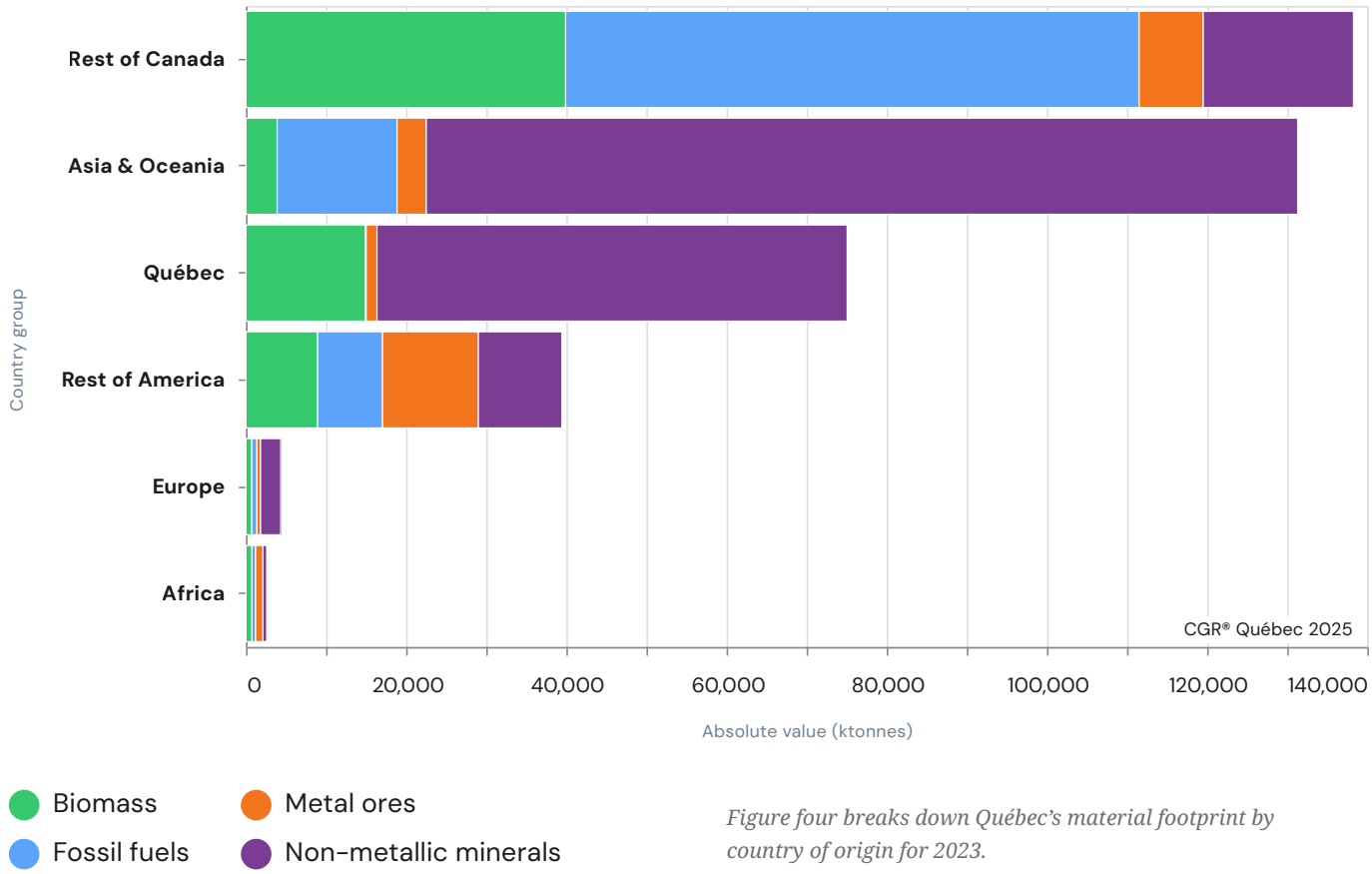


Figure four breaks down Québec's material footprint by country of origin for 2023.

