Kootenay Rockies Tourism
Regional Carbon Inventory

This report has been prepared by Synergy Enterprises.

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Table of Contents

Executive Summary

About this Report

Tourism in the Kootenay Rockies region relies heavily on the health of the natural environment and is vulnerable to the changing climate, therefore it is important for Kootenay Rockies Tourism (KRT) and its regional stakeholders to adopt climate change adaptation strategies, including measurement, and reduction, of tourism's carbon footprint. As part of its commitment to destination stewardship and climate resiliency, KRT began the process of conducting a baseline greenhouse gas emissions inventory for the visitor economy in the Kootenay Rockies region in 2023.

2022 was established as the baseline year as it was deemed to be the best representation of the current tourism reality in the region, acknowledging the fact that in tourism was still recovering in 2022 from the effects of the COVID-19 pandemic. This emissions inventory was completed using a "bottom-up" approach, which relies on primary source data (such as total accommodation nights or number of flights from a given country) for tourism activities happening within the regional boundary and uses that data to calculate the associated emissions.

A combination of frameworks was utilized to capture and assign emissions to tourism activity within the Kootenay Rockies tourism region. The main frameworks consulted were the GHG Protocol "Global Protocol for Community-Scale Greenhouse Gas Inventories", the GHG Protocol "Corporate Standard", and ISO 14064-1.

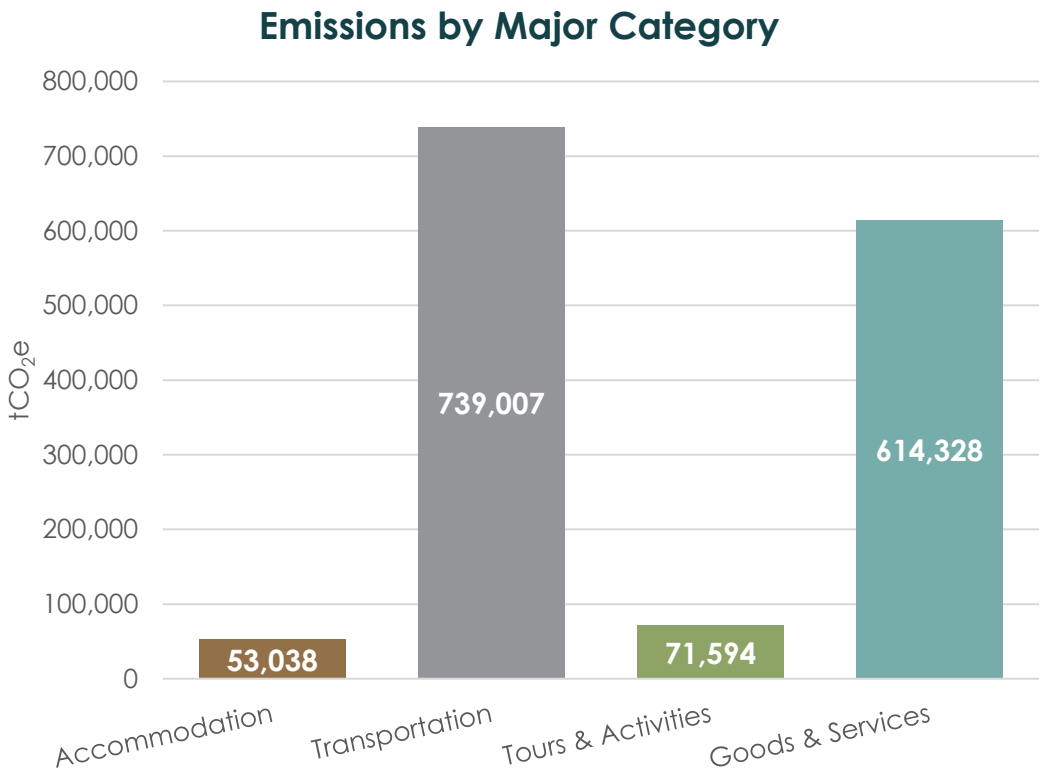
Acknowledgements

KRT extends its gratitude to Destination BC, the BC Regional Tourism Secretariat, Symphony Tourism Services, the Kootenay Rockies Community DMOs and Chambers of Commerce, and other regional tourism partners for their contributions that allowed the completion of this inventory. Without access to their data, this report would not have been possible. Moving forward, KRT hopes that even more comprehensive data collection will be possible, to enable a more complete understanding of tourism's impact on the Kootenay Rockies region.

Emissions by Source

Tourism activity emissions can be broken down into 4 major categories: Accommodation, Transportation, Tours & Activities, and Goods & Services[i]. In general, tourism regions see approximately 50% of their emissions come from Transportation, while greater variability occurs in the other categories based on several factors, including popular accommodation types, visitor spend on goods and services, and the types of tours or activities that visitors participate in.

In 2022, total tourism emissions for the KR region were 1,477,967 tCO_2e[ii]. Transportation accounted for 50% of the total, followed by Goods & Services (42%), Tours & Activities (4.8%), and Accommodation (3.6%). Overall, this resulted in average emissions per visitor of 241 $kgCO_2e$ per trip. Emissions per visitor varied greatly dependent on origin; visitors from Alberta had the lowest emissions impact per trip at 146 $kgCO_2e$. In general, visitors from Canada had the lowest average emissions impact (204 $kgCO_2e$), followed by the US (352 $kgCO_2e$). Overseas visitors, primarily due to long-haul international flights, had the highest average emissions impact at 1,725 $kgCO_2e$.



