Supplement of

High spatial resolution emissions inventory (2005–2022) in Chile from livestock and waste sectors

Diana Rojas, Nicolás Álamos, Nicolás Huneeus, Mariel Opazo, Ignacio Leiva, Kevin Basoa, Ignacio Beltrán, Tia Scarpelli, Mauricio Osses, Juan Pablo Boisier

This Supplement provides the acronyms, data sources, emission factors, parameters, constructed input datasets and summary results underlying the main text. It is organized in four sections (S1–S4). Tables and figures are numbered by section (e.g. Table S2.1, Fig. S4.1) and are cross-referenced from the main article. The only dataset deposited in the repository (Zenodo) is the final gridded product (NetCDF); all supporting series are reported within this Supplement.

Contents

Table S1. Acronyms of the institutions and datasets cited in this study.
Table S2.1. Activity-data sources by sector.
Table S2.2. Emission-factor sources (locator table).
Table S2.3. Parameter sources (locator table).
Table S2.4. Distribution of manure across management systems by livestock type.
Table S2.5. Domestic solid-waste composition by macro-zone.
Table S3.1. SAG poultry and swine establishments used as point sources, by region.
Table S3.2. Domestic solid-waste generation by commune for 2005 and 2022.
Table S3.3. Industrial solid-waste generation by region and year, 1960–2022.
Table S3.4. Population by commune for 2005 and 2022.
Table S3.5. Domestic solid-waste disposal sites and classification (2005 and 2022).
Table S3.6. Industrial solid-waste disposal facilities and classification (2005 and 2022).
Table S3.7. Landfill CH_4 recovery by region and year (2004–2022).
Table S3.8. Wastewater-treatment plants: classification and treated volume (2005 and 2022).
Table S3.9. Sanitation system-use fractions by region and area (2005–2022).
Table S3.10. Collected-wastewater population by region: treated vs. untreated (2005 and 2022).
Table S4.1. National emissions by sub-sector and pollutant (2005 and 2022).
Table S4.2. National livestock population by species group (2005–2022).
Fig. S4.1. Leading emission sector per grid cell for N_2O, NH_3 and NMVOC (2022).
Fig. S4.2. Spatial comparison INEMA vs. EDGAR for N_2O, NH_3 and NMVOC (2022).

S1 Acronyms and institutions

Table S1 lists the institutional acronyms used throughout the main text and this Supplement.

Table S1. Acronyms of the institutions and datasets cited in this study.

Acronym	Spanish name	English name
INGEI	Inventario Nacional de Gases de Efecto Invernadero	National Greenhouse Gas Inventory
MMA	Ministerio del Medio Ambiente	Ministry of the Environment
SAG	Servicio Agrícola y Ganadero	Agricultural and Livestock Service
SISS	Superintendencia de Servicios Sanitarios	Superintendence of Sanitary Services
RETC	Registro de Emisiones y Transferencias de Contaminantes	Pollutant Release and Transfer Register

Acronym	Spanish name	English name
CASEN	Encuesta Nacional de Caracterización Socioeconómica	National Socioeconomic Characterization Survey
SUBDERE	Subsecretaría de Desarrollo Regional y Administrativo	Undersecretariat for Regional and Administrative Development
BCC	Banco Central de Chile	Chilean Central Bank
MDSF	Ministerio de Desarrollo Social y Familia	Ministry of Social Development and Family
INE	Instituto Nacional de Estadística	Chile's National Institute of Statistics
CR2	Centro de Ciencia del Clima y la Resiliencia	Center for Climate and Resilience Research

S2 Data sources, emission factors and parameters

Section S2 documents the origin of every input to the inventory. Table S2.1 lists the activity-data sources; Tables S2.2 and S2.3 are locator tables that identify, for each emission factor and parameter, its type (country-specific or default), units, and the exact table or section of the source document. Tables S2.4 and S2.5 give the categorical distributions applied across the domain.

S2.1 Activity-data sources

Table S2.1 lists, by sector, every activity-data variable used to build the inventory, with the provider/dataset, the bibliographic reference and a direct-access link (DOI, URL, or the supplementary table where Transparency-Law data are reported).

Table S2.1. Activity-data sources by sector.

Sector	Data used	Provider & dataset	Reference	Direct access	Last access
Livestock	Livestock population by commune and species (1950–2020)	CR2 – Water Use dataset (CR2WU)	Boisier et al., 2024b	https://doi.org/10.5281/zenodo.13324235	— (DOI)
Livestock	Land cover / pastureland (1×1 km, yearly)	CR2 – Land Use/Cover dataset (CR2LUC)	Boisier et al., 2024a	https://doi.org/10.5281/zenodo.13324250	— (DOI)
Livestock	High-intensity livestock establishment records (georeferenced)	SAG – administrative records	SAG, 2024	Appendix A.1 (Transparency Law request; not publicly distributed)	—
Solid Waste Disposal	Regional domestic waste quantities	MMA – INGEI (DIN 2024)	MMA, 2024a	https://snichile.mma.gob.cl/wp-content/uploads/2025/03/2024_DIN_CL.pdf	—
Solid Waste Disposal	Commune population and intercensal projections (2002–2035)	INE – population projections	INE, 2017a	https://www.ine.gob.cl/estadisticas/sociales/demografia-y-vitales/proyecciones-de-poblacion	—
Solid Waste Disposal	Municipal waste composition (6 fractions)	SUBDERE – waste characterization study	SUBDERE, 2024	https://proactiva.subdere.gov.cl/handle/123456789/649	—
Solid Waste Disposal	Domestic final disposal sites and management type (per commune)	SUBDERE – national waste diagnosis/catalogue	SUBDERE, 2013; 2018; 2024	2024: https://proactiva.subdere.gov.cl/handle/123456789/649 · 2013/2018: — (add link or mark "not available online")	—
Solid Waste Disposal	Industrial solid waste quantities (2014–2022)	MMA – Pollutant Release and Transfer Register (RETC)	MMA, 2024b	https://datosretc.mma.gob.cl/group/residuos	18 Apr 2025
Solid Waste Disposal	Industrial final disposal sites and management type	MMA – Pollutant Release and Transfer Register (RETC)	MMA, 2024b	https://datosretc.mma.gob.cl/group/residuos	18 Apr 2025
Solid Waste Disposal	Industrial disposal-site coordinates (georeferenced establishments)	MMA – RETC establishment register	MMA, 2024b	Table S3.6 (Transparency Law request; not publicly distributed)	—

Sector	Data used	Provider & dataset	Reference	Direct access	Last access
Solid Waste Disposal	National GDP series	World Bank – World Development Indicators (GDP, current US$)	World Bank, 2024	https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=CL	—
Solid Waste Disposal	Regional GDP series (2015–2022)	Banco Central de Chile (BCC) – Regional Accounts	BCC, 2024	https://si3.bcentral.cl/siete/en/	2025-09-12
Solid Waste Disposal	Regional GDP shares (historical, 1960–2001)	MIDEPLAN – regional GDP splicing series	MIDEPLAN, 2004	https://www.desarrollosocialyfamilia.gob.cl/btca/txtcompleto/mideplan/empalme-seriepibreg.1960-2001final-anexo.pdf	2025-09-12
Solid Waste Disposal	Landfill methane recovery by site	MMA – institutional data	MMA, 2024c	Table S3.7 (Transparency Law request; not publicly distributed)	—
Wastewater treatment and discharge	Treated wastewater volumes, BOD, sludge, treatment-plant coordinates	SISS – operational data	SISS, 2024b	Table S3.8 (Transparency Law request; not publicly distributed)	—
Wastewater treatment and discharge	Collected treated/untreated split; sanitary coverage (annual reports 2005–2022)	SISS – sanitary-sector coverage reports	SISS, 2024a	https://www.siss.gob.cl/589/w3-propertyvalue-8979.html	4 Apr 2025
Wastewater treatment and discharge	Population fractions by disposal system (commune level)	MDSF – CASEN survey (waves 2006–2022)	MDSF, 2024	https://observatorio.ministeriodesarrollosocial.gob.cl/encuesta-casen	12 Apr 2025
Wastewater treatment and discharge	Commune population and projections	INE – population projections	INE, 2017a	https://www.ine.gob.cl/estadisticas/sociales/demografia-y-vitales/proyecciones-de-poblacion	—
Wastewater treatment and discharge	Urban blocks and rural localities (spatial proxy)	INE – 2017 Census cartography [shapefile]	INE, 2017b	https://www.ine.gob.cl/herramientas/portal-de-mapas/geodatos-abiertos	2025-09-20
Wastewater treatment and discharge	Sanitation sector characterization (supporting)	MOP & MDSF – climate-risk sanitation study	MOP and MDSF, 2024	https://cambioclimatico.mop.gob.cl/archivos/sites/2/2024/07/Caracterizacion-del-sector-vulnerabilidad-y-evaluacion-de-efectos-adversos-del-cambio-climatico-y-riesgos-mayo-2024.pdf	12 Apr 2025
Dataset used for comparison	Gridded global emissions (CH_4, N_2O, NH_3, NMVOC)	EDGAR v8.0	Crippa et al., 2024	https://edgar.jrc.ec.europa.eu/dataset_ghg80	—
Dataset used for comparison	National GHG inventory (regional)	MMA – INGEI	MMA, 2024a	https://snichile.mma.gob.cl/	—
Dataset used for comparison	CH_4 point-source plume retrievals	Carbon Mapper Data Portal	Carbon Mapper, 2025	https://data.carbonmapper.org/	2025-09-15

S2.2 Emission-factor sources

Table S2.2 states, for each emission source and pollutant, whether the emission factor is country-specific (INGEI) or an IPCC/EMEP default, its units, and the source document and table.

Table S2.2. Emission-factor sources (locator table).

Emission source	Pollutant	Parameter	Emission factor	Units	Source table / section	Reference
Enteric Fermentation	CH4	Dairy Cattle Emission Factor	Country-specific	kg CH_4 $head^{-1}$ yr^{-1}	Anexo 11.4.3; Tabla 11-19 del documento del INGEI_2024 (página 84)	MMA, 2024a
Enteric Fermentation	CH4	Swine Emission Factor	Default	kg CH_4 $head^{-1}$ yr^{-1}	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.10 uptaded (pg 38)	IPCC 2019
Enteric Fermentation	CH4	Non-dairy Cattle Emission Factor	Country-specific	kg CH_4 $head^{-1}$ yr^{-1}	Tabla 5-8. del documento 2024_DIN_CL (página 249)	MMA, 2024a
Enteric Fermentation	CH4	Other Species Emission Factor	Default	kg CH_4 $head^{-1}$ yr^{-1}	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.10 uptaded (pg 38)	IPCC 2019
Manure Management	CH4	Dairy Cattle Emission Factor	Country-specific	kg CH_4 $head^{-1}$ yr^{-1}	Tabla 5-21. del documento 2024_DIN_CL (página 265)	MMA, 2024a
Manure Management	CH4	Swine Emission Factor	Country-specific	kg CH_4 $head^{-1}$ yr^{-1}	Tabla 5-23. del documento 2024_DIN_CL (página 267)	MMA, 2024a
Manure Management	CH4	Non-dairy Cattle Emission Factor	Country-specific	kg CH_4 $head^{-1}$ yr^{-1}	Tabla 5-22. del documento 2024_DIN_CL (página 266)	MMA, 2024a
Manure Management	CH4	Other Species Emission Factor	Default	g CH_4 kg^{-1} VS	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.14 uptaded (pg 62)	IPCC 2019
Manure Management	CH4	Poultry Emission Factor	Default	g CH_4 kg^{-1} VS	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.14 uptaded (pg 61)	IPCC 2019
Manure Management	N2O	Dairy Cattle Emission Factor	Default	kg N_2O-N (kg N excreted)$^{-1}$	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land Use-Chapter 10 EMissions from livestock and manure managementTable 10.21 uptaded (pg 91)-Chapter 11 N2O emissions from managed soils...Table 11.2 uptadet (pg 26)	IPCC 2019
Manure Management	N2O	Swine Emission Factor	Default	kg N_2O-N (kg N excreted)$^{-1}$	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land Use-Chapter 10 EMissions from livestock and manure managementTable 10.21 uptaded (pg 91)-Chapter 11 N2O emissions from managed soils...Table 11.2 uptadet (pg 26)	IPCC 2019

