



LAP

LATIN AMERICA POWER



GREENHOUSE GAS PROTOCOL REPORT FOR LATIN AMERICA POWER TOTORAL & SAN JUAN WIND FARMS

2021



carbonneutral
Sustainability at the core of your Business

approved
reseller of



INDEX CONTENT

1. Description	3
2. Introduction	3
2. About the Company	5
3. Key Assumptions	6
4. Methodology	7
4.1. Scope of the Evaluation	7
4.2. Activities Included in the Evaluation	8
4.3. Ilap Results (Totoral & San Juan)	10
4.3.1. Summary Results	10
4.3.2. Detail by Scope	14
Annex	15
Annex 1 - Emission Factors	16
Annex 2 - Totoral & San Juan	17
References	19

1. DESCRIPTION

Client	Latin America Power
Country	Chile
Organizational Perimeter	Totoral & San Juan Power Plants
Standard	WRI/WBCSD GHG Protocol
Calculation Period	01 Jan 2021 - 31 Dec 2021
Calculation Assessor	Teresa Estay - Carboneutral
Quality Assurance Assesor	Chloé Chartier - Ecometrica

2. INTRODUCTION

A greenhouse gas (GHG) emissions assessment quantifies the total greenhouse gases produced directly and indirectly from a business or organization's activities. Also known as a carbon footprint, it is an essential tool, providing businesses with a basis for understanding and managing its climate change impacts.

The objective of this report is to present the results of the greenhouse gas inventory of Latin America Power 2021, with details of its operations in Chile and Peru, in addition to the San Juan and Totoral Wind Farms.

A GHG assessment quantifies the total GHG produced directly or indirectly by the organization's activities. The seven greenhouse gases defined by the Kyoto Protocol are quantified, and measured in units of carbon dioxide equivalent, or CO₂e. The seven Kyoto gases are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF₃), sulfur hexafluoride (SF₆), and perfluorocarbons. (PFC).

The global warming potential (GWP) of each gas is shown in the following table:

Table 1. GWP of Kyoto (IPCC 2013)

GHG	GWP
Carbon dioxide (CO ₂)	1
Methane (CH ₄)	28
Nitrous oxide (N ₂ O)	265
Hidrofluorocarbons (HFCs)	1-12.400
Perfluorocarbons (PFCs)	1-11.100
Nitrogen trifluoride (NF ₃)	16.100
Sulphur hexafluoride (SF ₆)	23.500

This assessment has been carried out in accordance with the World Business Council for Sustainable Development and World Resources Institute's (WBCSD/WRI) Greenhouse Gas Protocol; a Corporate Accounting and Reporting Standard, including the GHG Protocol Scope 2 Guidance. This protocol is considered current best practice for corporate or organizational greenhouse gas emissions reporting. GHG emissions have been reported by the three WBCSD/WRI Scopes.

Scope 1 includes direct GHG emissions from sources that are owned or controlled by the company such as natural gas combustion and company owned vehicles.

Scope 2 accounts for GHG emissions from the generation of purchased electricity, heat and steam generated off-site. As the subject of this assessment operates in markets which offer contractual instruments with product or supplier-specific data, scope 2 emissions are reported using both the location-based method and the market-based method. The location-based method applies average emission factors that correspond to the grid where consumption occurs, whereas the market-based method applies emission factors that correspond to energy purchased (or not purchased) through contractual instruments. Contractual instruments include energy attribute certificates, direct energy contracts, and supplier specific emission rates. The subject of this assessment has ensured that any contractual instruments used in the market-based method have met the Scope 2 Quality Criteria, as defined in the Guidance. Where contractual instruments do not meet the Quality Criteria, or where contractual instruments were not purchased, market-based scope 2 emissions have been calculated using residual mix emission factors. Where residual mix emission factors are not available, market-based scope 2 emissions have been calculated using default location grid-average emission factors, per the Protocol hierarchy. This may result in double counting between electricity consumers, as an adjusted emission factor taking into account voluntary purchases of electricity with specific attributes was not available.

Scope 3 includes all other indirect emissions such as waste disposal, business travel and staff commuting. Reporting of these activities is optional under the WBCSD/WRI GHG Protocol, but as they can contribute a significant portion of overall emissions Ecometrica recommends they are reported where applicable.