Total Emissions **1,477,967 tCO_2e**

Emissions per Visitor **241 $kgCO_2e$**

[i] In the context of this report, 'Goods and Services' includes the impact of food purchases and retail shopping activity.
[ii] tCO_2e represents tonnes of carbon dioxide equivalents, a synthesized unit of emissions measurement that accounts for the varying climate impacts of different greenhouse gases.

Emissions Totals by Source and Visitor Origin	BC	Alberta	Other Canada	USA	Other International
Accommodation (tCO_2e)	15,351	25,164	6,163	4,598	1,762
Transportation (tCO_2e)	70,309	92,687	185,754	109,118	281,139
Tours & Activities (tCO_2e)	20,631	33,015	9,648	6,052	2,248
Goods & Services (tCO_2e)	199,494	267,022	72,747	54,267	20,798
Total (tCO_2e)	**305,785**	**417,888**	**274,312**	**174,035**	**305,947**
Intensity ($kgCO_2e$/visitor)	***174***	***146***	***323***	***352***	***1,725***

Description of Emissions Sources

Accommodation

Accommodation emissions account for the emissions for which visitors staying overnight are responsible. They occur primarily due to accommodation facilities burning fossil fuels such as natural gas, propane, or heating oil for building heating and hot water. Electricity consumption can also be a large contributor; however, BC's electricity grid is predominantly powered by hydroelectricity and as such has a low emissions impact compared to other regions.

Transportation

Transportation emissions cover two distinct categories: travel to the region and travel within the region. These emissions occur when fuels are consumed by the vehicles used to transport people (e.g., planes, buses, and personal vehicles).

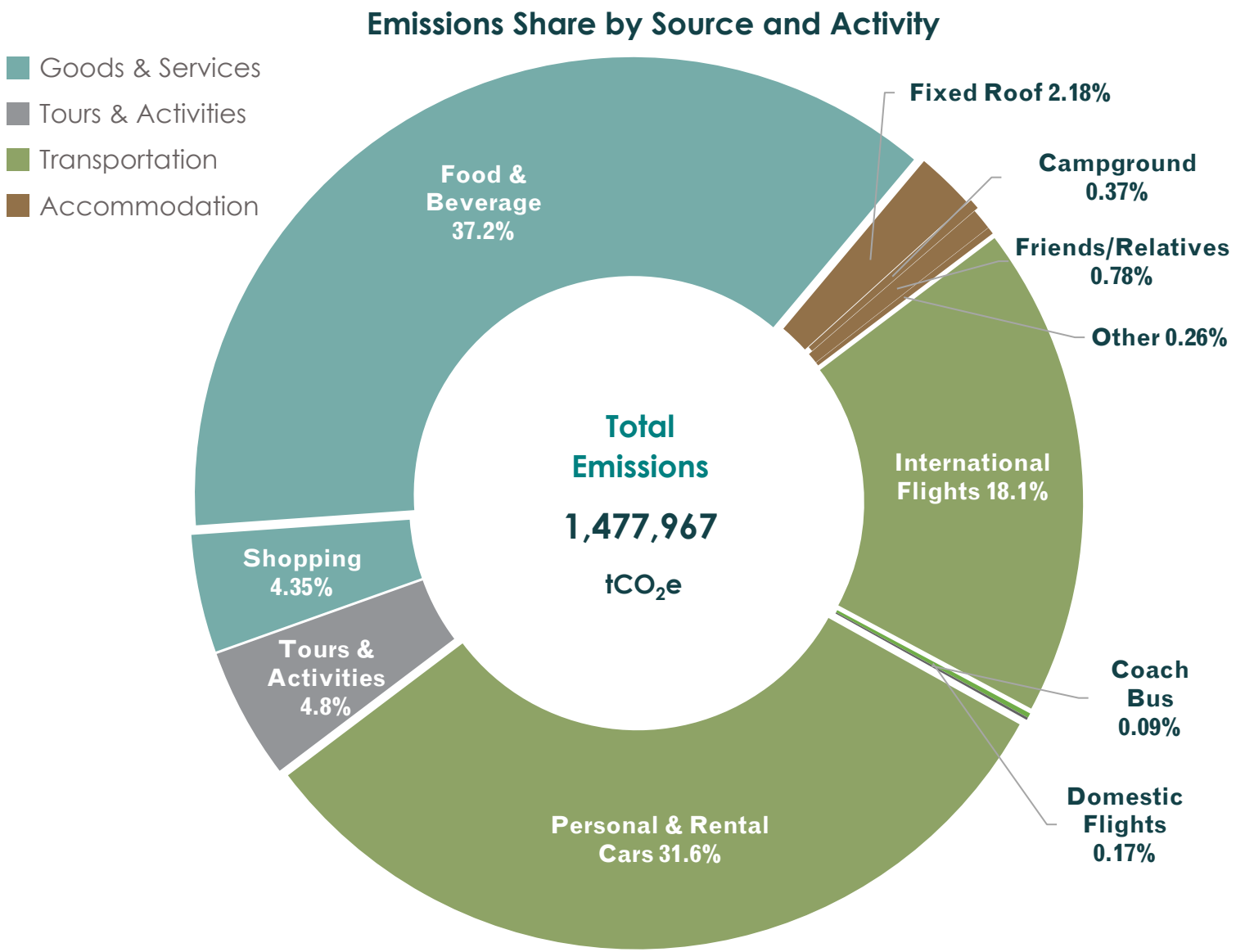
Tours & Activities

Emissions from Tours & Activities occur when visitors travel to and from an in-region destination at which they will take part in a tour or activity. Additionally, the emissions impact of Heli- and Cat-skiing has been included due to the prevalence of these activities in the KR region.