Emission source	Pollutant	Parameter	Emission factor	Units	Source table / section	Reference
Manure Management	N2O	Poultry Emission Factor	Default	kg N_2O-N (kg N excreted)$^{-1}$	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land Use-Chapter 10 EMissions from livestock and manure managementTable 10.21 uptaded (pg 91)-Chapter 11 N2O emissions from managed soils...Table 11.2 uptadet (pg 26)	IPCC 2019
Manure Management	N2O	Volatilization Emission Factor	Default	kg N_2O-N (kg N volatilized)$^{-1}$	IPCC 2019 Refinement, Vol.4, Ch.11, Table 11.3	IPCC 2019
Manure Management	N2O	Leaching/runoff emissions factor	Default	kg N_2O-N (kg N leached)$^{-1}$	IPCC 2019 Refinement, Vol.4, Ch.11, Table 11.3	IPCC 2019
Manure Management	NH3	Dairy Cattle Emission Factor	Default	kg NH_3 AAP^{-1} yr^{-1}	EMEP/EEA air pollutant emission inventory guidebook 20233. Agriculture3.B Manure Management 2023 Table 3-2, pg 15	EMEP/EEA 2023
Manure Management	NH3	Swine Emission Factor	Default	kg NH_3 AAP^{-1} yr^{-1}	EMEP/EEA air pollutant emission inventory guidebook 20233. Agriculture3.B Manure Management 2023 Table 3-2, pg 15	EMEP/EEA 2023
Manure Management	NH3	Poultry Emission Factor	Default	kg NH_3 AAP^{-1} yr^{-1}	EMEP/EEA air pollutant emission inventory guidebook 20233. Agriculture3.B Manure Management 2023 Table 3-2, pg 15	EMEP/EEA 2023
Manure Management	NMVOC	Dairy Cattle Emission Factor	Default	kg NMVOC AAP^{-1} yr^{-1}	EMEP/EEA air pollutant emission inventory guidebook 20233. Agriculture3.B Manure Management 2023 Table 3-4, pg 18	EMEP/EEA 2023
Manure Management	NMVOC	Swine Emission Factor	Default	kg NMVOC AAP^{-1} yr^{-1}	EMEP/EEA air pollutant emission inventory guidebook 20233. Agriculture3.B Manure Management 2023 Table 3-4, pg 18	EMEP/EEA 2023
Manure Management	NMVOC	Poultry Emission Factor	Default	kg NMVOC AAP^{-1} yr^{-1}	EMEP/EEA air pollutant emission inventory guidebook 20233. Agriculture3.B Manure Management 2023 Table 3-4, pg 18	EMEP/EEA 2023
Solid Waste Disposal	NMVOC	NMVOC emission factor (fracción de CH4)	3.6	kg NMVOC (t CH_4)$^{-1}$	EMEP/EEA 2023, Ch.5.A Solid waste disposal	EMEP/EEA 2023
Wastewater	N2O	N2O emission factor	Default	kg N_2O-N kg^{-1} N	IPCC 2019 Refinement, Vol.5, Ch.6, Table 6.8A	IPCC 2019
Wastewater	NMVOC	NMVOC emission factor	0.015 (= 15 mg m^{-3})	g NMVOC m^{-3} treated	EMEP/EEA 2023, Ch.5.D Wastewater	EMEP/EEA 2023
Wastewater	NH3	NH3 emission factor (septic)	Default	kg NH_3 cap^{-1} yr^{-1}	EMEP/EEA 2023, Ch.5.D Wastewater	EMEP/EEA 2023

S2.3 Parameter sources

Table S2.3 is the analogous locator table for the intermediate parameters (VS, TAM, NEX, DOC, DOCf, MCF, k, BOD, B_0, etc.), giving units and the exact source table for each.

Table S2.3. Parameter sources (locator table).

Emission source	Pollutant	Parameter	Acronym	Value / type	Units	Source table / section	Reference
Manure Management	CH4	Volatid solid excretion rate (other species)	VS_rate	default	kg VS (1000 kg animal mass)$^{-1}$ day^{-1}	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.13A new (pg 56)	IPCC 2019
Manure Management	CH4	Typical Animal Mass (other species)	TAM	Country specific	kg animal^{-1}	Tabla 5-19. del documento 2024_DIN_CL (página 262)	MMA, 2024a
Manure Management	N2O	Nitrogen excretion rate (Dairy Cattle)	NEX	Country specific	kg N animal^{-1} yr^{-1}	Tabla 5-17. del documento 2024_DIN_CL (página 262)	MMA, 2024a
Manure Management	N2O	Nitrogen loss fractions due to volatilization of NH3 and NOx (Dairy Cattle)(component Frac_losses)	Fgas_MS	default	fraction	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.22 uptaded (pg 97)	IPCC 2019
Manure Management	N2O	Leaching of nitrogen (Dairy Cattle) (component Frac_losses)	Fleach_MS	default	fraction	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.22 uptaded (pg 97)	IPCC 2019
Manure Management	N2O	Nitrogen excretion rate (Swine)	NEX	default	kg N (1000 kg animal mass)$^{-1}$ day^{-1}	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.19 uptaded (pg 83)	IPCC 2019
Manure Management	N2O	Nitrogen loss fractions due to volatilization of NH3 and NOx (Swine) (component Frac_losses)	Fgas_MS	default	fraction	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.22 uptaded (pg 97)	IPCC 2019
Manure Management	N2O	Leaching of nitrogen (Swine) (component Frac_losses)	Fleach_MS	default	fraction	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.22 uptaded (pg 97)	IPCC 2019
Manure Management	N2O	Nitrogen excretion rate (Poultry)	NEX	default	kg N (1000 kg animal mass)$^{-1}$ day^{-1}	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories	IPCC 2019

Emission source	Pollutant	Parameter	Acronym	Value / type	Units	Source table / section	Reference
						Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementTable 10.19 uptaded (pg 83)	
Manure Management	N2O	Typical Animal Mass (Poultry)	TAM	default	kg	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 - Agriculture, Forestry and Other Land UseChapter 10 EMissions from livestock and manure managementAnnex 10A.1 TABLE 10A.5 (NEW) (pg 117)	IPCC 2019
Solid Waste Disposal	CH4	Degradable organic carbon	DOC	Country-specific	fraction (per waste type)	INGEI 2024, DIN — Sector Residuos	MMA, 2024a
Solid Waste Disposal	CH4	Waste composition (mass fraction)	f_i	Country-specific	fraction (0–1)	See Table S2.5 (waste composition by macro-zone)	SUBDERE 2024
Solid Waste Disposal	CH4	Fraction of DOC decomposed	DOCf	Country-specific	fraction (≈0.5)	INGEI 2024, DIN — Residuos	MMA, 2024a
Solid Waste Disposal	CH4	Methane correction factor	MCF	Country-specific	fraction (per management type)	INGEI 2024, DIN — Residuos	MMA, 2024a
Solid Waste Disposal	CH4	Decay rate constant	k	Default	yr^{-1} (per type/climate)	IPCC 2019 Refinement, Vol.5, Ch.3 SWDS, Table 3.3	IPCC 2019
Solid Waste Disposal	CH4	Fraction of CH4 in landfill gas	F	Default	fraction (=0.5)	IPCC 2006, Vol.5, Ch.3, Eq.3.6	IPCC 2006
Solid Waste Disposal	CH4	Oxidation factor	OX	Default	fraction (0.1 managed; 0 unmanaged)	IPCC 2019 Refinement, Vol.5, Ch.3 SWDS	IPCC 2019
Solid Waste Disposal	CH4	Recovered methane	R	Country-specific	Gg CH_4 yr^{-1} (per site)	MMA — Transparency Law request	MMA 2024c
Wastewater	CH4	Per-capita BOD	BOD	Country-specific	g BOD cap^{-1} day^{-1}	INGEI 2024, DIN — Aguas residuales	MMA, 2024a
Wastewater	CH4	Max. CH4 producing capacity	Bo	Default	kg CH_4 kg^{-1} BOD (=0.6)	IPCC 2019 Refinement, Vol.5, Ch.6 Wastewater, Table 6.2	IPCC 2019
Wastewater	CH4	Methane correction factor (por sistema)	MCF	Default	fraction (per system)	IPCC 2019 Refinement, Vol.5, Ch.6, Table 6.3	IPCC 2019
Wastewater	CH4	Sludge removed fraction	S	Default	fraction (0.5 septic; 0 others)	IPCC 2019 Refinement, Vol.5, Ch.6	IPCC 2019
Wastewater	N2O	Per-capita protein consumption	P	Country-specific	kg protein cap^{-1} yr^{-1}	Tabla 7-29 del documento 2024_DIN_CL (serie 1990–2022)	MMA, 2024a
Wastewater	N2O	Fraction of N in protein	FNPR	Country-specific	fraction (≈0.16)	Sección 5.D del documento 2024_DIN_CL (valor por defecto = 0,16)	MMA, 2024a
Wastewater	N2O	Factor N from household products	NHH	Default	factor	IPCC 2019 Refinement, Vol.5, Ch.6	IPCC 2019
Wastewater	N2O	Non-consumed protein factor	F_NON-CON	Default	factor	IPCC 2019 Refinement, Vol.5, Ch.6	IPCC 2019
Wastewater	N2O	Industrial/commercial co-discharge factor	F_IND-COM	Default	factor	IPCC 2019 Refinement, Vol.5, Ch.6	IPCC 2019
Wastewater	N2O	Nitrogen removal fraction	NREM	Default	fraction	IPCC 2019 Refinement, Vol.5, Ch.6	IPCC 2019

Emission source	Pollutant	Parameter	Acronym	Value / type	Units	Source table / section	Reference
Manure Management	CH4	Fraction	AWMS	Country specific	fraction	Ver Tabla S2.4	MMA, 2024a

S2.4 Manure-management system distribution

Table S2.4 gives the fraction of each livestock type's manure allocated to each management system. Fractions sum to 1 within each row; a dash (–) denotes a system not used.

Table S2.4. Distribution of manure across management systems by livestock type (fraction of total manure).

Livestock type	Grazing	Daily distribution	Covered anaerobic lagoon	Anaerobic digester	Deep bed	Aerobic treatment	Solid storage
Swine	0.01	0.01	0.16	0.19	0.02	0.61	–
Dairy Cattle	0.78	–	0.18	–	–	–	0.04
Poultry	–	–	–	–	–	–	1
Other cattle	1	–	–	–	–	–	–
Others	1	–	–	–	–	–	–

S2.5 Domestic solid-waste composition

Table S2.5 gives the composition of domestic solid waste for the three macro-zones. Fractions sum to 1 within each zone.

Table S2.5. Domestic solid-waste composition by macro-zone (mass fraction).

Fraction	Northern zone	Metropolitan zone	Southern zone
Organic matter	0.566	0.567	0.560
Paper/cardboard	0.106	0.123	0.109
Plastics	0.120	0.107	0.110
Glass	0.030	0.038	0.024
Metals	0.019	0.010	0.020
Others	0.159	0.155	0.177

Zones: Northern = Arica y Parinacota, Tarapacá, Antofagasta, Atacama, Coquimbo, Valparaíso; Metropolitan = Metropolitana; Southern = O'Higgins, Maule, Ñuble, Biobío, Araucanía, Los Ríos, Los Lagos, Aysén, Magallanes.

Source: SUBDERE (2024). *Note:* only organic matter, paper/cardboard and the "others" fraction carry degradable organic carbon; plastics, glass and metals are excluded from CH_4 generation.

S3 Constructed input datasets

Section S3 documents the datasets constructed by the authors from the raw sources of Table S2.1. Because the only dataset deposited in the repository (Zenodo) is the final gridded product (NetCDF), the constructed input series are reported in full within this Supplement, or summarized where a summary is scientifically sufficient (decided per table).

S3.1 Livestock establishment records (SAG)

High-intensity livestock establishment records obtained from SAG through Transparency-Law requests. Poultry and swine emissions are spatially allocated to these establishments as point sources (swine in communes without establishments are assigned to pastureland). All cattle —including dairy— are distributed over pastureland; the SAG dairy-farm records were used only to derive the dairy manure-management split (Table S2.4) and are therefore not listed here. Table S3.1 reports, by region, the number of poultry and swine establishments used as point sources.

Table S3.1. Number of SAG poultry and swine establishments used as point sources, by region.