A GHG assessment is an essential tool in the process of monitoring and reducing an organization's climate change impact as it allows reduction targets to be set and action plans formulated. GHG assessment results can also allow organizations to be transparent about their climate change impacts through reporting of GHG emissions to customers, shareholders, employees and other stakeholders. Regular assessments allow clients to track their progress in achieving reductions over time and provide evidence to support green claims in external marketing initiatives such as product labelling or CSR reporting. Ecometrica GHG assessments are designed to be transparent, consistent and repeatable over time.

* WBCSD/WRI: World Business Council For Sustainable Development/World Resource Institute

2. ABOUT THE COMPANY

Inversiones Latin America Power Limitada ("ILAP") is a subsidiary of Latin America Power S.A. and owner of 100% of the assets of San Juan and Totoral. Latin America Power S.A. is fully owned by LAP.

- San Juan is a 193.2 MW facility located in Freirina, Atacama region, Chile, which is about 650 km north of Santiago, made up of 56 Vestas V117-3.45 MW wind turbines, which began operating in the first quarter of 2017.

- Totoral is a 46.0 MW facility located in Canela, Chile, which is about 300 km north of Santiago, made up of 23 Vestas V90-2.0 MW wind turbines, and has been in operation since 2010.



In this report, the total GHG emissions of ILAP are presented, with the detail for the San Juan and Totoral Wind Farms.

3. KEY ASSUMPTIONS

General:

- ▶ All emissions were calculated using the Ecometrica Sustainability platform, a software which automatically selects the most geographically and temporally appropriate emission factors and non-standard conversions (e.g. fuel efficiency, heat content) for each emission source. Each of the emission factors and non-standard conversions is associated with a level of uncertainty, assigned by the tool based on its associated level of scientific certainty.

Market-Based Instruments:

- ▶ It was confirmed by ILAP that none of the sites included in the 2021 assessment purchased any market-based instruments for Scope 2 energy consumption in 2021

Premises:

- ▶ ILAP estimated the fuel consumption of the San Juan Wind Farm Diesel generators based on the performance of the equipment and the hours of operation for the period under evaluation.

Company Owned Vehicles:

- ▶ Leased vehicles whose fuel is provided by ILAP were assumed to be company vehicles.

4. METHODOLOGY

For the development of the calculations, the Greenhouse Gas Protocol methodology developed by the WRI and the World Business Council for Sustainable Development was used, through the Our Impacts platform of Ecometrica Ltda, accredited for the CDP, Dow Jones sustainability Index, GRI and GHG Protocol.

4.1. SCOPE OF THE EVALUATION

Organizational Boundary

- ▶ The ILAP Carbon Footprint calculation was carried out under an operational approach Reference Period

Reference Period

- ▶ The reference period for measuring the Carbon Footprint for ILAP includes all emissions within the period January 1st, 2021 - December 31st, 2021

Geographic Scope

- ▶ The geographical scope includes all the facilities of ILAP Chile.

Operational Boundary

- ▶ The operational boundary was defined based on the different emission sources related to both the activities directly related to the company and those indirectly related.

Scopes represent direct emissions (which are directly controlled by the company) and indirect emissions (which are not controlled by the company). The following classification was established for them:

- ▶ Scope 1: Direct Emissions.
- ▶ Scope 2: Indirect emissions related to the purchase of electricity.
- ▶ Scope 3: Other Indirect Emissions from the company's activities.

Each of the Scopes is developed depending on the degree of information available and its precision, in this way certain processes or activities are included or excluded from the emissions inventory

4.2. ACTIVITIES INCLUDED IN THE EVALUATION

The questions considered in the evaluation are the following:

Scope 1	Scope 2	Scope 3
<ul style="list-style-type: none">▪ Vehicles▪ Fuel Consumption▪ Loss of refrigerant gas and other fugitive emissions	<ul style="list-style-type: none">▪ Electricity	<ul style="list-style-type: none">▪ Flights▪ Hazardous waste▪ Municipal solid waste▪ Leased Vehicles▪ Homeoffice▪ Hotel stays and cabins▪ Road transport, shared vehicle (factors tonne.km)▪ Taxis▪ Water Supply and Treatment