Québec's material footprint reflects how natural resources are used to meet core societal needs, with **Housing (125 million tonnes), Other services (67 million tonnes), Mobility (63 million tonnes)**, and **Nutrition (57 million tonnes)** representing the largest areas of material demand. While biomass resources primarily serve nutritional needs—driven by items like processed and packaged food, beef production, and fuel wood—most other provisioning systems are dominated by non-metallic minerals, especially those embodied in imports from countries such as India and China. Residential buildings alone are a major driver of demand across non-metallic minerals, fossil fuels, and metals, alongside key contributors such as oil and gas and mineral exploration, motor gasoline, and civil engineering works like highways and bridges. Overall, just five sectors—residential buildings, oil and gas and mineral exploration, highways and related infrastructure, prepared meals, and other land transportation civil engineering works—account for a striking 35% of Quebec's consumption-based material footprint, underscoring the outsized impact of construction, energy, transport, and food systems in shaping resource use across the province.

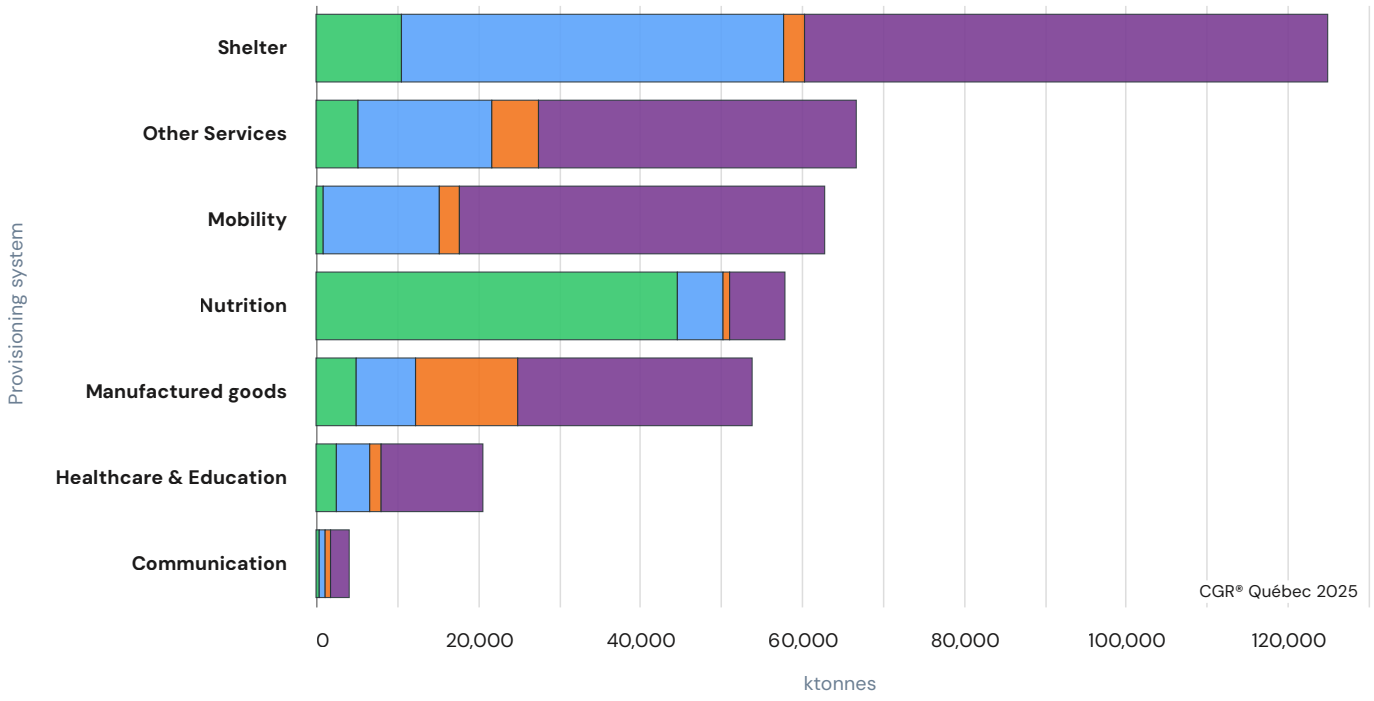


Figure five breaks down Québec's material footprint by provisioning system for 2023.