Region	Poultry	Swine
Arica y Parinacota	833	60
Tarapacá	356	79
Antofagasta	827	118
Atacama	923	44
Coquimbo	4,069	80
Valparaíso	5,388	130
Metropolitana	2,771	866
O'Higgins	6,894	577
Maule	5,984	187
Ñuble	6,348	193
Biobío	6,613	500
Araucanía	9,280	444
Los Ríos	3,255	91
Los Lagos	8,246	336
Aysén	2,982	41
Magallanes	470	32
National total	65,239	3,778

Extract: this table summarizes the full SAG establishment records (individual georeferenced establishments) as counts by region. *Source:* SAG (Transparency-Law requests AR006T0012792 for poultry and AR006T0012538 for swine). *Note:* each establishment carries point coordinates (UTM → lat/lon) used for gridding; individual coordinates are not listed here for volume and privacy.

S3.2 Domestic solid-waste series (by commune)

Annual domestic solid-waste generation by commune, obtained by combining the regional per-capita generation rate (from regional municipal-waste tonnages) with the commune population series (Table S3.4); this commune-level series (1952–2022) feeds the FOD model of the Solid Waste Disposal sector. Table S3.2 reports the generation of all 346 communes for 2005 and 2022.

Table S3.2. Domestic solid-waste generation by commune for 2005 and 2022 (t yr^{-1}), grouped by region.

Region	Commune	2005	2022
Arica y Parinacota	Arica	61,088	89,707
Arica y Parinacota	Camarones	361	440
Arica y Parinacota	General Lagos	270	286
Arica y Parinacota	Putre	682	903
Tarapacá	Alto Hospicio	22,941	69,227
Tarapacá	Colchane	452	796
Tarapacá	Huara	738	1,545
Tarapacá	Iquique	50,563	115,529
Tarapacá	Pica	1,141	3,109
Tarapacá	Pozo Almonte	369	697
Tarapacá	Pozo Almonte	3,095	9,165
Antofagasta	Antofagasta	105,509	111,775
Antofagasta	Calama	49,450	49,668
Antofagasta	María Elena	3,054	1,706
Antofagasta	Mejillones	3,096	3,939
Antofagasta	Ollagüe	125	71
Antofagasta	San Pedro de Atacama	1,819	2,761
Antofagasta	Sierra Gorda	454	455
Antofagasta	Taltal	3,721	3,544
Antofagasta	Tocopilla	8,372	7,224
Atacama	Caldera	4,600	8,907

Region	Commune	2005	2022
Atacama	Chañaral	4,130	5,913
Atacama	Copiapó	43,202	78,629
Atacama	Diego de Almagro	5,768	6,377
Atacama	Freirina	1,943	3,509
Atacama	Huasco	2,710	5,167
Atacama	Tierra Amarilla	3,936	6,496
Atacama	Vallenar	1,542	2,601
Atacama	Vallenar	15,669	25,848
Coquimbo	Andacollo	3,888	4,694
Coquimbo	Canela	3,285	3,785
Coquimbo	Combarbalá	4,730	5,509
Coquimbo	Coquimbo	62,583	105,757
Coquimbo	Illapel	10,760	13,075
Coquimbo	La Higuera	1,336	1,785
Coquimbo	La Serena	61,338	102,721
Coquimbo	Los Vilos	6,396	9,494
Coquimbo	Monte Patria	10,686	12,952
Coquimbo	Ovalle	35,833	48,816
Coquimbo	Paiguano	1,504	1,864
Coquimbo	Punitaqui	3,522	4,904
Coquimbo	Río Hurtado	1,616	1,723
Coquimbo	Salamanca	8,457	11,730
Coquimbo	Vicuña	8,666	11,979
Valparaíso	Algarrobo	3,397	5,425
Valparaíso	Cabildo	6,595	7,179
Valparaíso	Calera	17,085	18,631
Valparaíso	Calle Larga	3,808	5,920
Valparaíso	Cartagena	6,241	9,085
Valparaíso	Casablanca	7,854	10,349
Valparaíso	Catemu	4,293	5,360
Valparaíso	Concón	11,848	16,307
Valparaíso	El Quisco	3,777	6,348
Valparaíso	El Tabo	2,950	5,126
Valparaíso	Hijuelas	5,668	6,685
Valparaíso	Isla de Pascua	1,585	2,978
Valparaíso	Juan Fernández	236	372
Valparaíso	La Cruz	5,035	9,228
Valparaíso	La Ligua	11,264	13,197
Valparaíso	Limache	13,996	17,614
Valparaíso	Llaillay	7,612	9,330
Valparaíso	Los Andes	20,863	23,752
Valparaíso	Nogales	7,475	8,169
Valparaíso	Olmué	5,113	6,847
Valparaíso	Panquehue	2,279	2,682
Valparaíso	Papudo	1,675	2,192
Valparaíso	Petorca	3,305	3,673
Valparaíso	Puchuncaví	4,896	7,158
Valparaíso	Putaendo	5,146	6,184
Valparaíso	Quillota	27,292	34,416
Valparaíso	Quilpué	46,171	59,044
Valparaíso	Quintero	8,163	12,963

Region	Commune	2005	2022
Valparaíso	Rinconada	2,577	4,038
Valparaíso	San Antonio	30,013	33,847
Valparaíso	San Esteban	5,242	7,349
Valparaíso	San Felipe	22,962	29,523
Valparaíso	Santa María	4,561	5,777
Valparaíso	Santo Domingo	2,791	4,257
Valparaíso	Valparaíso	96,344	110,324
Valparaíso	Villa Alemana	35,140	49,697
Valparaíso	Viña del Mar	103,470	127,062
Valparaíso	Zapallar	2,076	2,837
Metropolitana	Alhué	1,954	3,526
Metropolitana	Buin	28,168	52,566
Metropolitana	Calera de Tango	7,907	13,585
Metropolitana	Cerro Navia	57,867	65,234
Metropolitana	Colina	35,872	87,477
Metropolitana	Conchalí	54,550	63,911
Metropolitana	Curacaví	10,440	17,278
Metropolitana	El Bosque	68,970	78,923
Metropolitana	El Monte	11,515	18,983
Metropolitana	Estación Central	47,059	100,342
Metropolitana	Huechuraba	31,815	53,410
Metropolitana	Independencia	29,326	69,183
Metropolitana	Isla de Maipo	11,272	19,064
Metropolitana	La Cisterna	34,875	46,705
Metropolitana	La Florida	145,860	187,269
Metropolitana	La Granja	51,753	55,859
Metropolitana	La Pintana	74,566	87,276
Metropolitana	La Reina	38,308	46,160
Metropolitana	Lampa	20,466	62,447
Metropolitana	Las Condes	101,065	156,065
Metropolitana	Lo Barnechea	32,194	59,210
Metropolitana	Lo Espejo	44,569	47,266
Metropolitana	Lo Prado	41,640	47,820
Metropolitana	Macul	44,512	63,193
Metropolitana	Maipú	193,263	269,996
Metropolitana	María Pinto	4,424	7,064
Metropolitana	Melipilla	40,634	67,113
Metropolitana	Padre Hurtado	17,446	35,999
Metropolitana	Paine	21,888	39,534
Metropolitana	Peñaflor	28,829	47,992
Metropolitana	Peñalolén	88,844	124,794
Metropolitana	Pirque	7,452	14,654
Metropolitana	Providencia	48,215	74,482
Metropolitana	Pudahuel	80,850	119,183
Metropolitana	Puente Alto	204,149	304,422
Metropolitana	Quilicura	57,389	123,001
Metropolitana	Quinta Normal	42,762	64,564
Metropolitana	Recoleta	59,841	89,979
Metropolitana	Renca	54,882	74,919
Metropolitana	San Bernardo	103,969	157,849
Metropolitana	San Joaquín	39,725	47,807

Region	Commune	2005	2022
Metropolitana	San José de Maipo	5,511	8,819
Metropolitana	San Miguel	33,361	64,414
Metropolitana	San Pedro	3,475	5,658
Metropolitana	San Ramón	37,646	39,311
Metropolitana	Santiago	29,584	41,424
Metropolitana	Santiago	101,222	242,950
Metropolitana	Talagante	25,167	38,638
Metropolitana	Tiltil	6,294	10,157
Metropolitana	Vitacura	32,630	45,016
Metropolitana	Ñuñoa	45,782	49,094
Metropolitana	Ñuñoa	68,743	119,726
O'Higgins	Chimbarongo	9,573	13,401
O'Higgins	Chépica	4,132	5,646
O'Higgins	Coinco	1,915	2,791
O'Higgins	Coltauco	4,939	7,638
O'Higgins	Doñihue	5,214	8,156
O'Higgins	Graneros	8,036	13,145
O'Higgins	La Estrella	880	1,093
O'Higgins	Las Cabras	6,201	9,592
O'Higgins	Litueche	1,663	2,413
O'Higgins	Lolol	1,835	2,595
O'Higgins	Machalí	9,950	21,966
O'Higgins	Malloa	3,778	5,008
O'Higgins	Marchihue	2,013	2,700
O'Higgins	Mostazal	6,470	9,856
O'Higgins	Nancagua	4,676	6,840
O'Higgins	Navidad	1,636	2,470
O'Higgins	Olivar	3,659	5,214
O'Higgins	Palmilla	3,333	4,731
O'Higgins	Paredones	1,896	2,218
O'Higgins	Peralillo	2,915	4,228
O'Higgins	Peumo	4,061	5,275
O'Higgins	Pichidegua	5,256	7,361
O'Higgins	Pichilemu	3,841	6,457
O'Higgins	Placilla	2,408	3,244
O'Higgins	Pumanque	1,012	1,241
O'Higgins	Quinta de Tilcoco	3,398	4,956
O'Higgins	Rancagua	3,277	5,055
O'Higgins	Rancagua	63,839	94,962
O'Higgins	Rengo	15,250	22,792
O'Higgins	Requínoa	6,824	10,929
O'Higgins	San Fernando	19,251	28,113
O'Higgins	San Vicente	12,108	18,112
O'Higgins	Santa Cruz	9,759	14,725
Maule	Cauquenes	8,407	15,050
Maule	Chanco	1,890	3,157
Maule	Colbún	3,718	7,823
Maule	Constitución	9,496	17,161
Maule	Curepto	2,101	3,152
Maule	Curicó	25,707	56,952
Maule	Empedrado	847	1,424

Region	Commune	2005	2022
Maule	Hualañé	1,975	3,474
Maule	Licantén	1,366	2,374
Maule	Linares	17,376	34,841
Maule	Longaví	5,776	11,294
Maule	Maule	4,553	21,958
Maule	Molina	8,065	17,309
Maule	Parral	7,832	15,313
Maule	Pelarco	1,525	3,142
Maule	Pelluhue	1,308	2,810
Maule	Pencahue	1,637	2,927
Maule	Rauco	1,823	3,908
Maule	Retiro	3,786	7,231
Maule	Romeral	2,642	5,621
Maule	Río Claro	2,602	5,076
Maule	Sagrada Familia	3,574	6,664
Maule	San Clemente	7,834	16,017
Maule	San Javier	8,093	17,144
Maule	San Rafael	1,616	3,459
Maule	Talca	41,865	81,393
Maule	Teno	5,285	10,657
Maule	Vichuquén	943	1,476
Maule	Villa Alegre	3,040	6,039
Maule	Yerbas Buenas	3,317	6,626
Ñuble	Bulnes	4,041	9,523
Ñuble	Chillán	32,799	84,532
Ñuble	Chillán Viejo	4,669	14,579
Ñuble	Cobquecura	1,054	2,203
Ñuble	Coelemu	3,115	7,082
Ñuble	Coihueco	4,771	12,056
Ñuble	El Carmen	2,437	5,148
Ñuble	Ninhue	1,085	2,259
Ñuble	Pemuco	1,681	3,614
Ñuble	Pinto	1,981	5,050
Ñuble	Portezuelo	1,007	2,059
Ñuble	Quillón	3,052	7,994
Ñuble	Quirihue	2,226	5,128
Ñuble	Ránquil	1,115	2,636
Ñuble	San Carlos	9,858	23,785
Ñuble	San Fabián	732	1,983
Ñuble	San Ignacio	3,115	6,973
Ñuble	San Nicolás	1,972	5,176
Ñuble	Treguaco	1,006	2,406
Ñuble	Yungay	3,279	7,857
Ñuble	Ñiquén	2,202	4,847
Biobío	Arauco	8,690	12,412
Biobío	Cabrero	6,508	9,888
Biobío	Cañete	7,998	11,905
Biobío	Concepción	53,883	76,413
Biobío	Contulmo	1,449	2,028
Biobío	Coronel	20,226	29,287
Biobío	Coronel	24,973	40,757