**SAN JUAN'S WIND FARM
TOTORAL'S WIND FARM**

GHG RESULTS
2021

4.3.ILAP RESULTS (TOTORAL & SAN JUAN)

TOTAL EMISSIONS : **1189.7 tCO₂e**

Key performance indicators

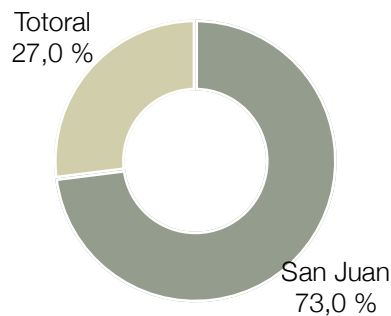
Absolute greenhouse gas emissions vary over time and often respond to the expansion or contraction of an organization. It is therefore useful to use metrics that take these effects into account and monitor the intensity of greenhouse gas emissions. In order to compare GHG emissions over time, the GHG emissions metric per electricity generation. Kg CO₂e/MWh generated, was used in this case, in addition to GHG emissions per full-time employee, both listed in the table below.

Data	FT Employees	tCO ₂ e/employee	Mwh Generated	kgCO ₂ e/MWh
San Juan	4,0	217,150	512.246	1,6957
Totoral	7,0	45,881	71.090	4,5154
Total	11,0	108,155	583.336	2,0395

4.3.1. SUMMARY RESULTS

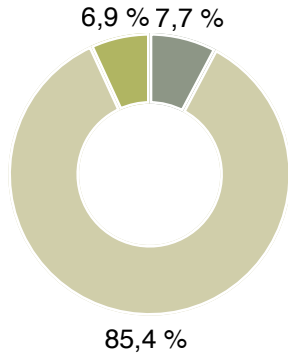
In 2021, ILAP emitted 1,189.7 tons of CO₂e, emissions that come mainly from the operations of the San Juan plant.

Consolidated Summary (tCO₂e)



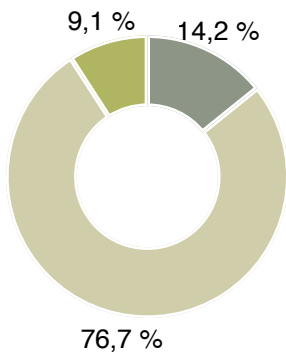
Business Unit	tCO ₂ e	%
Totoral	321,1	27,0 %
San Juan	868,6	73,0 %
Total	1.189,7	100,0 %

ILAP Summary by Scope (tCO2e)



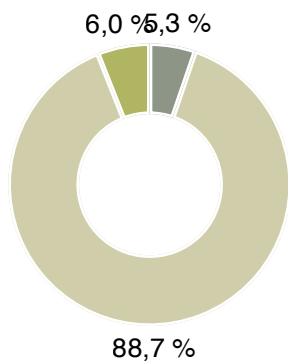
Scope	tCO ₂ e/yr	%
Scope 1	92,0	7,7 %
Scope 2	1.016,2	85,4 %
Scope 3	81,5	6,9 %
Total	1.189,7	100,0 %

Totoral's Summary by Scope (tCO2e)



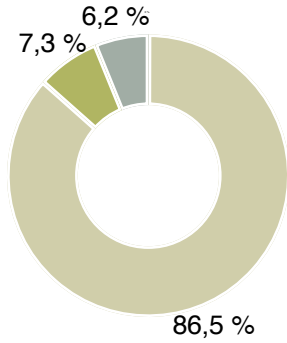
Scope	tCO ₂ e/yr	%
Scope 1	45,6	14,2 %
Scope 2	246,1	76,7 %
Scope 3	29,3	9,1 %
Total	321,0	100,0 %

San Juan's Summary by Scope (tCO2e)



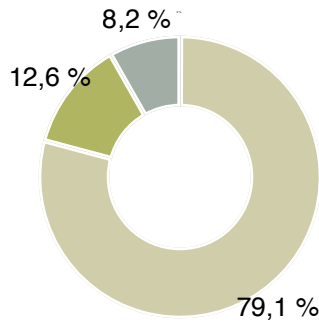
Scope	tCO ₂ e/yr	%
Scope 1	46,4	5,3 %
Scope 2	770,1	88,7 %
Scope 3	52,1	6,0 %
Total	868,6	100,0 %