Goods & Services

Emissions from Goods & Services account for the embedded carbon emissions of food and retail goods purchased by visitors. In the context of this report, embedded carbon emissions refer to the lifecycle emissions impact of these goods and services.

Summary of Findings



Introduction

The Kootenay Rockies (KR) region of British Columbia is a preferred four-season destination for passionate travellers of all ages and abilities with a sense of adventure and a desire to discover unparalleled, accessible outdoor recreation and the authentic mountain culture unique to the Kootenays' small towns. The KR region is home to four national parks as well as over 75 provincial parks and millions of visitors from across Canada, the United States, and the rest of the world travel to the Kootenay Rockies each year to immerse themselves in the abundance of nature and outdoor adventure.

Tourism in the Kootenay Rockies is very seasonal, with a distinct high season in summer and winter, with different visitor types attracted in each season for the various outdoor activities the region offers. The health of the natural environment is vital to the current and ongoing success of the region as a tourism destination, and the impacts of tourism visitation should be measured, monitored, and mitigated to ensure the region is responsibly managed.

As a Regional Destination Management Organization (RDMO), Kootenay Rockies Tourism (KRT) represents over 850 tourism businesses and operators, including accommodation properties, golf courses, ski resorts and backcountry ski operators; many of whom have been hard hit by forest fires and are vulnerable to declining snowpacks, therefore it is important for KRT and its regional stakeholders to adopt climate change adaptation strategies, including measurement, and reduction, of tourism's carbon footprint.

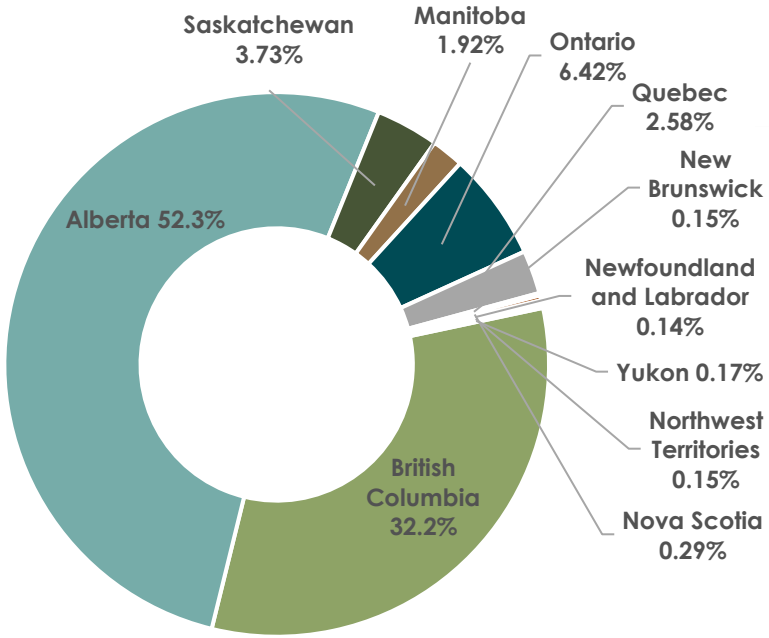
KRT began the process of conducting a baseline greenhouse gas (GHG) emissions inventory for the visitor economy in the Kootenay Rockies region in 2023. Measuring the carbon footprint of tourism aligns well with the 10-year Kootenay Rockies Destination Development Strategy, which outlines "Develop strategies to adapt to climate change and to reduce the contribution of the tourism industry to greenhouse gas emissions" as a key goal for the region.

KRT and its partners have established a low-emissions travel initiative in the KR region and become the first in Canada to implement a community-driven strategy to build a clean transportation network in a rural setting, and the hope is that the results of this GHG emissions inventory can further drive destination development projects and influence both visitor and stakeholder decision making.

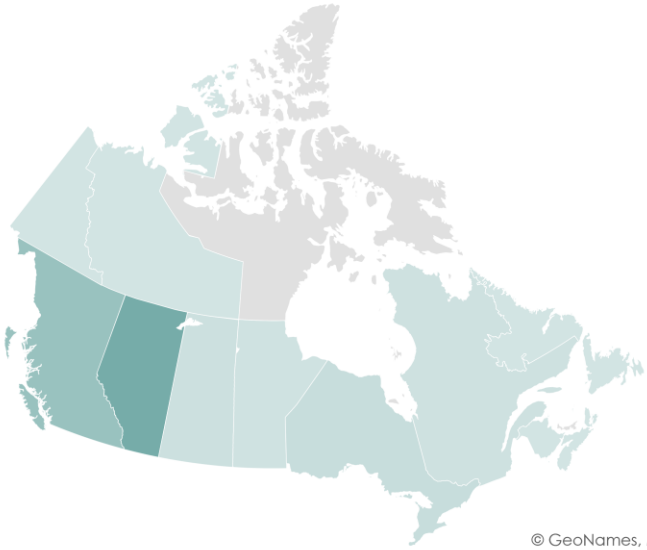
Visitor Profile

In 2022, nearly 2.5 million overnight visitors[iii] travelled to the KR region. Of these visitors, 88% (2.2 million) were from Canada, with Alberta (52%) and BC (33%) accounting for the majority of domestic visitation. Many visitors also arrived from Ontario (6%), Saskatchewan (4%), Quebec (2%), and Manitoba (2%), with the remaining provinces and territories each accounting for less than 1% of total visitors.