Carbon footprint

To fully understand an economy's environmental impact, measuring its material footprint is not enough. While the material footprint highlights the effects of material consumption both domestically and internationally, assessing the carbon footprint is equally critical. A consumption-based carbon footprint captures the GHG emissions tied to the goods and services consumed by a person, industry, or provincial economy. By accounting for the emissions embodied in imports and exports, this approach offers a comprehensive view of an economy's true contribution to global emissions, surpassing the insights of production-based accounting.

Québec's carbon footprint was **117 million tonnes of CO_2e** in 2023, equal to 14 tonnes per capita and representing around 0.2% of total global emissions. In the same year, 45.6% of this footprint originated domestically, while 54.4% was linked to international sources. The biggest contributors were Asia & Oceania (19.5%), the rest of America (15.8%), the rest of Canada (14.8%), with Europe (3.1%) and Africa (1.2%) contributing smaller shares.

Quebec's carbon footprint is spread relatively evenly across key sectors, with **Other services (17.2%), Nutrition (16.3%)**, and **Manufactured goods (13.8%)** leading emissions contributions, followed closely by **Housing (13.3%)** and **Mobility (12.4%)** (see Figure seven). Among all emission sources, residential buildings stand out as a major contributor, responsible for up to 8% of total GHG emissions, highlighting the significant climate impact of the built environment.

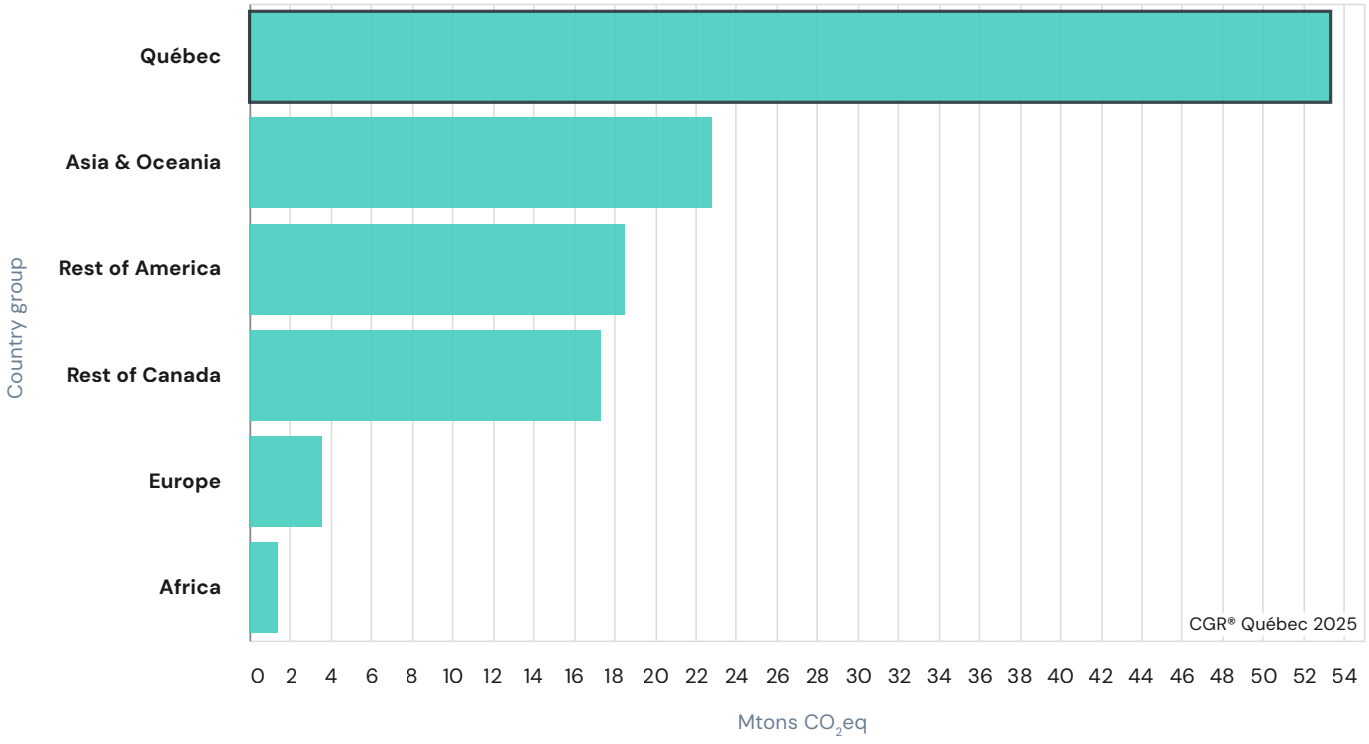


Figure six breaks down Québec's carbon footprint by country of origin for 2023.