Region	Commune	2005	2022
Biobío	Curanilahue	7,884	10,845
Biobío	Florida	2,717	3,792
Biobío	Hualqui	5,079	8,472
Biobío	Laja	5,539	7,642
Biobío	Lebu	6,226	8,674
Biobío	Los Angeles	971	1,380
Biobío	Los Angeles	43,587	70,751
Biobío	Los Álamos	4,736	7,273
Biobío	Lota	11,653	14,568
Biobío	Mulchén	7,176	9,939
Biobío	Nacimiento	6,441	8,950
Biobío	Negrete	2,208	3,360
Biobío	Penco	11,330	15,998
Biobío	Quilaco	981	1,339
Biobío	Quilleco	2,479	3,199
Biobío	San Pedro de la Paz	22,848	47,950
Biobío	San Rosendo	946	1,145
Biobío	Santa Bárbara	3,278	4,680
Biobío	Santa Juana	3,239	4,745
Biobío	Talcahuano	38,965	50,591
Biobío	Tirúa	2,442	3,538
Biobío	Tomé	21,489	31,237
Biobío	Tomé	13,090	18,850
Biobío	Tucapel	3,254	4,897
Biobío	Yumbel	1,537	2,171
Biobío	Yumbel	5,081	7,087
Araucanía	Angol	9,925	10,867
Araucanía	Carahue	4,998	4,909
Araucanía	Collipulli	4,594	5,075
Araucanía	Cunco	3,618	3,477
Araucanía	Curacautín	3,411	3,504
Araucanía	Curarrehue	1,394	1,510
Araucanía	Ercilla	1,755	1,621
Araucanía	Freire	4,798	4,904
Araucanía	Galvarino	2,491	2,426
Araucanía	Gorbea	2,998	2,909
Araucanía	Lautaro	6,726	7,957
Araucanía	Loncoche	4,665	4,768
Araucanía	Lonquimay	2,033	2,134
Araucanía	Los Sauces	1,513	1,443
Araucanía	Lumaco	2,152	1,920
Araucanía	Melipeuco	1,134	1,212
Araucanía	Nueva Imperial	6,034	6,541
Araucanía	Padre Las Casas	12,672	16,132
Araucanía	Perquenco	1,314	1,396
Araucanía	Pitrufquen	4,508	5,075
Araucanía	Pucón	4,554	5,829
Araucanía	Purén	2,509	2,337
Araucanía	Renaico	1,899	2,103
Araucanía	Saavedra	2,680	2,449
Araucanía	Temuco	51,260	58,994

Region	Commune	2005	2022
Araucanía	Teodoro Schmidt	3,049	3,035
Araucanía	Toltén	2,135	1,923
Araucanía	Traiguén	3,785	3,714
Araucanía	Victoria	6,712	6,837
Araucanía	Vilcún	4,708	6,109
Araucanía	Villarrica	2,051	2,406
Araucanía	Villarrica	9,624	11,537
Los Ríos	Corral	1,513	1,884
Los Ríos	Futrono	4,260	5,278
Los Ríos	La Unión	10,957	13,731
Los Ríos	Lago Ranco	2,849	3,564
Los Ríos	Lanco	4,363	6,188
Los Ríos	Los Lagos	5,686	7,112
Los Ríos	Mariquina	5,383	8,193
Los Ríos	Máfil	2,034	2,559
Los Ríos	Paillaco	5,513	7,235
Los Ríos	Panguipulli	9,557	12,517
Los Ríos	Río Bueno	9,244	11,422
Los Ríos	Valdivia	41,940	62,210
Los Lagos	Ancud	10,019	17,729
Los Lagos	Calbuco	8,015	15,525
Los Lagos	Castro	10,222	20,112
Los Lagos	Chaitén	1,408	2,106
Los Lagos	Chonchi	3,278	6,738
Los Lagos	Cochamó	1,064	1,658
Los Lagos	Curaco de Vélez	875	1,712
Los Lagos	Dalcahue	3,031	6,371
Los Lagos	Fresia	3,136	5,262
Los Lagos	Frutillar	4,064	8,565
Los Lagos	Futaleufú	525	1,194
Los Lagos	Hualaihué	2,124	3,988
Los Lagos	Los Muermos	4,220	7,437
Los Lagos	Los Muermos	4,217	7,823
Los Lagos	Maullín	3,832	6,180
Los Lagos	Osorno	37,662	72,990
Los Lagos	Palena	425	760
Los Lagos	Puerto Montt	48,280	114,897
Los Lagos	Puerto Octay	2,463	3,805
Los Lagos	Puerto Varas	8,783	20,859
Los Lagos	Puqueldón	1,028	1,750
Los Lagos	Purranque	5,178	8,771
Los Lagos	Puyehue	2,763	4,925
Los Lagos	Queilén	1,301	2,313
Los Lagos	Quellón	5,886	12,406
Los Lagos	Quemchi	2,136	3,658
Los Lagos	Quinchao	2,167	3,437
Los Lagos	Río Negro	3,636	5,916
Los Lagos	San Juan de la Costa	2,121	3,143
Los Lagos	San Pablo	2,540	4,399
Aysén	Aysén	7,283	11,936
Aysén	Chile Chico	1,483	2,444

Region	Commune	2005	2022
Aysén	Cisnes	1,733	2,781
Aysén	Coyhaique	17,083	29,299
Aysén	Guaitecas	468	763
Aysén	Guaitecas	1,012	1,765
Aysén	Lago Verde	303	435
Aysén	O'Higgins	166	318
Aysén	Río Ibáñez	815	1,286
Aysén	Tortel	154	275
Magallanes	Antártica	23	32
Magallanes	Cabo de Hornos	797	437
Magallanes	Laguna Blanca	177	57
Magallanes	Natales	7,443	5,361
Magallanes	Porvenir	2,058	1,658
Magallanes	Primavera	356	151
Magallanes	Punta Arenas	46,285	31,853
Magallanes	Río Verde	110	46
Magallanes	San Gregorio	379	147
Magallanes	Timaukel	136	62
Magallanes	Torres del Paine	235	233
National total		5,113,700	7,784,784

Extract: this table shows two years (2005 and 2022) of the full commune-by-year domestic-waste series (1952–2022); the complete series is the dataset used by the FOD model.

S3.3 Industrial solid-waste series (by region)

Annual industrial solid-waste generation by region (1960–2022), reconstructed from regional GDP and a region-specific waste-to-GDP generation rate; this series feeds the industrial branch of the Solid Waste Disposal sector. Table S3.3 reports the full annual series.

Table S3.3. Industrial solid-waste generation by region and year, 1960–2022 (kt yr^{-1}).

Year	Ar.	Ta.	An.	At.	Co.	Va.	RM	OH.	Ma.	Nu.	Bi.	Ara.	LR.	LL.	Ay.	Mag.
1960		0.4	0.5	0.3	0.3	2.3	12	1.1	0.9		7.3	3.6		3.3	0.2	0.9
1961		0.5	0.6	0.4	0.4	2.6	14	1.3	1.1		8.6	4.3		4	0.2	1
1962		0.6	0.6	0.4	0.5	3.1	17	1.5	1.2		9.8	4.6		4.3	0.2	1.1
1963		0.6	0.6	0.5	0.5	2.9	17.2	1.5	1.1		9.4	4.6		4.3	0.2	1.1
1964		0.6	0.7	0.5	0.5	3	18.4	1.6	1.2		10.1	4.7		4.5	0.2	1.2
1965		0.6	0.7	0.5	0.5	3.1	19.3	1.5	1.2		10.1	4.7		4.6	0.3	1.2
1966		0.8	0.8	0.5	0.6	3.5	23.3	1.8	1.4		11.5	5.5		5.1	0.3	1.3
1967		0.8	0.8	0.5	0.5	3.5	22.6	2	1.3		11.6	5		5.1	0.4	1.4
1968		0.7	0.8	0.5	0.6	3.6	23	2	1.5		11.9	5.5		5.3	0.4	1.3
1969		0.7	1.1	0.5	0.6	4.1	26.9	2.3	1.7		13.8	6.1		6	0.4	1.4
1970		0.8	1.1	0.6	0.7	4.4	29.7	2.4	1.8		15.1	7		6.6	0.5	1.6
1971		0.9	1.3	0.6	0.8	5.3	35.2	2.7	2.1		18.8	8.6		7.8	0.6	1.9
1972		1	1.4	0.6	0.9	5.7	38.5	3.1	2.2		20.7	9.4		8.5	0.6	1.9
1973		1.5	2.1	0.9	1.4	8.3	54	4.4	3.2		29.4	12.8		12.3	1	2.7
1974		1.5	2.2	0.9	1.3	8.6	49.1	5.2	3.1		28.1	12.8		11.9	0.8	2.8
1975		0.7	1	0.5	0.7	3.9	22.7	2.3	1.7		13	6.7		6.1	0.4	1.2
1976		1	1.7	0.6	0.9	5.3	30.2	2.8	2.3		18.5	9.1		8.1	0.5	1.7
1977		1.3	2.3	0.8	1.2	7.2	41.5	3.8	3		24.4	11.9		10.7	0.9	2.3
1978		1.6	2.6	1	1.4	7.8	48.7	4.3	3.3		26.6	12.7		11.7	1	2.9
1979		2.2	3.4	1.4	1.9	10.5	67.8	6.1	4.4		35.9	17.3		15.3	1.3	3.5
1980		3.1	4.5	1.9	2.4	13.4	90.8	7.9	5.7		48.2	23		20.8	1.5	5.4