Domestic Visitors by Origin



Domestic Visitors by Origin



KEY HIGHLIGHT

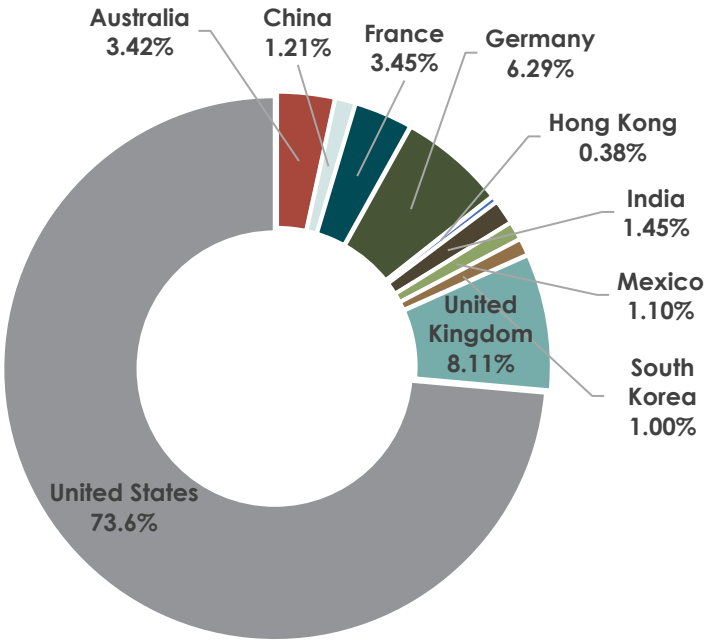
Alberta's geographical proximity made the KR region a prime travel candidate for Alberta residents. More than half of all domestic visitors to the region in 2022 came from Alberta.

[iii] Overnight visitors are defined as those that stayed in the KRT region for at least one night.

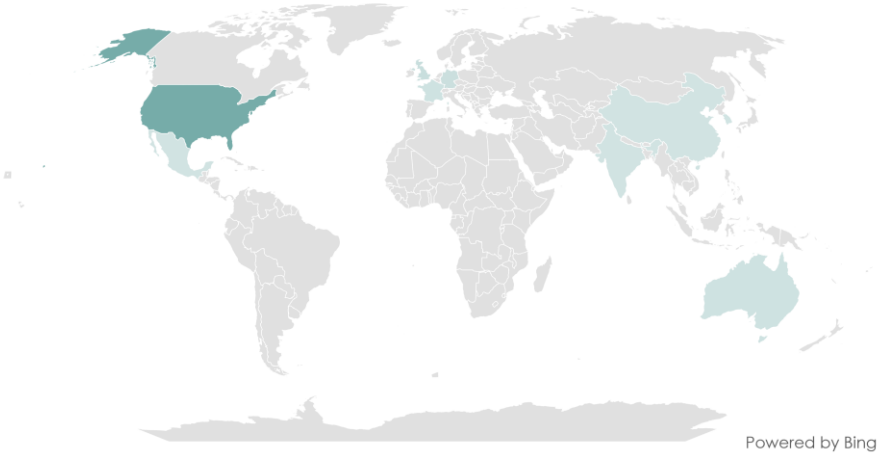
Over 300,000 international travelers visited the KR region in 2022. More than 215,000 of these visitors were from the US, accounting for 72% of all international visitors. California (18%), Washington (8%), Texas (7%), and New York (6%) were the top states of origin. All other states accounted for less than 5% of total US visitors except for Alaska, Delaware, and Rhode Island, with no residents of these states visiting the KRT region.

Outside of North America, the top countries of origin were Germany (24,000) and the UK (23,000). Smaller volumes of international visitors came from France, Australia, India, China, South Korea, and Hong Kong.