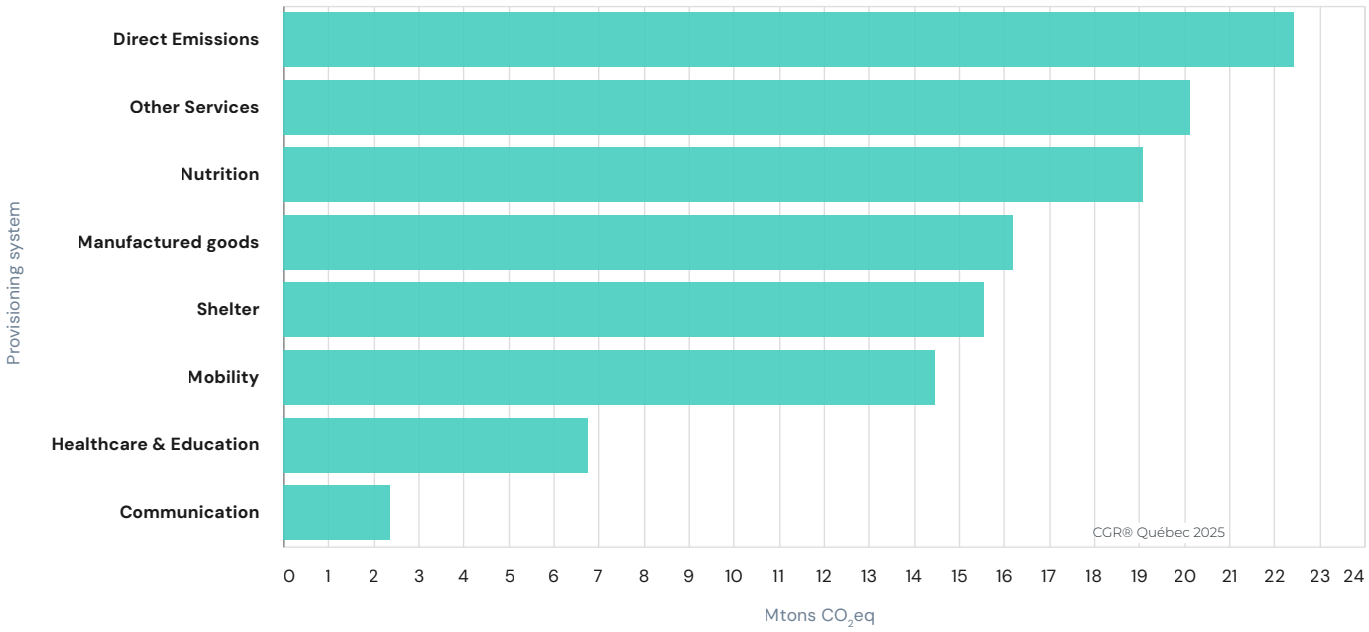


Figure seven breaks down Québec's carbon footprint by provisioning system for 2023.

Waste management

Québec generates substantial volumes of waste, with varying outcomes in terms of treatment and recovery. According to harmonised data aligned with the CGR methodology,19 46% of waste is sent to landfill (4.6 million tonnes), 11% is treated through incineration or energy recovery (1.05 million tonnes), 32% is recycled (3.2 million tonnes), and 11% is used for backfilling (1.1 million tonnes). However, the original reported data suggests a slightly different distribution, with higher recycling rates (39%) and more waste sent to landfills (36%). These discrepancies point to variations in data collection and classification methods, but in both cases, landfill remains the dominant endpoint for Québec's waste.

Despite this, the province does cycle a significant volume of materials back into the economy. Total domestic consumption of secondary materials amounts to five million tonnes, of which 4.3 million tonnes are recycled domestically, excluding organic flows (3.0 million tonnes) and waste from unidentified domestic extraction (1.1 million tonnes). This means Québec imports around 0.7 million tonnes of secondary materials to meet demand. Domestically cycled materials—totalling approximately 4.3 million tonnes—are largely composed of wood waste (30%), paper and cardboard (14.6%), construction and demolition waste (14.7%), and ferrous metals (14%). A smaller share consists of mixed or undifferentiated material flows (8.6%).