Year	Ar.	Ta.	An.	At.	Co.	Va.	RM	OH.	Ma.	Nu.	Bi.	Ara.	LR.	LL.	Ay.	Mag.
1981		3.6	5.1	2.1	2.7	15.8	109.8	9.4	7		56.8	26.3		24.1	1.8	6.8
1982		2.1	3.4	1.3	1.7	8.6	59.1	5.9	4.5		31.9	16		14.3	1.2	4
1983		2.1	3.5	1.3	1.7	9	60.9	5.8	4.9		35.3	16.7		15.3	1.3	4.2
1984		2.1	3.3	1.3	1.7	8.7	58.8	5.8	4.5		34.6	16.7		14.8	1	3.9
1985		2	2.8	1.2	1.6	7.7	52.6	5.5	4.1		31.2	15.1		13.6	0.9	3.3
1986		2.1	2.9	1.2	1.7	8	57.2	5.9	4.4		32.5	15		14.8	1.2	3.5
1987		2.4	3.3	1.4	1.9	9	68.7	6.7	5.2		37.9	18.3		17.8	1.4	4.2
1988		2.7	3.9	1.7	2.3	10.9	80.6	7.4	6.1		44.4	22.2		20.4	1.6	4.4
1989		3.1	5	1.8	2.7	12.5	94	8.3	6.6		48.9	24.6		23	1.5	5.1
1990		3.3	5.4	2.2	3	13.5	104.7	9	7.3		54.1	27.2		26.6	1.7	5.4
1991		3.7	6.4	2.6	3.4	14.9	121.4	10.1	8.8		60.1	30		28.4	1.9	6.1
1992		4.6	7.1	3.4	4.3	17.5	150.7	12.2	10.7		70.4	37.8		33.7	2.4	6.6
1993		4.8	7.4	3.8	4.4	19.3	163.6	12.8	11.2		74.1	40.5		36.2	2.5	7.1
1994		5.9	9.1	4.9	5.1	22.8	185.1	15.5	13.6		84	46.8		42.8	2.9	7.3
1995		7.9	11.4	6.4	6.6	29.1	241.4	19.1	17.5		106.2	60.4		55.1	3.8	9.4
1996		8.4	14.3	7.1	7.1	30.2	257.2	19.5	17.8		111.4	62.3		59	4	9.4
1997		9.8	16.5	7.8	7.7	31.2	280.7	20.8	19.4		119	67.9		68.8	4.4	10.2
1998		9.4	17	7.5	7.7	30.2	264.6	19.9	18.1		111.5	65		65.8	4.2	9.8
1999		9.1	15.5	6.9	7.4	28.7	239.9	18.8	16.7		102.8	59.9		60.6	4.6	9.6
2000		9.2	15.2	6.8	8.4	29.1	250.2	20.4	18.2		105.4	64.4		65.5	4.8	9.3
2001		8.2	15.1	6.2	7.7	26.6	227.2	18.2	16.7		95.3	56.7		59.8	4.4	8.5
2002		7.5	15.2	5.6	7.8	26.1	223.2	18	16.5		91.3	56.1		57.2	4.4	8.2
2003		7.6	17	5.7	8.9	28.5	243.2	19.8	18		97	61.6		60.6	4.9	8.8
2004		9.2	22.6	6.7	12	36.9	315.2	25.8	23.5		122.5	80.4		76.3	6.5	11.1
2005		10.5	28.6	7.5	15.4	45.5	389.4	32	29.2		147.3	100		91.5	8.1	13.5
2006		12.1	36.9	8.4	20.1	57.3	490.2	40.6	36.9		180.4	126.8		111.7	10.4	16.6
2007		12.3	42.4	8.4	23.4	64.2	550.1	45.8	41.6		196.8	143.3		121.5	11.9	18.2
2008		11.5	45.3	7.6	25.3	67	574.1	48.1	43.7		199.6	150.6		122.7	12.7	18.6
2009		9.8	44.2	6.2	24.9	64	548.7	46.3	41.9		185.1	144.9		113.4	12.3	17.4
2010		10.8	57.2	6.4	32.5	80.9	693.8	58.9	53.3		227	184.5		138.5	15.9	21.5
2011		10.8	67.7	5.8	38.9	93.7	804.2	68.7	62.1		254.9	215.3		154.9	18.7	24.3
2012		9.5	73.5	4.5	42.6	99.5	854.9	73.4	66.3		262.3	230.5		158.7	20.2	25.2
2013	5.8	2.5	78	2.9	45.6	103.4	888.8	76.8	69.3	36.2	263.7	241.2	34.3	158.8	21.3	25.6
2014	5.4	2.3	72.8	27.3	39.4	90.5	814.1	70.5	62.6	32.5	246.3	220.3	32.1	153.5	19.9	24.4
2015	5	20.6	64.9	24.2	34.9	81.2	745	66.4	60.4	30.5	225.7	206.1	29.8	139.2	16.8	22.3
2016	5.1	20.2	62.4	25.4	35.9	84.7	771.4	68.7	62.3	32.6	231.8	219.9	31.2	145.1	17	23.7
2017	5.8	23	66.4	27.7	40	94.3	854.6	74.4	68.5	35.4	260.1	245.8	34.7	170.1	20.6	26.6
2018	6.1	25.4	73.3	27.9	43.4	97.5	909.4	81.1	76.3	39	280.8	263.5	37.3	186.9	21.8	27.1
2019	5.6	24.9	68.4	24.7	41.4	90.8	857.2	75.3	70.8	36.5	265.8	250.7	35.1	178.2	20.5	26.6
2020	5.1	23.2	65.3	24.2	38.3	83	763.4	70.5	67.5	34.2	244.6	232.6	32.8	164.7	18.3	22.6
2021	6.7	28.5	72.9	30.9	46.6	102.9	974.3	86.7	82.7	43.1	300.3	294.2	40.5	200.9	21.2	27.4
2022	6.7	26.7	68.2	28.9	43.4	101.2	934.5	81.3	79.1	41.3	287.6	286.7	38.9	196	20.5	27.2

Note: blank cells for Los Ríos and Ñuble before 2013 correspond to years when these regions were part of Biobío and Los Lagos, respectively (they were created in 2007 and 2018). Regions abbreviated; Ar. = Arica; Ta. = Tarapacá; An. = Antofagasta; At. = Atacama; Co. = Coquimbo; Va. = Valparaiso; RM = Metropolitana; OH = O'Higgins; Ma. = Maule; Bi. = Biobio; Ara. = Araucanía; LR = Los Ríos; LL = Los Lagos; Ay. = Aysén; Mag. = Magallanes.

S3.4 Communal population series

Communal population used to downscale population-driven emissions. Although the regional totals derive from public projections (INE), the commune-level disaggregation is constructed by the authors

and constitutes the reproducible contribution of this dataset. Table S3.4 reports the population of all 346 communes for 2005 and 2022.

Table S3.4. Population by commune for 2005 and 2022 (inhabitants), grouped by region.

Region	Commune	2005	2022
Arica y Parinacota	Arica	197,507	253,125
Arica y Parinacota	Camarones	1,166	1,242
Arica y Parinacota	General Lagos	872	807
Arica y Parinacota	Putre	2,204	2,548
Tarapacá	Alto Hospicio	76,126	137,263
Tarapacá	Camiña	1,226	1,383
Tarapacá	Colchane	1,499	1,579
Tarapacá	Huara	2,449	3,063
Tarapacá	Iquique	167,784	229,072
Tarapacá	Pica	3,786	6,165
Tarapacá	Pozo Almonte	10,271	18,172
Antofagasta	Antofagasta	315,097	437,883
Antofagasta	Calama	147,681	194,575
Antofagasta	María Elena	9,122	6,684
Antofagasta	Mejillones	9,246	15,430
Antofagasta	Ollagüe	374	279
Antofagasta	San Pedro de Atacama	5,431	10,818
Antofagasta	Sierra Gorda	1,355	1,784
Antofagasta	Taltal	11,112	13,883
Antofagasta	Tocopilla	25,004	28,301
Atacama	Alto del Carmen	5,013	5,767
Atacama	Caldera	14,953	19,746
Atacama	Chañaral	13,424	13,109
Atacama	Copiapó	140,436	174,309
Atacama	Diego de Almagro	18,750	14,137
Atacama	Freirina	6,317	7,779
Atacama	Huasco	8,811	11,455
Atacama	Tierra Amarilla	12,795	14,401
Atacama	Vallenar	50,935	57,301
Coquimbo	Andacollo	11,345	11,828
Coquimbo	Canela	9,584	9,537
Coquimbo	Combarbalá	13,802	13,883
Coquimbo	Coquimbo	182,603	266,502
Coquimbo	Illapel	31,394	32,949
Coquimbo	La Higuera	3,898	4,499
Coquimbo	La Serena	178,969	258,850
Coquimbo	Los Vilos	18,663	23,924
Coquimbo	Monte Patria	31,180	32,638
Coquimbo	Ovalle	104,551	123,013
Coquimbo	Paiguano	4,389	4,698
Coquimbo	Punitaqui	10,275	12,358
Coquimbo	Río Hurtado	4,716	4,343
Coquimbo	Salamanca	24,675	29,560
Coquimbo	Vicuña	25,285	30,187
Valparaíso	Algarrobo	10,188	15,668
Valparaíso	Cabildo	19,780	20,735
Valparaíso	Calera	51,240	53,809

Region	Commune	2005	2022
Valparaíso	Calle Larga	11,422	17,097
Valparaíso	Cartagena	18,718	26,238
Valparaíso	Casablanca	23,555	29,891
Valparaíso	Catemu	12,874	15,482
Valparaíso	Concón	35,533	47,097
Valparaíso	El Quisco	11,329	18,334
Valparaíso	El Tabo	8,847	14,804
Valparaíso	Hijuelas	16,998	19,309
Valparaíso	Isla de Pascua	4,753	8,601
Valparaíso	Juan Fernández	709	1,074
Valparaíso	La Cruz	15,101	26,652
Valparaíso	La Ligua	33,783	38,117
Valparaíso	Limache	41,976	50,872
Valparaíso	Llaillay	22,829	26,946
Valparaíso	Los Andes	62,569	68,602
Valparaíso	Nogales	22,419	23,594
Valparaíso	Olmué	15,335	19,777
Valparaíso	Panquehue	6,834	7,745
Valparaíso	Papudo	5,024	6,331
Valparaíso	Petorca	9,913	10,607
Valparaíso	Puchuncaví	14,685	20,674
Valparaíso	Putaendo	15,433	17,862
Valparaíso	Quillota	81,851	99,401
Valparaíso	Quilpué	138,470	170,531
Valparaíso	Quintero	24,483	37,441
Valparaíso	Rinconada	7,728	11,663
Valparaíso	San Antonio	90,011	97,758
Valparaíso	San Esteban	15,722	21,226
Valparaíso	San Felipe	68,864	85,270
Valparaíso	Santa María	13,680	16,686
Valparaíso	Santo Domingo	8,369	12,295
Valparaíso	Valparaíso	288,945	318,638
Valparaíso	Villa Alemana	105,389	143,536
Valparaíso	Viña del Mar	310,318	366,981
Valparaíso	Zapallar	6,227	8,194
Metropolitana	Alhué	5,078	7,649
Metropolitana	Buin	73,212	114,028
Metropolitana	Calera de Tango	20,552	29,470
Metropolitana	Cerrillos	76,893	89,858
Metropolitana	Cerro Navia	150,406	141,507
Metropolitana	Colina	93,236	189,757
Metropolitana	Conchalí	141,784	138,638
Metropolitana	Curacaví	27,135	37,479
Metropolitana	El Bosque	179,264	171,201
Metropolitana	El Monte	29,930	41,179
Metropolitana	Estación Central	122,312	217,664
Metropolitana	Huechuraba	82,692	115,858
Metropolitana	Independencia	76,222	150,074
Metropolitana	Isla de Maipo	29,298	41,354
Metropolitana	La Cisterna	90,646	101,313
Metropolitana	La Florida	379,112	406,229

Region	Commune	2005	2022
Metropolitana	La Granja	134,513	121,170
Metropolitana	La Pintana	193,808	189,321
Metropolitana	La Reina	99,567	100,131
Metropolitana	Lampa	53,195	135,461
Metropolitana	Las Condes	262,683	338,541
Metropolitana	Lo Barnechea	83,678	128,439
Metropolitana	Lo Espejo	115,842	102,530
Metropolitana	Lo Prado	108,228	103,732
Metropolitana	Macul	115,694	137,079
Metropolitana	Maipú	502,319	585,684
Metropolitana	María Pinto	11,498	15,323
Metropolitana	Melipilla	105,613	145,583
Metropolitana	Padre Hurtado	45,344	78,091
Metropolitana	Paine	56,891	85,759
Metropolitana	Pedro Aguirre Cerda	118,995	106,496
Metropolitana	Peñaflor	74,932	104,106
Metropolitana	Peñalolén	230,918	270,707
Metropolitana	Pirque	19,368	31,787
Metropolitana	Providencia	125,317	161,568
Metropolitana	Pudahuel	210,142	258,535
Metropolitana	Puente Alto	530,614	660,361
Metropolitana	Quilicura	149,162	266,818
Metropolitana	Quinta Normal	111,144	140,055
Metropolitana	Recoleta	155,536	195,185
Metropolitana	Renca	142,647	162,517
Metropolitana	San Bernardo	270,230	342,411
Metropolitana	San Joaquín	103,251	103,704
Metropolitana	San José de Maipo	14,325	19,131
Metropolitana	San Miguel	86,709	139,729
Metropolitana	San Pedro	9,033	12,274
Metropolitana	San Ramón	97,847	85,274
Metropolitana	Santiago	263,090	527,014
Metropolitana	Talagante	65,413	83,814
Metropolitana	Tiltil	16,359	22,033
Metropolitana	Vitacura	84,809	97,651
Metropolitana	Ñuñoa	178,672	259,712
O’Higgins	Chimbarongo	33,994	38,117
O’Higgins	Chépica	14,672	16,060
O’Higgins	Codegua	11,637	14,379
O’Higgins	Coinco	6,801	7,939
O’Higgins	Coltauco	17,539	21,725
O’Higgins	Doñihue	18,515	23,199
O’Higgins	Graneros	28,535	37,390
O’Higgins	La Estrella	3,126	3,109
O’Higgins	Las Cabras	22,019	27,283
O’Higgins	Litueche	5,906	6,865
O’Higgins	Lolol	6,517	7,380
O’Higgins	Machalí	35,333	62,480
O’Higgins	Malloa	13,417	14,245
O’Higgins	Marchihue	7,149	7,679
O’Higgins	Mostazal	22,976	28,035