International Visitors by Origin



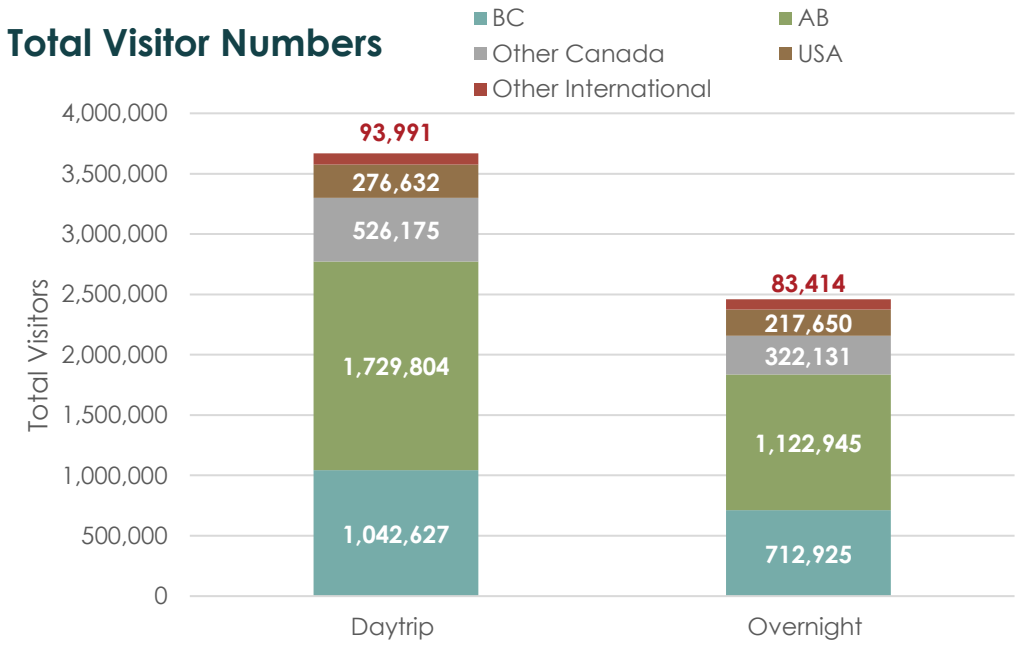
International Visitors by Origin

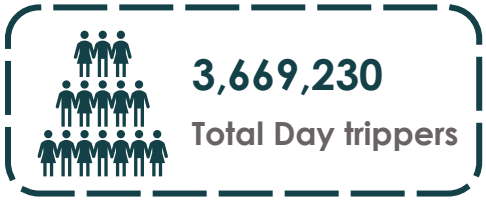


KEY HIGHLIGHT

Visitors from the United States made up nearly 75% of all international visitors. The region's proximity to the US border and multiple land border crossings makes the region easily accessible to visitors from the US.

In addition to overnight visitors, nearly 3.7 million day-trippers[iv] visited the KR region in 2022. 3.3 million of these visitors (90%) came from Canada, again predominantly from Alberta (61%) and BC (26%). Visitors from the US again accounted for most international visitors (75%). Day-tripper visitor volumes from most international regions were higher than overnight visitor volumes; France and Germany, however, both had higher volumes of overnight visitors.





[iv] Day-trippers are defined as those visitors that spent at least three hours in the region. Pass-through visitors (those without a final destination within the KRT region) were not included to align with the 'Induced Activity Allocation' methodology as described in the GHG Protocol for Cities.

Transportation

The KR region is serviced by two main East-West highways in BC: the Trans-Canada Highway (Highway 1) and the Crowsnest Highway (Highway 3). The combination of this highway access and limited international flight options creates a unique travel profile for visitors to the KR region.

Travel to the region[v] is dominated by "rubber on the road": primarily personal vehicles and rental vehicles. Over 97% of all visitors drove themselves to the KR region, with flights (<2%) and buses (1%) making up the remainder. Of those who drove, 92% drove personal vehicles, with the remaining 8% of visitors indicating that they took a rental vehicle.

Across destinations that have assessed the emissions impact of tourism in their region, a consistent trend has been identified, where approximately 50% of emissions come from travel to the region. The KR region is no exception, with travel accounting for 740,000 tCO_2e, almost exactly 50% of emissions across the entire inventory.

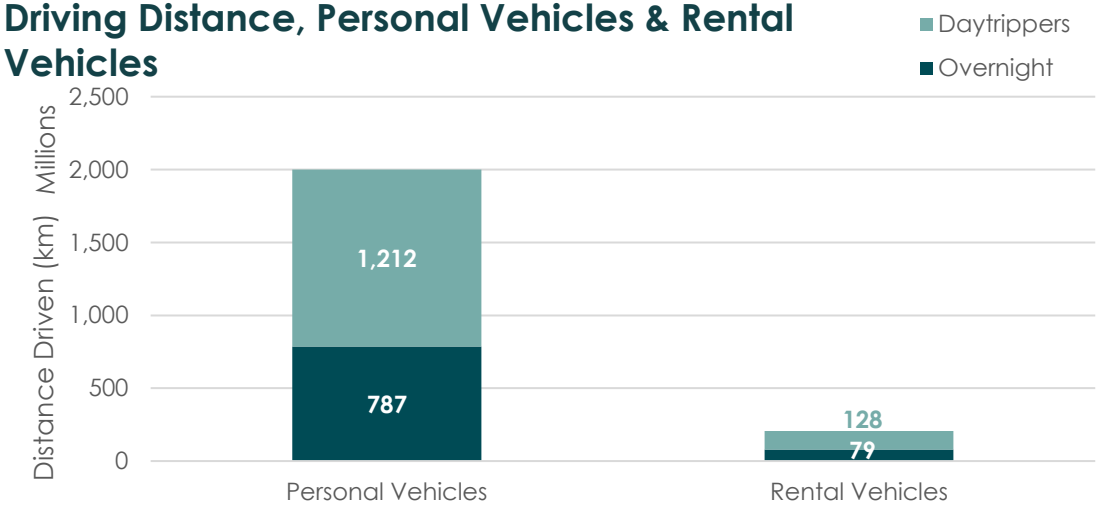
	Visitor Origin				
Primary Mode of Transport	**BC**	**AB**	**Other Canada**	**USA**	**Other International**
International Flights	N/A	N/A	N/A	2,176	83,414
Domestic Flights	7,129	11,229	3,221	N/A	N/A
Coach Bus	17,556	28,527	8,483	4,943	N/A
Rental Vehicles	140,444	228,220	67,864	39,543	N/A
Personal Vehicles	1,590,423	2,584,772	768,737	447,620	N/A
Total	**1,755,552**	**2,852,749**	**848,305**	**494,282**	**83,414**

[v] 'Travel to the region' is defined as the primary method by which visitors reached the destination. For example, international visitors that flew from their country of origin are listed under 'International Flights' despite the necessity to travel to the region from an internationally serviced airport.