Total Summary by Activity (tCO2e)



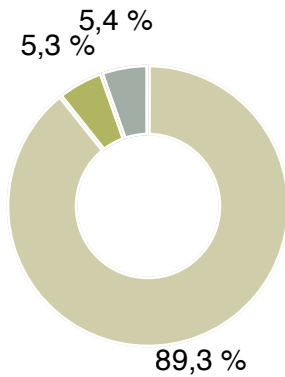
Activity	tCO ₂ e/yr	%
Third-Party Deliveries	0,5	0,0 %
Premises	1.029,30	86,5 %
Owned Vehicles	86,7	7,3 %
Business Travel	73,2	6,2 %
Total	1.189,7	100,0 %

Totoral's Summary by Activity (tCO2e)



Activity	tCO ₂ e/yr	%
Third-Party Deliveries	0,2	0,1 %
Premises	254,00	79,1 %
Owned Vehicles	40,5	12,6 %
Business Travel	26,4	8,2 %
Total	321,1	100,0 %

San Juan's Summary by Activity (tCO2e)



Activity	tCO ₂ e/yr	%
Third-Party Deliveries	0,2	0,0 %
Premises	775,30	89,3 %
Owned Vehicles	46,3	5,3 %
Business Travel	46,8	5,4 %
Total	868,6	100,0 %

Summary by Greenhouse Gas type

GHG	GWP	tGEI/yr (location-based)	tCO ₂ e/yr (location-based)	tGEI/yr (market-based)	tCO ₂ e/yr (market-based)
CO ₂	1	159,4	159	159	159,40
CH ₄	28	0,107	2,99	0,107	2,99
NO ₂	265	0,004	1,09	0,004	1,09
HFC-410A	1.924	0,000	0,00	0,000	0,00
SF ₆	23.500	0,000	4,70	0,000	4,70
CO ₂ e	1	1.021	1.021,27	1.021	1.021,27
		Total	1.189		1.189

Total's Summary by Greenhouse Gas type

GHG	GWP	tGEI/yr (location-based)	tCO ₂ e/yr (location-based)	tGEI/yr (market-based)	tCO ₂ e/yr (market-based)
CO ₂	1	66,7	67	67	66,70
CH ₄	28	0,030	0,84	0,030	0,84
NO ₂	265	0,0018	0,48	0,002	0,48
HFC-410A	1.924	0,000	0,00	0,000	0,00
SF ₆	23.500	0,0002	4,70	0,000	4,70
CO ₂ e	1	248,1	248,12	248	248,12
		Total	321		321

San Juan's Summary by Greenhouse Gas type

GHG	GWP	tGEI/yr (location-based)	tCO ₂ e/yr (location-based)	tGEI/yr (market-based)	tCO ₂ e/yr (market-based)
CO ₂	1	92,7	93	93	92,70
CH ₄	28	0,077	2,15	0,077	2,15
NO ₂	265	0,0022	0,58	0,002	0,58
HFC-410A	1.924	0,000	0,00	0,000	0,00
SF ₆	23.500	0,0000	0,00	0,000	0,00
CO ₂ e	1	773,2	773,15	773	773,15
		Total	868,6		868,6

4.3.2. DETAIL BY SCOPE

Summary of Scope 1 Emissions:

The following table summarizes the direct GHG emissions of ILAP in Chile, tCO₂e.

Source	San Juan	Totoral	Total	%
Stationary combustion	0,1	0,2	0,3	0,2 %
Mobile Sources	46,3	40,5	86,8	99,8 %
Fugitive Emissions	0,0	4,9	4,9	0,0 %
Total	46,4	45,6	92,0	100,0 %

The detail of greenhouse gas emissions for each source is detailed in the Excel document Annex.

Summary of Scope 2 Emissions:

Below is the consumption in kWh and associated emissions according to the national energy matrix:

Source	MWh	tCO ₂ e/año	%
San Juan	1.971,0	770,1	75,8 %
Totoral	630,0	246,1	24,2 %
Total	1.971,0	1.016,2	100,0 %

Scope 2 indirect emissions are represented by the power consumption of the plants, information provided by ILAP for the reference period.