Region	Commune	2005	2022
O'Higgins	Nancagua	16,605	19,456
O'Higgins	Navidad	5,809	7,027
O'Higgins	Olivar	12,993	14,831
O'Higgins	Palmilla	11,837	13,458
O'Higgins	Paredones	6,734	6,309
O'Higgins	Peralillo	10,351	12,027
O'Higgins	Peumo	14,419	15,005
O'Higgins	Pichidegua	18,666	20,937
O'Higgins	Pichilemu	13,639	18,367
O'Higgins	Placilla	8,552	9,228
O'Higgins	Pumanque	3,592	3,529
O'Higgins	Quinta de Tilcoco	12,066	14,097
O'Higgins	Rancagua	226,694	270,112
O'Higgins	Rengo	54,152	64,831
O'Higgins	Requínoa	24,234	31,087
O'Higgins	San Fernando	68,361	79,964
O'Higgins	San Vicente	42,997	51,518
O'Higgins	Santa Cruz	34,656	41,884
Maule	Cauquenes	42,813	44,327
Maule	Chanco	9,623	9,299
Maule	Colbún	18,933	23,042
Maule	Constitución	48,363	50,547
Maule	Curepto	10,698	9,285
Maule	Curicó	130,923	167,746
Maule	Empedrado	4,316	4,194
Maule	Hualañé	10,058	10,232
Maule	Licantén	6,959	6,993
Maule	Linares	88,491	102,620
Maule	Longaví	29,416	33,264
Maule	Maule	23,187	64,676
Maule	Molina	41,076	50,983
Maule	Parral	39,885	45,103
Maule	Pelarco	7,767	9,253
Maule	Pelluhue	6,663	8,276
Maule	Pencahue	8,336	8,622
Maule	Rauco	9,282	11,510
Maule	Retiro	19,280	21,299
Maule	Romeral	13,456	16,557
Maule	Río Claro	13,252	14,952
Maule	Sagrada Familia	18,204	19,627
Maule	San Clemente	39,897	47,177
Maule	San Javier	41,216	50,496
Maule	San Rafael	8,232	10,189
Maule	Talca	213,211	239,735
Maule	Teno	26,918	31,390
Maule	Vichuquén	4,804	4,347
Maule	Villa Alegre	15,484	17,787
Maule	Yerbas Buenas	16,895	19,515
Ñuble	Bulnes	21,437	22,703
Ñuble	Chillán	173,980	201,523
Ñuble	Chillán Viejo	24,764	34,755

Region	Commune	2005	2022
Ñuble	Cobquecura	5,592	5,252
Ñuble	Coelemu	16,521	16,884
Ñuble	Coihueco	25,307	28,742
Ñuble	El Carmen	12,929	12,272
Ñuble	Ninhue	5,756	5,385
Ñuble	Pemuco	8,915	8,616
Ñuble	Pinto	10,509	12,039
Ñuble	Portezuelo	5,342	4,908
Ñuble	Quillón	16,189	19,058
Ñuble	Quirihue	11,808	12,226
Ñuble	Ránquil	5,914	6,284
Ñuble	San Carlos	52,291	56,702
Ñuble	San Fabián	3,882	4,728
Ñuble	San Ignacio	16,524	16,624
Ñuble	San Nicolás	10,462	12,339
Ñuble	Treguaco	5,338	5,736
Ñuble	Yungay	17,391	18,730
Ñuble	Ñiquén	11,681	11,554
Biobío	Alto Biobío	6,477	6,793
Biobío	Antuco	4,092	4,317
Biobío	Arauco	36,618	38,834
Biobío	Cabrero	27,423	30,937
Biobío	Cañete	33,702	37,249
Biobío	Chiguayante	85,231	91,632
Biobío	Concepción	227,057	239,077
Biobío	Contulmo	6,104	6,346
Biobío	Coronel	105,232	127,519
Biobío	Curanilahue	33,223	33,931
Biobío	Florida	11,449	11,863
Biobío	Hualpén	90,554	97,732
Biobío	Hualqui	21,401	26,506
Biobío	Laja	23,339	23,909
Biobío	Lebu	26,237	27,139
Biobío	Los Angeles	183,670	221,361
Biobío	Los Álamos	19,959	22,755
Biobío	Lota	49,103	45,580
Biobío	Mulchén	30,240	31,098
Biobío	Nacimiento	27,142	28,002
Biobío	Negrete	9,305	10,514
Biobío	Penco	47,742	50,055
Biobío	Quilaco	4,134	4,188
Biobío	Quilleco	10,446	10,010
Biobío	San Pedro de la Paz	96,278	150,023
Biobío	San Rosendo	3,985	3,581
Biobío	Santa Bárbara	13,815	14,644
Biobío	Santa Juana	13,648	14,846
Biobío	Talcahuano	164,193	158,285
Biobío	Tirúa	10,290	11,069
Biobío	Tomé	55,161	58,978
Biobío	Tucapel	13,713	15,322
Biobío	Yumbel	21,412	22,174

Region	Commune	2005	2022
Araucanía	Angol	51,351	56,476
Araucanía	Carahue	25,862	25,511
Araucanía	Cholchol	10,614	12,504
Araucanía	Collipulli	23,771	26,374
Araucanía	Cunco	18,717	18,067
Araucanía	Curacautín	17,649	18,207
Araucanía	Curarrehue	7,213	7,845
Araucanía	Ercilla	9,079	8,423
Araucanía	Freire	24,825	25,483
Araucanía	Galvarino	12,890	12,606
Araucanía	Gorbea	15,514	15,118
Araucanía	Lautaro	34,801	41,352
Araucanía	Loncoche	24,136	24,778
Araucanía	Lonquimay	10,520	11,088
Araucanía	Los Sauces	7,829	7,498
Araucanía	Lumaco	11,132	9,976
Araucanía	Melipeuco	5,869	6,297
Araucanía	Nueva Imperial	31,222	33,993
Araucanía	Padre Las Casas	65,564	83,834
Araucanía	Perquenco	6,797	7,253
Araucanía	Pitrufquen	23,323	26,375
Araucanía	Pucón	23,562	30,290
Araucanía	Purén	12,981	12,146
Araucanía	Renaico	9,823	10,929
Araucanía	Saavedra	13,868	12,727
Araucanía	Temuco	265,216	306,579
Araucanía	Teodoro Schmidt	15,774	15,774
Araucanía	Toltén	11,048	9,993
Araucanía	Traiguén	19,583	19,302
Araucanía	Victoria	34,729	35,531
Araucanía	Vilcún	24,359	31,745
Araucanía	Villarrica	49,796	59,955
Los Ríos	Corral	5,462	5,439
Los Ríos	Futrono	15,381	15,233
Los Ríos	La Unión	39,560	39,632
Los Ríos	Lago Ranco	10,285	10,288
Los Ríos	Lanco	15,752	17,861
Los Ríos	Los Lagos	20,530	20,527
Los Ríos	Mariquina	19,435	23,648
Los Ríos	Máfil	7,342	7,386
Los Ríos	Paillaco	19,905	20,884
Los Ríos	Panguipulli	34,504	36,130
Los Ríos	Río Bueno	33,375	32,968
Los Ríos	Valdivia	151,415	179,563
Los Lagos	Ancud	41,408	42,507
Los Lagos	Calbuco	33,124	37,221
Los Lagos	Castro	42,247	48,219
Los Lagos	Chaitén	5,817	5,050
Los Lagos	Chonchi	13,546	16,155
Los Lagos	Cochamó	4,397	3,976
Los Lagos	Curaco de Vélez	3,616	4,104

Region	Commune	2005	2022
Los Lagos	Dalcahue	12,526	15,275
Los Lagos	Fresia	12,962	12,616
Los Lagos	Frutillar	16,797	20,535
Los Lagos	Futaleufú	2,168	2,862
Los Lagos	Hualaihué	8,780	9,562
Los Lagos	Llanquihue	17,426	18,755
Los Lagos	Los Muermos	17,439	17,831
Los Lagos	Maullín	15,835	14,816
Los Lagos	Osorno	155,649	174,998
Los Lagos	Palena	1,758	1,822
Los Lagos	Puerto Montt	199,531	275,473
Los Lagos	Puerto Octay	10,180	9,123
Los Lagos	Puerto Varas	36,300	50,010
Los Lagos	Puqueldón	4,247	4,195
Los Lagos	Purranque	21,399	21,028
Los Lagos	Puyehue	11,420	11,809
Los Lagos	Queilén	5,378	5,545
Los Lagos	Quellón	24,327	29,745
Los Lagos	Quemchi	8,828	8,770
Los Lagos	Quinchao	8,955	8,241
Los Lagos	Río Negro	15,027	14,183
Los Lagos	San Juan de la Costa	8,764	7,536
Los Lagos	San Pablo	10,496	10,548
Aysén	Aysén	22,823	25,138
Aysén	Chile Chico	4,646	5,148
Aysén	Cisnes	5,429	5,857
Aysén	Cochrane	3,170	3,718
Aysén	Coyhaique	53,531	61,705
Aysén	Guaitecas	1,467	1,607
Aysén	Lago Verde	950	917
Aysén	O'Higgins	519	670
Aysén	Río Ibáñez	2,555	2,708
Aysén	Tortel	483	579
Magallanes	Antártica	62	144
Magallanes	Cabo de Hornos	2,130	1,978
Magallanes	Laguna Blanca	473	257
Magallanes	Natales	19,896	24,255
Magallanes	Porvenir	5,501	7,500
Magallanes	Primavera	952	684
Magallanes	Punta Arenas	123,718	144,116
Magallanes	Río Verde	295	209
Magallanes	San Gregorio	1,012	666
Magallanes	Timaukel	363	279
Magallanes	Torres del Paine	629	1,055
National total		16,183,489	19,828,563

Extract: this table shows two years (2005 and 2022) of the full commune population series (1952–2024); the complete annual series underlies the population-driven emissions.

S3.5 Domestic disposal sites

Registry of the domestic (municipal) solid-waste disposal sites used to locate SWD point sources. Table S3.5 lists all 207 sites with their identifier, region, commune, name and IPCC-relevant

classification (sanitary landfill, dumpsite, or open dump), which determines the methane correction factor (MCF) in the FOD model.

Table S3.5. Domestic solid-waste disposal sites: identifier, region, commune, name and classification in 2005 and 2022.

ID	Region	Commune	Site name	Class 2005	Class 2022
91	Arica y Parinacota	ARICA	Vartedero Municipal Zapahuira	Dumpsite	Dumpsite
194	Arica y Parinacota	Arica	Vertedero Quebrada Encantada	Dumpsite	Dumpsite
46	Arica y Parinacota	Camarones	Relleno Sanitario Camarones	Open dump	Sanitary landfill
120	Arica y Parinacota	General Lagos	Vertedero General Lagos	Open dump	Open dump
139	Arica y Parinacota	General Lagos	Vertedero Municipal de Arica Chisllane	Open dump	Open dump
207	Arica y Parinacota	PARINACOTA	Visviri	Open dump	Open dump
133	Arica y Parinacota	Putre	Vertedero Municipal de Putre	Open dump	Open dump
83	Tarapacá	Alto Hospicio	Relleno Sanitario Santa Inés	Open dump	Sanitary landfill
174	Tarapacá	Alto Hospicio	Vertedero Municipal el Boro	Dumpsite	Dumpsite
47	Tarapacá	Camiña	Relleno Sanitario Camiña	Sanitary landfill	Sanitary landfill
3	Tarapacá	Colchane	Basural Carboneras	Open dump	Open dump
8	Tarapacá	Huara	Basural de Huara	Open dump	Open dump
72	Tarapacá	Pica	Relleno Sanitario Manual de Pica	Sanitary landfill	Sanitary landfill
177	Tarapacá	Pozo almonte	Vertedero Municipal Pozo Almonte	Open dump	Dumpsite
51	Antofagasta	Antofagasta	Relleno Sanitario Chaqueta Blanca	Open dump	Sanitary landfill
122	Antofagasta	Antofagasta	Vertedero La Chimba	Open dump	Dumpsite
5	Antofagasta	Calama	Basural de Caspana	Open dump	Open dump
49	Antofagasta	Calama	Relleno Sanitario Cerro Colorado	Sanitary landfill	Sanitary landfill
68	Antofagasta	Calama	Relleno Sanitario Manual , Ayquina	Open dump	Dumpsite
69	Antofagasta	Calama	Relleno Sanitario Manual , Chui Chui	Open dump	Dumpsite
70	Antofagasta	Calama	Relleno Sanitario Manual , Toconce	Open dump	Dumpsite
43	Antofagasta	El Loa	Microbasural de Machuca	Open dump	Open dump
155	Antofagasta	Mejillones	Vertedero Municipal de Mejillones	Dumpsite	Dumpsite
71	Antofagasta	Ollagüe	Relleno Sanitario Manual de Ollagüe	Open dump	Sanitary landfill
4	Antofagasta	San Pedro de Atacama	Basural de Camar	Open dump	Open dump
10	Antofagasta	San Pedro de Atacama	Basural de Peine	Open dump	Open dump
12	Antofagasta	San Pedro de Atacama	Basural de Río Grande	Open dump	Open dump
13	Antofagasta	San Pedro de Atacama	Basural de Talabre	Open dump	Open dump
81	Antofagasta	San Pedro de Atacama	Relleno Sanitario San Pedro de Atacama	Dumpsite	Sanitary landfill
132	Antofagasta	San Pedro de Atacama	Vertedero Manual Socaire	Dumpsite	Dumpsite
134	Antofagasta	Sierra Gorda	Vertedero Municipal Baquedano	Open dump	Open dump
169	Antofagasta	Sierra Gorda	Vertedero Municipal de Sierra Gorda	Dumpsite	Dumpsite
114	Antofagasta	Taltal	Vertedero de Taltal	Dumpsite	Dumpsite
78	Antofagasta	Tocopilla	Relleno Sanitario Quebrada Ancha	Open dump	Sanitary landfill
88	Antofagasta	Tocopilla	Sin/Nombre - tocopilla	Open dump	Dumpsite
170	Antofagasta	Tocopilla	Vertedero Municipal de Tocopilla	Sanitary landfill	Sanitary landfill
27	Atacama	Alto del Carmen	Basural Municipal Ramadilla	Open dump	Open dump
50	Atacama	Caldera	Relleno Sanitario Cerro Montevideo	Open dump	Sanitary landfill
142	Atacama	Caldera	Vertedero Municipal de Caldera	Dumpsite	Dumpsite
18	Atacama	Chañaral	Basural Municipal de Chañaral	Open dump	Open dump
57	Atacama	Copiapó	Relleno Sanitario El Chulo	Open dump	Sanitary landfill