Personal & Rental Vehicles

Driving was the primary method of travel used by overnight visitors to reach the KR region in 2022. Over 2.2 billion kilometres were driven by visitors to reach the region. Nearly 2 billion kilometres were driven in personal vehicles by domestic visitors and those from the US, with distance driven in rental vehicles making up the balance. Driving accounted for 63% of all travel emissions, resulting in almost 470,000 tCO_2e.

Driving Distance, Personal Vehicles & Rental Vehicles



KEY HIGHLIGHT

The KR region is home to a strong Electric Vehicle (EV) charging network, providing visitors with EVs with reassurance that they can explore all that the region has to offer, worry-free.

As EV sales continue to grow across North America, the emissions impact of vehicle travel in the region will continue to decrease, thanks to the region's robust charging network and BC's low-emission electricity grid. For future inventories, improved data on visitor mode of transport and EV use would allow for more granularity in this area.

Buses

Visitors taking buses covered 46 million psg-km[vi] in 2022, accounting for about 1% of all visitor travel. Of the travel methods used by visitors to the KR region, bus travel has the lowest emissions intensity. This is due to buses being able to carry larger numbers of passengers, achieving economies of scale when it comes to fuel consumption and emissions per passenger.

Ground Travel **1,985,982,0385 psg-km**

Ground Travel **468,617 tCO_2e**

[vi] Psg-km refers to passenger-kilometres, a unit that measures the distance covered by one occupant of a vehicle, allowing the emissions impact to be 'shared' by all occupants. For example, each occupant in a plane carrying 100 passengers for 1,000 km would be responsible for 1,000 psg-km.

Flights

Flights from non-US international destinations were the second largest source of travel emissions, responsible for almost 267,000 tCO_2e. These emissions resulted from a total distance flown of nearly 1.4 billion passenger-kilometres (psg-km)[vii]. Some visitors from the US also flew into the region; however, this proportion of US visitors was minimal, resulting in 5.4 million psg-km and just over 1,000 tCO_2e. In total, flights accounted for 36% of travel emissions and 17.7% of the total inventory.

In addition to international flights, some domestic visitors also flew into the region. This was the least common method of travel, responsible for only 0.2% of all distance travelled (13.1 million psg-km). Bus travel by comparison was responsible for 0.6% of total distance travelled. When comparing the emissions impacts of these activities, however, domestic flights were responsible for 0.3% of travel emissions, compared to less than 0.2% of travel emissions for bus travel.

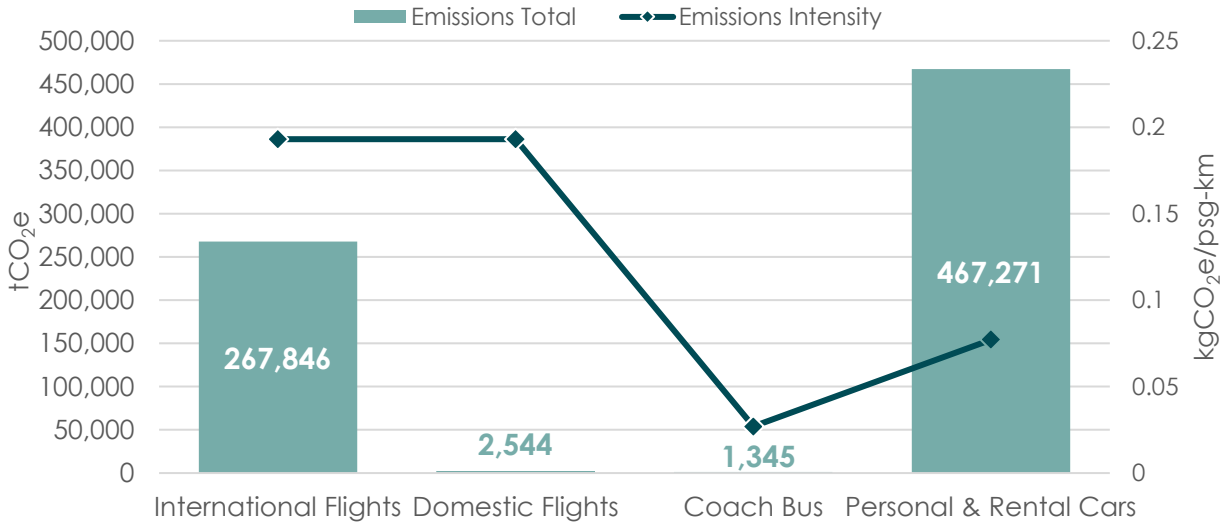
Calgary International Airport (YYC) and Vancouver International Airport (YVR) were considered the two international gateway airports for the region. As such, international visitors were assumed to have flown into one of these two airports, and then travelled by vehicle from the airport to the KR region. It is expected that some of these visitors flew to one of the in-region airports (YXC or YCG) via Calgary or Vancouver; however, visitor-specific data was not available to reasonably account for these flights. Similarly, Kelowna International Airport (YLW) is a secondary gateway to the region (particularly Revelstoke), for which detailed visitor movements were unavailable.