This picture highlights the ongoing challenges in Québec's transition toward a more circular economy. While recovery and recycling infrastructure exists and supports the recirculation of key material streams, large volumes of waste continue to end up primarily in landfills. Strengthening upstream design for circularity, alongside improving the quality and usability of recycled outputs, will be key to increasing secondary material use and reducing environmental impacts.

2.2 Québec's Circularity Indicator Set

This report aims to provide a comprehensive analysis of the state of Québec's circular economy, with the view that the Circularity Metric—while important—is only one piece of a large and complex puzzle. To support practical decision-making, the report goes beyond the headline figure to explore the 'Circularity Gap': the remaining material flows that move through the economy but are not yet circular. To do this, we use the Circularity Indicator Set, which captures the full spectrum of inputs into Québec's economy. It differentiates circular inputs, like secondary materials and carbon-neutral biomass, from linear inputs, such as fossil fuels and virgin, non-renewable materials. It also tracks Net Additions to Stock—materials used for buildings and infrastructure that are added to long-term reserves and won't re-enter circulation for many years. Figure eight illustrates the composition of these material flows, providing a visual overview of how inputs are distributed across the circular, linear, and addition to stock categories.

By using this methodology, we aim to answer a number of critical questions: How much material is Québec adding to its stock annually? How much biomass is being consumed? By providing these insights, the Circularity Indicator Set can enable local stakeholders to track circular performance over time, set meaningful goals, and steer future actions.

To enable comparability with the Circularity Metric published in the first *Circularity Gap Report Québec* (**3.5%**), we recalculated it using a similar methodology. This result, along with the full Circularity Indicator Set calculated using the updated methodology, is presented across Tables one, two, and three.

For a detailed explanation of each indicator, please refer to the Methodology Document.