ID	Region	Commune	Site name	Class 2005	Class 2022
203	Atacama	Copiapó	Vertedero Viñita Azul	Dumpsite	Dumpsite
56	Atacama	Diego de Almagro	Relleno Sanitario Diego de Almagro	Dumpsite	Sanitary landfill
24	Atacama	Freirina	Basural Municipal Freirina	Open dump	Open dump
151	Atacama	Huasco	Vertedero Municipal de Huasco	Open dump	Open dump
14	Atacama	Tierra Amarilla	Basural de Tierra Amarilla	Open dump	Open dump
76	Atacama	Vallenar	Relleno Sanitario Provincial del Huasco	Dumpsite	Sanitary landfill
94	Coquimbo	Andacollo	Vertedero Andacollo	Dumpsite	Dumpsite
192	Coquimbo	Canela	Vertedero Quebrada El Gallo	Dumpsite	Dumpsite
197	Coquimbo	Combarbalá	Vertedero Sector Casas Blancas	Dumpsite	Dumpsite
59	Coquimbo	Coquimbo	Relleno Sanitario El Panul	Sanitary landfill	Sanitary landfill
195	Coquimbo	Illapel	Vertedero Quebrada Lo Gallardo	Dumpsite	Dumpsite
118	Coquimbo	Los Vilos	Vertedero Fundo Caracas	Dumpsite	Dumpsite
99	Coquimbo	Monte Patria	Vertedero Cerro Manchado	Dumpsite	Dumpsite
116	Coquimbo	Ovalle	Vertedero El Incienso	Dumpsite	Dumpsite
115	Coquimbo	Punitaqui	Vertedero El Higueral	Dumpsite	Dumpsite
168	Coquimbo	Rio Hurtado	Vertedero Municipal de Río Hurtado	Open dump	Open dump
117	Coquimbo	Salamanca	Vertedero El Queñe	Dumpsite	Dumpsite
193	Coquimbo	Vicuña	Vertedero Quebrada El Mollaco	Dumpsite	Dumpsite
95	Valparaíso	Cabildo	Vertedero Cabildo	Dumpsite	Dumpsite
97	Valparaíso	Cartagena	Vertedero Cartagena	Dumpsite	Sanitary landfill
143	Valparaíso	Casablanca	Vertedero Municipal de Casablanca	Dumpsite	Dumpsite
200	Valparaíso	Isla de Pascua	Vertedero Vai a Ori	Open dump	Open dump
35	Valparaíso	Juan Fernandez	Botadero Municipal Juan Fernández	Open dump	Open dump
105	Valparaíso	Petorca	Vertedero de Chincolco	Dumpsite	Dumpsite
161	Valparaíso	Puchuncaví	Vertedero Municipal de Puchuncaví	Dumpsite	Dumpsite
80	Valparaíso	Quillota	Relleno Sanitario San Pedro	Dumpsite	Sanitary landfill
167	Valparaíso	Quintero	Vertedero Municipal de Quintero	Open dump	Dumpsite
42	Valparaíso	San Felipe	CTI La Hormiga	Dumpsite	Sanitary landfill
198	Valparaíso	Santa María	Vertedero Tabolango	Dumpsite	Dumpsite
58	Valparaíso	Valparaíso	Relleno Sanitario El Molle	Dumpsite	Sanitary landfill
173	Valparaíso	Villa Alemana	Vertedero Municipal de Villa Alemana	Dumpsite	Dumpsite
85	Metropolitana	Maipú	Relleno Sanitario Santiago Poniente	Sanitary landfill	Sanitary landfill
92	Metropolitana	Maria Pinto	Vertedero - Maria Pinto	Dumpsite	Dumpsite
158	Metropolitana	Melipilla	Vertedero Municipal de Popeta	Dumpsite	Dumpsite
84	Metropolitana	Talagante	Relleno Sanitario Santa Marta	Sanitary landfill	Sanitary landfill
90	Metropolitana	Talagante	SIN/NOMBRE Metropolitana - Talagante	Open dump	Open dump
66	Metropolitana	Til Til	Relleno Sanitario Loma Los Colorados	Sanitary landfill	Sanitary landfill
65	O'Higgins	Pichilemu	Relleno Sanitario Las Quilas	Sanitary landfill	Sanitary landfill
52	O'Higgins	Requínoa	Relleno Sanitario Colihues La Yesca	Sanitary landfill	Sanitary landfill
202	Maule	Constitución	Vertedero Viñales	Open dump	Open dump
204	Maule	Curicó	Vichuquén	Dumpsite	Dumpsite
89	Maule	Linares	Sin/Nombre Maule-Linares	Dumpsite	Dumpsite
124	Maule	Linares	Vertedero La Loica en Retiro	Dumpsite	Closed
205	Maule	Linares	Villa Alegre	Dumpsite	Dumpsite
206	Maule	Linares	Villa Baviera	Dumpsite	Dumpsite
191	Maule	Pellehue	Vertedero Pulluhue	Dumpsite	Dumpsite
40	Maule	Río Claro	Centro de Tratamiento Eco Maule	Sanitary landfill	Sanitary landfill
101	Maule	Río Claro	Vertedero Cumpeo	Dumpsite	Dumpsite

ID	Region	Commune	Site name	Class 2005	Class 2022
82	Maule	San Clemente	Relleno Sanitario San Roque	Dumpsite	Sanitary landfill
6	Maule	Talca	Basural de Gualleco	Open dump	Open dump
7	Maule	Talca	Basural de Huaquén	Open dump	Open dump
60	Maule	Talca	Relleno Sanitario El Retamo	Sanitary landfill	Sanitary landfill
75	Maule	Teno	Relleno Sanitario Parque El Guanaco	Sanitary landfill	Sanitary landfill
61	Ñuble	Chillán Viejo	Relleno Sanitario Fundo Las Cruces	Sanitary landfill	Sanitary landfill
54	Biobío	Cañete	Relleno Sanitario de Cañete	Dumpsite	Dumpsite
62	Biobío	Curanilahue	Relleno Sanitario Intercomunal Arauco-Curanilahue	Sanitary landfill	Sanitary landfill
103	Biobío	Curanilahue	Vertedero Curanilahue	Dumpsite	Dumpsite
53	Biobío	Florida	Relleno Sanitario Copiulemu	Sanitary landfill	Sanitary landfill
128	Biobío	Lebu	Vertedero Lebu	Dumpsite	Dumpsite
67	Biobío	Los Angeles	Relleno Sanitario Los Ángeles	Sanitary landfill	Sanitary landfill
129	Biobío	Mulchén	Vertedero Licura Mulchén	Dumpsite	Dumpsite
48	Biobío	Penco	Relleno Sanitario Cemarc	Sanitary landfill	Sanitary landfill
138	Araucanía	Angol	Vertedero Municipal de Angol	Dumpsite	Dumpsite
104	Araucanía	Carahue	Vertedero de Carahue	Dumpsite	Dumpsite
37	Araucanía	Collipulli	Centro de Manejo de Residuo Malleco Norte	Open dump	Sanitary landfill
106	Araucanía	Collipulli	Vertedero de Collipulli	Dumpsite	Dumpsite
107	Araucanía	Cunco	Vertedero de Cunco	Dumpsite	Dumpsite
147	Araucanía	Curacautín	Vertedero Municipal de Curacautín	Dumpsite	Dumpsite
108	Araucanía	Ercilla	Vertedero de Ercilla	Dumpsite	Dumpsite
55	Araucanía	Freire	Relleno Sanitario de Coipue	Sanitary landfill	Sanitary landfill
149	Araucanía	Gorbea	Vertedero Municipal de Gorbea	Dumpsite	Dumpsite
152	Araucanía	Lautaro	Vertedero Municipal de Lautaro	Dumpsite	Dumpsite
153	Araucanía	Loncoche	Vertedero Municipal de Loncoche	Dumpsite	Dumpsite
154	Araucanía	Lonquimay	Vertedero Municipal de Lonquimay	Open dump	Open dump
109	Araucanía	Los Sauces	Vertedero de Los Sauces	Dumpsite	Dumpsite
110	Araucanía	Lumaco	Vertedero de Lumaco	Dumpsite	Dumpsite
21	Araucanía	Melipeuco	Basural Municipal de Melipeuco	Open dump	Open dump
112	Araucanía	Mulchén	Vertedero de Mulchén	Dumpsite	Dumpsite
185	Araucanía	Nueva Imperial	Vertedero Privado de Nueva Imperial	Dumpsite	Dumpsite
156	Araucanía	Perquenco	Vertedero Municipal de Perquenco	Dumpsite	Dumpsite
157	Araucanía	Pitrufquén	Vertedero Municipal de Pitrufquén	Dumpsite	Dumpsite
130	Araucanía	Pucón	Vertedero Los Nevados	Dumpsite	Dumpsite
186	Araucanía	Puerto Savedra	Vertedero Privado Pullallán	Dumpsite	Dumpsite
162	Araucanía	Purén	Vertedero Municipal de Purén	Dumpsite	Dumpsite
140	Araucanía	Temuco	Vertedero Municipal de Boyeco	Dumpsite	Dumpsite
93	Araucanía	Teodoro Schmidt	Vertedero Alberto Saez	Dumpsite	Dumpsite
119	Araucanía	Toltén	Vertedero Fundo Traiguén	Dumpsite	Dumpsite
171	Araucanía	Traiguén	Vertedero Municipal de Traiguén	Open dump	Open dump
172	Araucanía	Victoria	Vertedero Municipal de Victoria	Dumpsite	Sanitary landfill
175	Araucanía	Vilcún	Vertedero Municipal El Manzano	Dumpsite	Dumpsite
87	Araucanía	Villarrica	Relleno Villarrica	Sanitary landfill	Sanitary landfill
196	Los Ríos	Corral	Vertedero Quitaluto	Open dump	Open dump
25	Los Ríos	La Unión	Basural Municipal La Unión	Open dump	Open dump
126	Los Ríos	Lago Ranco	Vertedero Lago Ranco	Open dump	Open dump
63	Los Ríos	Paillaco	Relleno Sanitario Intercomunal Paillaco- Futrono	Sanitary landfill	Sanitary landfill
113	Los Ríos	Panguipulli	Vertedero de Panguipulli	Open dump	Open dump
16	Los Ríos	Ranco	Basural El Lepún	Open dump	Open dump