KEY HIGHLIGHT

Travel method has the largest impact on the emissions intensity per visitor. International visitors had a per visitor emissions intensity of 1,725 kgCO_2e - over 10 times higher

[vii] Passenger-kilometres (psg-km) is a standardized unit of measure used to allocate a share of emissions to each individual passenger on travel methods that carry groups of people, such as flights, buses, and ferries.

Travel Emissions by Method



Total distance flown by visitors is equivalent to

34,943

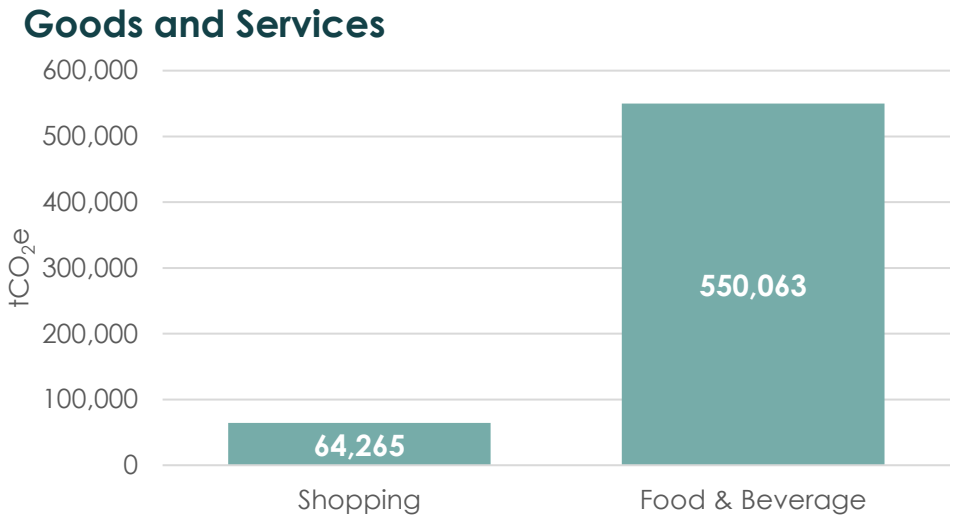
Trips Around Earth

Flights **1,400,331,967 psg-km**

Flights **267,846 tCO_2e**

Goods and Services

Access to restaurants, local food and beverage options, and shopping are key components of travel experiences. Many food and retail establishments rely on tourism for a large portion of their customers, particularly during the tourism high season. On average, visitors to the KR region spent approximately $100 per day on shopping and food and beverage purchases in 2022. Of this, approximately $34 was spent on shopping and $64 was spent on food and beverage.



Food and Beverage

In 2022, visitors spent over $750 million on food and beverage purchases. The emissions impact of these purchases was 550,000 tCO_2e, making this the largest source of emissions across all tourism activities. These emissions are calculated based on the embedded carbon in our food and drink. Embedded carbon refers to the emissions that take place during all the stages of production of the food and drink. This includes agriculture, transportation, and packaging, among others. Food and beverage emissions account for both restaurant purchases, as well as food and beverage purchased for personal preparation.

Shopping

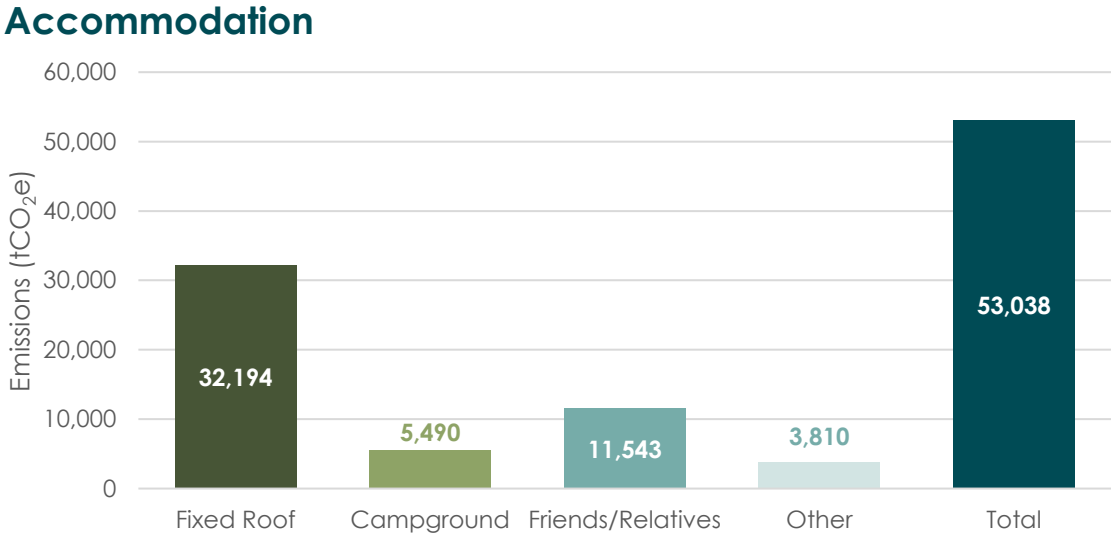
Shopping expenses in the KR region were low at an average of $34 per person per day. As a result, visitors spent $380 million on shopping. Shopping activity captures the purchase of goods from retail facilities as well as some tour-related activity, such as visiting farmers' markets, museums, and general shopping as a planned activity as part of a trip. The resulting emissions from shopping totaled 64,000 tCO_2e, an average of 5.9 $kgCO_2e$ per visitor.