Summary of Scope 3 Emissions:

Source	San Juan tCO ₂ e	Totoral tCO ₂ e	Total tCO ₂ e	%
Business Travel	46,8	26,4	73,2	90,1 %
Premises	5,1	2,7	7,8	9,2 %
Third-Party Deliveries	0,2	0,2	0,4	0,7 %
Total	52,2	29,3	81,5	100,0 %



ANNEX

ANNEX 1 - EMISSION FACTORS

Factor	Coefficiente	Unidad
Diésel, combustión fija (sector comercial/institucional)	74100	kgCO2/TJ
Auto de pasajeros promedio	0,000009	kgCH4/mi
Auto de pasajeros promedio	0,341	kgCO2/mi
Trabajador en casa en Santiago	1,004920446	kgCO2/Día de trabajo en cas
Auto de pasajeros promedio	0,000008	kgN2O/mi
Trabajador en casa en Santiago	1,02772E-05	kgN2O/Día de trabajo en cas
Suministro de agua	0,149	kgCO2eq/m3
Tratamiento del agua	0,272	kgCO2eq/m3
Camión, vehículo utilitario de trabajo ligero, diésel, promedi	0,0000214	kgN2O/mi
Camión, vehículo utilitario de trabajo ligero, diésel, promedi	0,000029	kgCH4/mi
Hotel, negocios	4,41614E-05	kgN2O/noche
Red eléctrica	3,48731E-06	kgCH4/kWh
Hotel, negocios	0,000192151	kgN2O/noche
Flete de carreteras, camión de trabajo pesado y mediano	0,000002	kgCH4/tonelada corta-milla
Red eléctrica, SEN	0,3907	kgCO2eq/kWh
Flete de carreteras, camión de trabajo pesado y mediano	0,211	kgCO2/tonelada corta-milla
Vuelos, distancia media (hacia/desde el RU), clase ejecuti	3,75839E-06	kgN2O/pasajero-km
Vuelos, distancia media (hacia/desde el RU), clase ejecuti	0,0000004	kgCH4/pasajero-km
Hotel, negocios	0,001382904	kgCH4/noche
Vuelos, distancia media (hacia/desde el RU), clase ejecuti	0,11863	kgCO2/pasajero-km
Flete de carreteras, camión de trabajo pesado y mediano	0,0000049	kgN2O/tonelada corta-milla
Red eléctrica	0,183011031	kgCO2/kWh
Vuelos, distancia media (hacia/desde el RU), clase econór	2,51678E-06	kgN2O/pasajero-km
Vuelos, distancia media (hacia/desde el RU), clase econór	0,0000004	kgCH4/pasajero-km
Hotel, negocios	0,001419786	kgCH4/noche
Vuelos, distancia media (hacia/desde el RU), clase econór	0,07908	kgCO2/pasajero-km
Gasolina para motor (sector comercial/institucional)	0,6	kgN2O/TJ
Gasolina para motor (sector comercial/institucional)	69300	kgCO2/TJ
Gasolina para motor (sector comercial/institucional)	10	kgCH4/TJ
Vuelos, corta distancia, (hacia/desde el RU)	4,09396E-06	kgN2O/pasajero-km
Vuelos, corta distancia, (hacia/desde el RU)	0,000004	kgCH4/pasajero-km
Gasolina	8,78	kgCO2/Galón U.S.
SF6 (hexafluoruro de azufre)	1	kgSF6/kg
Vuelos, corta distancia, (hacia/desde el RU)	0,12871	kgCO2/pasajero-km
Diésel, combustión móvil	10,21	kgCO2/Galón U.S.
Hotel, negocios	20,52411268	kgCO2/noche
Gas refrigerante R410a	1	kgHFC-410a/kg
Trabajador en casa en Perú	9,62221E-05	kgCH4/Día de trabajo en cas
Hotel, negocios	27,36609774	kgCO2/noche
Vehículo de pasajeros a gasolina	0,0000072	kgCH4/mi
Vehículo de pasajeros a gasolina	0,0000048	kgN2O/mi
Motocicleta, promedio	0,0000672	kgCH4/mi
Motocicleta, promedio	0,0000069	kgN2O/mi
Diésel, combustión fija (sector comercial/institucional)	0,6	kgN2O/TJ
Trabajador en casa en Perú	4,797185776	kgCO2/Día de trabajo en cas
Residuos, dispuestos en vertedero, residuos sólidos urba	40,1	kgCH4/tonelada
Residuos industriales y comerciales, dispuestos en vertec	467,0458	kgCO2eq/tonelada
Trabajador en casa en Perú	1,41569E-05	kgN2O/Día de trabajo en cas
Trabajador en casa en Santiago	2,65587E-05	kgCH4/Día de trabajo en cas
Diésel, combustión fija (sector comercial/institucional)	10	kgCH4/TJ
Red eléctrica	5,42883E-07	kgN2O/kWh