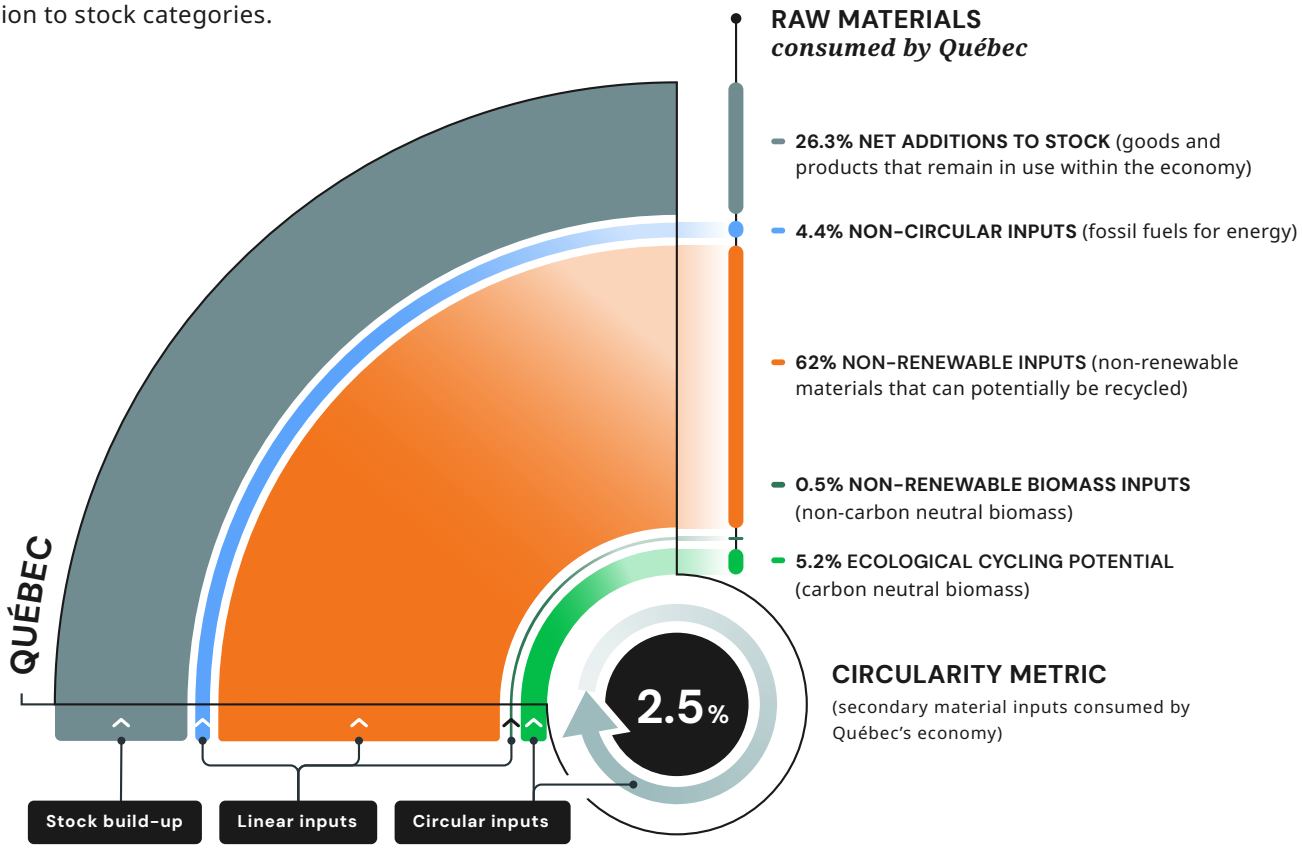


Figure eight depicts the Circularity Indicator Set, showing the full spectrum of inputs into Québec's economy.

Circular inputs

Indicator	Value	Explanation	What does this mean for Québec?
Technical Cycling Rate (Circularity Metric)	**2.5%** (Old methodology) 1.9% (New methodology)	The Technical Cycling rate, or the 'Circularity Metric', refers to the **share of secondary materials in an economy's total consumption**. It accounts for all materials that were formerly waste but are cycled back into use, including recycled materials from both the technical cycle (such as recycled cement and metals) and recycled processed biological inputs (such as paper and timber).	At 2.5%, Québec's Technical Cycling Rate is low compared to the global average of 6.9%.[20] This means only 2.5% of Québec's material consumption comes from cycled materials signalling the need for accelerated efforts to boost secondary material use and reduce overall material consumption. The bulk of secondary materials is biomass, at 3.1 million tonnes (63% of the total), followed by non-metallic minerals at 1.1 million tonnes (21%). Fossil fuels and metal ores contribute smaller shares, at 0.4 million tonnes (9%) and 0.3 million tonnes (7%), respectively.
Ecological Cycling Potential Rate	5.2% (Old methodology) 5.3% (New methodology)	The Ecological Cycling Potential rate captures the **share of primary biomass** (such as trees, manure, food products or agricultural residues) out of total material consumption that is considered **carbon-neutral** as a minimum criterion.	Québec's Ecological Cycling Potential is limited, with carbon-neutral biomass making up only 5.2% of total material consumption—well below the global average of 21.5%.[21] The majority of biomass consumption is linked to food products. Of Quebec's total biomass material footprint (69 million tonnes), the top contributors are Processed and Packaged food (7.6 million tonnes), Beef production (6.8 million tonnes), Fuel wood (5.4 million tonnes), Residential Buildings (4.3 million tonnes), Processed meat products (3.3 million tonnes), Cheese and cheese products (2.6 million tonnes), Fresh and frozen poultry (2.3 million tonnes) and milk and milk products (2.2 million tonnes), collectively accounting for 50% of total biomass use.

Table one shows the breakdown of Québec's circular inputs within the Circularity Indicator Set for 2023, highlighting secondary materials and carbon-neutral biomass flows.