KEY HIGHLIGHT

Daily spending in the KR region on goods and services was relatively low, averaging only $100 per day. With a high prevalence of camping, it is likely that many visitors are opting to prepare many of their own meals instead of visiting restaurants.

Accommodation

Visitor accommodation is another major emission generating activity, mainly from fossil fuels used for heating and cooling. In 2022, nearly 2.5 million visitors stayed overnight, resulting in almost 12 million nights stayed in the region. Fixed roof accommodations (hotels, motels, lodges, and B&Bs) accounted for 4.3 million of these room nights (42%)[viii]. 18% of visitors reported staying with friends or relatives for a total of over 1.8 million nights. Camping was the second most popular accommodation type, with 36% of visitors reporting that camping was their primary accommodation method. Nearly 3.7 million camping nights occurred in 2022.



4.55 $kgCO_2e$
Per Room Night

22 $kgCO_2e$/Traveller
Accommodation

[viii] Data on a detailed breakdown of room-nights for the sub-categories of fixed roof accommodation were not available. Access to this data for future inventories would allow for greater granularity in accommodation emissions calculations.

Fixed roof accommodations have the highest emissions impact per night, mainly due to the large energy and heating requirements of these facilities. Camping is the least carbon intensive as many of the KR region's campgrounds are provincial or national parks that do not have utility services. Emissions from camping result from private campgrounds with hookups, generator use in RVs, and RV sewage disposal.

KEY HIGHLIGHT

The KR Region is home to several ski resorts and during the winter season, overnight visitors opt to stay in fixed roof accommodations (hotels, lodges, vacation rentals) or with friends and family within a reasonable driving distance.

Tours & Activities

Visitors to the Kootenay Rockies take advantage of all the region has to offer, from hiking and mountain biking, to visiting farmers' markets and taking a canoe out on one of the region's many lakes. In the winter, visitors flock to ski resorts, take part in backcountry and heli-skiing, and engage in many other winter activities. Due to the size of the region and the variety of options, driving is required to access many of these activities. The emissions impact of this driving is an important consideration for the region's emissions inventory.

	BC	Alberta	Other Canada	USA	Other International	Total
Total Visitors	2,506,643	3,948,274	1,132,611	765,256	293,282	8,646,066
Distance Driven (km)	66,767,875	105,167,670	30,168,643	20,383,643	7,811,965	230,299,796
Emissions (tCO_2e)	14,458	22,774	6,533	4,414	1,692	49,871

KEY HIGHLIGHT

Visiting provincial parks, national parks, and hot springs topped the list of activities with the largest impact, together accounting for almost 63% of all activity-related emissions (45,000 tCO_2e). These activities had the highest volume of visitors who took part, with an average emissions impact per visitor of 29 $kgCO_2e$. By comparison, visitors who took part in Heli- and Cat-skiing had an average activity emissions impact of 140.75 $kgCO_2e$.

Most emissions associated with these activities comes from the transportation required to get to and from the activities.[ix] Additionally, activities such as Heli- and Cat-skiing carry an emissions impact due to the operation of the equipment required to provide these services. In total, visitors to the region drove over 100 million kilometres while partaking in these regional activities, resulting in 71,600 tCO_2e (4.8% of the total inventory).

Methodology

There are two main methodological approaches to GHG emissions measurement: the "Top-down Approach" and the "Bottom-up Approach". Both approaches have strengths and weaknesses, as well as situations to which they are better aligned.

A top-down approach takes state, provincial, or national level GHG inventories and allocates a portion to the region being assessed based on the economic impact of tourism in that region. This macro-economic approach allows for the contrasting of economic-environmental drivers and more simplified regional reporting without requiring complex data collection. Other tourism emissions inventories such as Auckland (New Zealand), Queensland (Australia) and Valencia (Spain) have adopted a top-down approach.

[ix] Emissions associated with the purchase of goods and services is captured in the corresponding section of this inventory. Therefore, these impacts are not accounted for in this portion of the report.

A bottom-up approach relies on primary source data (such as total room nights or number of flights from a given country) for activities happening within the regional boundary and uses that data to calculate the associated emissions. This approach allows for higher granularity and accuracy than the top-down approach, provided there is adequate data available to match the scope of the report.

Based on initial data outreach, it was determined that sufficient data was available from primary sources, aggregation, tourist surveys, regional, provincial, and national statistics programs, DMOs, airports, and others to use the bottom-up approach. This method includes enough local data and accounts for regionally specific nuance while retaining reasonable levels of accuracy.

Statement on Uncertainty and Estimations

Every attempt was made to complete this inventory with reasonable accuracy and detail. For those activities where limited data was available, a materiality assessment was caried out to determine if an estimate was required. Sources deemed immaterial were excluded, and estimates were made for those deemed material.

To avoid under-reporting the impact of an activity where an estimate was made, a conservative approach was taken to err on the side of overstating emissions. This was particularly relevant for visitor travel, which is discussed in more detail in the accompanying methodology document.