ANNEX 2 - TOTOTAL & SAN JUAN

Detailed Summary by WBCSD/WRI Scope: Location/Market Based Methodology

Question	Activity	Site	Scope	tCO ₂	tCH ₄	tN ₂ O	tSF ₆	tCO ₂ eq
Other Fuels	Diesel	San Juan	Scope 1	0,1228	1,7E-05	9,9E-07	0	0,12352
Other Fuels	Diesel	Tototal	Scope 1	0,16265	2,2E-05	1,3E-06	0	0,16361
Refrigerant gas loss and other fugitive emissions	SF6 (sulfur hexafluoride) emissions	Tototal	Scope 1	0	0	0	0,00021	4,935
Vans	Light diesel cargo truck, passenger transport	San Juan	Scope 1	45,7337	0,00236	0,00174	0	46,2613
Vans	Light diesel cargo truck, passenger transport	Tototal	Scope 1	40,0237	0,00207	0,00152	0	40,4854
Electricity	Electricity consumption (SEN)	San Juan	Scope 2	0	0	0	0	770,07
Electricity	Electricity consumption (SEN)	Tototal	Scope 2	0	0	0	0	246,141
Road freight, shared vehicle (tonne.km factors)	Third-Party Deliveries	San Juan	Scope 3	0,22112	2,1E-06	5,1E-06	0	0,22254
Road freight, shared vehicle (tonne.km factors)	Third-Party Deliveries	Tototal	Scope 3	0,23167	2,2E-06	5,4E-06	0	0,23316
Landfill Waste	Waste, disposed of in landfill, urban solid waste	San Juan	Scope 3	0	0,07218	0	0	2,02104
Landfill Waste	Waste, disposed of in landfill, urban solid waste	Tototal	Scope 3	0	0,02695	0	0	0,75452
Hazardous Waste	Industrial and commercial waste, disposed of in landfill	San Juan	Scope 3	0	0	0	0	2,98022
Hazardous Waste	Industrial and commercial waste, disposed of in landfill	Tototal	Scope 3	0	0	0	0	1,94805
Water Supply	Water Supply	Tototal	Scope 3	0	0	0	0	0,01216
Water Supply	Water Supply	San Juan	Scope 3	0	0	0	0	0,03576

Question	Activity	Site	Scope	tCO ₂	tCH ₄	tN ₂ O	tSF ₆	tCO ₂ eq
Water Treatment	Water Treatment	Totoral	Scope 3	0	0	0	0	0,0222
Water Treatment	Water Treatment	San Juan	Scope 3	0	0	0	0	0,06528
Leased Vehicles	Average car (unknown fuel)	Totoral	Scope 3	0,42229	1,1E-05	9,9E-06	0	0,42523
Leased Vehicles	Average car (unknown fuel)	San Juan	Scope 3	1,86991	4,9E-05	4,4E-05	0	1,88292
Leased Vehicles	Average car (unknown fuel)	San Juan	Scope 3	0,29113	7,7E-06	6,8E-06	0	0,29316
Leased Vehicles	Average car (unknown fuel)	Totoral	Scope 3	0,55091	1,5E-05	1,3E-05	0	0,55474
Hotel Night Stays	Nights of stay in a hotel	Totoral	Scope 3	9,30447	0,00048	6,5E-05	0	9,3353
Hotel Night Stays	Nights of stay in a hotel	San Juan	Scope 3	0,24629	1,3E-05	1,7E-06	0	0,24711
Hotel Night Stays	Nights of stay in a hotel	San Juan	Scope 3	0,02737	1,4E-06	1,9E-07	0	0,02746
Hotel Night Stays	Nights of stay in a hotel	San Juan	Scope 3	39,9545	0,00207	0,00028	0	40,0869
Taxi	Average Taxi	Totoral	Scope 3	15,1466	0,00029	0,00019	0	15,2049
Flights	Short Distance	Totoral	Scope 3	0,84382	2,6E-05	2,7E-05	0	0,85167
Flights	Short Distance	San Juan	Scope 3	4,2446	0,00013	0,00014	0	4,28407