Linear inputs

Indicator	Value	Explanation	What does this mean for Québec?
Non-Renewable Biomass Rate	0.5% (Old methodology) 0.6% (New methodology)	The Non-Renewable Biomass rate captures the share of virgin non-carbon-neutral biomass—including, for instance, crops on the input side—out of total resource use. This means that extracting and using this biomass resulted in net positive emissions due to land use and land cover change.	At 0.5%, Québec's Non-Renewable Biomass rate is low, below the global average of 2.2%. While the type biomass here is no different to that falling with ecological cycling, this category reflects the share that cannot be considered circular, calculated through a carbon balance and should therefore be eliminated.
Non-Renewable Rate	61.0% (Old methodology) 61.6% (New methodology)	Non-Renewable Inputs include metals, plastics, paper, glass and other materials found in everyday products. They do not include fossil fuels combusted for energy or any biomass other than paper and wood. Contrary to Technical Cycling, this category represents **materials that *can* potentially be cycled but are currently not**, whether in Québec or abroad.	Québec relies heavily on raw materials that could be replaced with secondary materials. Non-Renewable Inputs account for 61.0% of its material consumption, highlighting significant potential to increase technically-cycled inputs. The province's Non-Renewable rate exceeds the global average of 18.1%. This non-renewable share is driven primarily by non-metallic minerals (106.8 million tonnes, or 43.3% of the total) and fossil fuels used for material purposes (78.3 million tonnes, 31.8%), followed by biomass (39.5 million tonnes, 16%) and metal ores (21.6 million tonnes, 8.8%).
Non-Circular Rate	4.4% (Old methodology) 4.4% (New methodology)	This category centres on **fossil-based energy carriers**, such as coal, oil and natural gas, among others. This indicator captures fuels burnt for energy, while fossil fuels used to produce materials—such as chemicals and plastic—are captured by the Technical Cycling rate and Non-Renewable rate. As these fossil fuels combust, they release GHG emissions into the atmosphere. These material inputs cannot be cycled and are therefore **inherently non-circular**.	Québec's consumption of fossil fuels for energy represents 4.4% of total material inputs, well below the global average of 13.3%. This relatively low figure reflects progress in reducing reliance on fossil fuels. However, as the most impactful material group, further reductions are critical to mitigate climate change. Québec is a global leader in renewable electricity: over 99% of its power comes from clean sources, primarily hydropower (94–95%), with wind and solar making up the remainder.[22] However, this represents only around 42% of Québec's final energy consumption, with the remainder still heavily reliant on fossil fuels for heating, transport, and industrial processes.[23] While Québec's clean energy infrastructure offers a strong foundation for decarbonisation, reducing fossil fuel use in local sectors alone is not enough. Decarbonising the broader value chains Québec depends on—particularly those tied to imported goods and industrial inputs—will also be crucial to achieving a truly circular, low-carbon economy.

Table two shows the breakdown of Québec's linear inputs within the Circularity Indicator Set for 2023, detailing fossil fuel use and non-recycled material consumption.

Stock build-up

Indicator	Value	Explanation	What does this mean for Québec?
Net Additions to Stock	26.3% (Old methodology) 26.3% (New methodology)	Many of the materials that are needed to meet Québec's material demand feed into **goods that remain in use for a relatively long time, such as buildings, infrastructure, machinery and vehicles**.[24] These materials are added to the material reserves of an economy for longer than a year and are therefore referred to as Net Additions to Stock.	Québec's stock rate is moderate for an economy of its type, standing at 26.3%, below the global average of 38%. This global rate is largely driven by rapid stock buildup in emerging economies. Québec's lower rate is typical for economies with more mature infrastructure. Québec's stocking rate per capita sits at 11.7 tonnes, higher than Ireland (7.8 tonnes) and Switzerland (10.2 tonnes), and similar to that of New Zealand (12 tonnes). This reflects Québec's relatively low population density of 6.5 people per square kilometre,[25] where buildings and infrastructure tend to be less resource-efficient, contributing to a higher per capita stocking rate.

Table three shows the breakdown of Québec stock build-up within the Circularity Indicator Set for 2023, focusing on materials added to long-term reserves, such as buildings and infrastructure.

Endnotes

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3. Based on Eurostat data using 2023 data
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12. Measuring circularity is a fast-evolving field, particularly at the regional level, where data availability and consistency can be limited. Since 2021, methodological improvements—including a fuller application of the extended EW-MFA framework—led to the exclusion of some previously counted recycling flows. Additionally, the use of new and more detailed data sources (especially for material footprints) significantly affected the results. These changes enhance accuracy but make direct comparisons with earlier figures more complex.
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15. This approach accounts for the physical flows of materials embodied in imported products and the flows of materials exported as products and services. Thus, the material footprint, also referred to as Raw Material Consumption (RMC), is the total amount of raw materials extracted to meet the final demand of an economy.
16. Water and air are two natural resources generally excluded from economy-wide material flow analysis because their scale is so significant that including their mass obscures other resource use. For more insights, please refer to the Methodology Document.
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