REFERENCES

- ▶ EPA (2018). GHG Emission Factors Hub. Center for Corporate Climate Leadership. March 2018. https://www.epa.gov/sites/production/files/2018-03/documents/emission-factors_mar_2018_0.pdf
- ▶ IPCC (2006). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
- ▶ UN Statistics Division - Energy Balance Visualizations. <https://unstats.un.org/unsd/energystats/dataPortal/>
- ▶ CIBSE (2012). Energy Efficiency in Buildings, Guide F. The Chartered Institution of Building Services Engineers.
- ▶ CalRecycle (2015). California Department of Resources Recycling and Recovery (CalRecycle). 2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California. <http://www.calrecycle.ca.gov/Publications/Documents/1543%5C20151543.pdf>. Accessed October 2016.
- ▶ Department for Business, Energy and Industrial Strategy (2021). 2021 Government GHG Conversion Factors for Company Reporting.
- ▶ EPA (2021). GHG Emission Factors Hub. Center for Corporate Climate Leadership. April 2021. <https://www.epa.gov/climateleadership/ghg-emission-factors-hub>. Accessed April 2021.
- ▶ EPA (2021). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019. United States Environmental Protection Agency. Online: <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019>
- ▶ Ecometrica homemaker model (2020)
- ▶ FHWA (2021). US Federal Highway Administration. Highway Statistics 2020. Washington DC 20590. Online: <https://www.fhwa.dot.gov/policyinformation/statistics/2020/>. Released December 2021. Accessed February 2022.
- ▶ Gabriel Felmer (2018). Low-Energy Dwelling Prototypes for Different Regions of Chile. PhD thesis The Open University.
- ▶ IPCC (2006). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
- ▶ IPCC (2006). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
- ▶ IPCC (2007). IPCC Fourth Assessment Report: Climate Change 2007. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
- ▶ Ministerio de Energía (2021). Factores de Emisión, Factores de Emisión Promedio 2021. Comisión Nacional de Energía, Gobierno de Chile. Accessed March 2022. Available online: <http://energiaabierta.cl/visualizaciones/factor-de-emision-sic-sing/>

- ▶ Smith, A., K. Brown, S. Ogilvie, K. Rushton, and J. Bates, 2001: Waste management options and climate change. Final Report ED21158R4.1 to the European Commission, DG Environment, AEA Technology, Oxfordshire.
- ▶ US DOE (2016). US Department of Energy. National Renewable Energy Laboratory. Biodiesel Handling and Use Guide (Fifth Edition). Released November 2016. Online: <http://biodiesel.org/docs/using-hotline/nrel-handling-and-use.pdf?sfvrsn=4>. Accessed February 2017.
- ▶ United Nations (2021). UN Statistics Division - Energy Balance Visualizations. <https://unstats.un.org/unsd/energystats/dataPortal/>
- ▶ United Nations (2022). UN Statistics Division - 2019 Energy Balance Visualizations. <https://unstats.un.org/unsd/energystats/dataPortal/>
- ▶ US DOE (2016). US Department of Energy. National Renewable Energy Laboratory. Biodiesel Handling and Use Guide (Fifth Edition). Released November 2016. Online: <http://biodiesel.org/docs/using-hotline/nrel-handling-and-use.pdf?sfvrsn=4>. Accessed February 2017.



Climate Change & Sustainability

Vitacura 2909, Of. 1007
Las Condes, Santiago, Chile
T. +56229530530
M: contacto@carboneutral.cl
www.carboneutral.cl