ID	Region	Commune	Site name	Class 2005	Class 2022
96	Los Ríos	Rio Bueno	Vertedero Cachillahue	Open dump	Open dump
2	Los Ríos	Valdivia	Basural Carboneras 1	Open dump	Open dump
32	Los Ríos	Valdivia	Basural Quilche	Open dump	Open dump
111	Los Ríos	Valdivia	Vertedero de Morrompulli	Sanitary landfill	Sanitary landfill
17	Los Lagos	Ancud	Basural Municipal Ancud	Open dump	Open dump
29	Los Lagos	Calbuco	Basural Munuicipal de Calbuco	Open dump	Open dump
182	Los Lagos	Castro	Vertedero Municipal Punahuel	Open dump	Open dump
144	Los Lagos	Chaitén	Vertedero Municipal de Chaitén-Basural Península Comau	Open dump	Open dump
145	Los Lagos	Chonchi	Vertedero Municipal de Chonchi	Dumpsite	Dumpsite
148	Los Lagos	Curaco de Vélez	Vertedero Municipal de Curaco de Vélez	Dumpsite	Dumpsite
137	Los Lagos	Dalcahue	Vertedero Municipal Dalcahue	Dumpsite	Dumpsite
28	Los Lagos	Fresia	Basural Municipal Santa María	Open dump	Open dump
19	Los Lagos	Frutillar	Basural Municipal de Frutillar	Open dump	Open dump
20	Los Lagos	Futaleufú	Basural Municipal de Futaleufú	Open dump	Open dump
41	Los Lagos	Futaleufú	Centro de Tratamiento Integral de RSD de Futaleufú	Open dump	Sanitary landfill
150	Los Lagos	Hualaihué	Vertedero Municipal de Hualaihué	Open dump	Open dump
121	Los Lagos	Maullín	Vertedero Industrial El Empalme	Sanitary landfill	Sanitary landfill
102	Los Lagos	Osorno	Vertedero Curaco	Dumpsite	Dumpsite
9	Los Lagos	Palena	Basural de Palena	Open dump	Open dump
26	Los Lagos	Puerto Montt	Basural Municipal Lagunitas	Open dump	Open dump
22	Los Lagos	Puerto Varas	Basural Municipal de Puerto Varas	Open dump	Open dump
64	Los Lagos	Puerto Varas	Relleno Sanitario La Laja	Open dump	Sanitary landfill
183	Los Lagos	Puqueldón	Vertedero Municipal Puqueldón	Dumpsite	Dumpsite
163	Los Lagos	Queilén	Vertedero Municipal de Queilén	Dumpsite	Dumpsite
164	Los Lagos	Quellón	Vertedero Municipal de Quellón	Open dump	Open dump
165	Los Lagos	Quemchi	Vertedero Municipal de Quemchi	Open dump	Open dump
166	Los Lagos	Quinchao	Vertedero Municipal de Quinchao	Dumpsite	Dumpsite
23	Los Lagos	Rio Negro	Basural Municipal de Río Negro	Open dump	Open dump
39	Aysén	Aysén	Centro de Manejo RSD Islas Las Huichas	Open dump	Dumpsite
178	Aysén	Aysén	Vertedero Municipal Puerto Aysén	Dumpsite	Dumpsite
187	Aysén	Aysén	Vertedero Puerto Aguirre	Dumpsite	Dumpsite
201	Aysén	Aysén	Vertedero Villa Mañihuales	Dumpsite	Dumpsite
100	Aysén	Chile Chico	Vertedero Chile Chico	Open dump	Open dump
131	Aysén	Chile Chico	Vertedero Mallín Grande	Open dump	Open dump
188	Aysén	Chile Chico	Vertedero Puerto Bertrand	Dumpsite	Dumpsite
190	Aysén	Chile Chico	Vertedero Puerto Guadal	Open dump	Open dump
123	Aysén	Cisnes	Vertedero La Junta de Cisnes	Dumpsite	Dumpsite
136	Aysén	Cisnes	Vertedero Municipal Cisnes	Dumpsite	Dumpsite
179	Aysén	Cisnes	Vertedero Municipal Puerto Gala	Open dump	Open dump
180	Aysén	Cisnes	Vertedero Municipal Puerto Gaviota	Open dump	Open dump
181	Aysén	Cisnes	Vertedero Municipal Puerto Raúl Marín	Dumpsite	Dumpsite
36	Aysén	Cochrane	Centro de Gestión Residuos Sólidos Cochrane-Tortel	Open dump	Open dump
74	Aysén	Cochrane	Relleno Sanitario Municipalidad de Cochrane	Open dump	Sanitary landfill
146	Aysén	Cochrane	Vertedero Municipal de Cochrane	Open dump	Open dump
1	Aysén	Coyhaique	Basural Balmaceda	Open dump	Open dump
15	Aysén	Coyhaique	Basural El Blanco	Open dump	Open dump

ID	Region	Commune	Site name	Class 2005	Class 2022
34	Aysén	Coyhaique	Basural Villa Ortega	Open dump	Open dump
30	Aysén	Coyhaique	Basural Ñirehuao	Open dump	Open dump
38	Aysén	Coyhaique	Centro de Manejo de Residuos Coyhaique - Cemarc	Open dump	Sanitary landfill
73	Aysén	Guaitecas	Relleno Sanitario Melinka	Open dump	Open dump
125	Aysén	Lago Verde	Vertedero La Tapera	Dumpsite	Dumpsite
127	Aysén	Lago Verde	Vertedero Lago Verde	Open dump	Open dump
86	Aysén	O'Higgins	Relleno Sanitario Villa O´Higgins	Open dump	Open dump
31	Aysén	Río Ibáñez	Basural Puerto Sánchez	Open dump	Open dump
44	Aysén	Río Ibáñez	Relleno Sanitario Cerro Castillo	Sanitary landfill	Sanitary landfill
45	Aysén	Río Ibáñez	Relleno Sanitario Bahía Murta	Open dump	Open dump
77	Aysén	Río Ibáñez	Relleno Sanitario Puerto Ibáñez	Dumpsite	Dumpsite
79	Aysén	Río Ibáñez	Relleno Sanitario Río Tranquilo	Sanitary landfill	Sanitary landfill
135	Aysén	Tortel	Vertedero Municipal Caleta Tortel	Open dump	Open dump
141	Magallanes	Cabo de Hornos	Vertedero Municipal de Cabo de Hornos	Open dump	Open dump
33	Magallanes	Magallanes	Basural San Gregorio	Open dump	Open dump
159	Magallanes	Porvenir	Vertedero Municipal de Porvenir	Open dump	Open dump
160	Magallanes	Primavera	Vertedero Municipal De Primavera	Open dump	Open dump
184	Magallanes	Puerto Natales	Vertedero Natales	Dumpsite	Dumpsite
189	Magallanes	Puerto Natales	Vertedero Puerto Edén	Open dump	Open dump
176	Magallanes	Punta Arenas	Vertedero Municipal Leñadura	Dumpsite	Dumpsite
11	Magallanes	Tierra del Fuego	Basural de Puerto Toro	Open dump	Open dump
199	Magallanes	Timaukel	Vertedero Timaukel	Open dump	Open dump
98	Magallanes	Torres del Paine	Vertedero Cerro Castillo	Open dump	Open dump

Extract: the site registry is complete (all 207 sites); the classification columns show two years (2005 and 2022) of the annual site-status series. *Note:* classifications correspond to 2005 and 2022, illustrating the temporal evolution (30 sites were upgraded over the period, mostly from open dump or dumpsite to sanitary landfill); the full annual active-site status was derived from the SUBDERE 2013/2018/2024 catalogues for the FOD allocation. For the emission model, sanitary landfills are treated as managed (with CH_4 oxidation and recovery) and dumpsites and open dumps as unmanaged. Of the 207 sites, 185 carry point coordinates (UTM converted to lat/lon) used for gridding; individual coordinates are not listed here.

S3.6 Industrial disposal sites

Consolidated list of industrial waste-management/disposal facilities used to allocate regional industrial waste quantities to point sources. Facilities were compiled from the RETC establishment register (Transparency-Law request) and retained where present consistently over time. Table S3.6 lists the 238 facilities with their identifier, region and classification (sanitary landfill, dumpsite, or open dump).

Table S3.6. Industrial solid-waste disposal facilities: identifier, region and classification in 2005 and 2022.

Establishment ID	Region	Class 2005	Class 2022
244524	Arica y Parinacota	Not active	Dumpsite
5473154	Arica y Parinacota	Not active	Open dump
322291	Tarapacá	Dumpsite	Sanitary landfill
45	Tarapacá	Not active	Sanitary landfill
5461663	Tarapacá	Not active	Open dump
5461718	Tarapacá	Not active	Dumpsite
5461939	Tarapacá	Not active	Sanitary landfill
5462423	Tarapacá	Not active	Open dump
5464263	Tarapacá	Dumpsite	Sanitary landfill
5486067	Tarapacá	Not active	Sanitary landfill
80779	Tarapacá	Not active	Sanitary landfill
879723	Tarapacá	Dumpsite	Sanitary landfill
89013	Tarapacá	Not active	Sanitary landfill

Establishment ID	Region	Class 2005	Class 2022
2289604	Antofagasta	Not active	Sanitary landfill
2600	Antofagasta	Not active	Sanitary landfill
342720	Antofagasta	Not active	Sanitary landfill
3585	Antofagasta	Dumpsite	Dumpsite
359114	Antofagasta	Not active	Sanitary landfill
386175	Antofagasta	Dumpsite	Sanitary landfill
4585849	Antofagasta	Not active	Sanitary landfill
4803699	Antofagasta	Dumpsite	Sanitary landfill
4803700	Antofagasta	Not active	Sanitary landfill
4847	Antofagasta	Dumpsite	Sanitary landfill
5402844	Antofagasta	Dumpsite	Sanitary landfill
5440322	Antofagasta	Not active	Sanitary landfill
5453663	Antofagasta	Dumpsite	Sanitary landfill
5459478	Antofagasta	Not active	Sanitary landfill
5461385	Antofagasta	Dumpsite	Sanitary landfill
5461531	Antofagasta	Dumpsite	Dumpsite
5461653	Antofagasta	Not active	Sanitary landfill
5462303	Antofagasta	Not active	Sanitary landfill
5462378	Antofagasta	Not active	Dumpsite
5462379	Antofagasta	Dumpsite	Dumpsite
5470028	Antofagasta	Dumpsite	Dumpsite
5479785	Antofagasta	Not active	Sanitary landfill
5482604	Antofagasta	Not active	Sanitary landfill
5485914	Antofagasta	Not active	Sanitary landfill
5486096	Antofagasta	Not active	Sanitary landfill
5491543	Antofagasta	Not active	Sanitary landfill
64566	Antofagasta	Dumpsite	Sanitary landfill
69608	Antofagasta	Not active	Sanitary landfill
881991	Antofagasta	Not active	Sanitary landfill
881992	Antofagasta	Dumpsite	Dumpsite
881993	Antofagasta	Not active	Open dump
322306	Atacama	Dumpsite	Sanitary landfill
322365	Atacama	Not active	Sanitary landfill
323415	Atacama	Not active	Sanitary landfill
386202	Atacama	Dumpsite	Sanitary landfill
414080	Atacama	Dumpsite	Sanitary landfill
4507158	Atacama	Not active	Sanitary landfill
5440488	Atacama	Not active	Sanitary landfill
5458426	Atacama	Dumpsite	Sanitary landfill
5466270	Atacama	Dumpsite	Sanitary landfill
5480981	Atacama	Not active	Sanitary landfill
5484304	Atacama	Not active	Sanitary landfill
5485577	Atacama	Not active	Dumpsite
880197	Atacama	Not active	Sanitary landfill
5461047	Coquimbo	Dumpsite	Dumpsite
5461373	Coquimbo	Dumpsite	Sanitary landfill
5462051	Coquimbo	Not active	Sanitary landfill
5464915	Coquimbo	Not active	Dumpsite
5467323	Coquimbo	Not active	Dumpsite
5473631	Coquimbo	Not active	Sanitary landfill
5479311	Coquimbo	Not active	Sanitary landfill

Establishment ID	Region	Class 2005	Class 2022
5479787	Coquimbo	Not active	Dumpsite
5485519	Coquimbo	Not active	Dumpsite
5486593	Coquimbo	Not active	Dumpsite
879726	Coquimbo	Not active	Sanitary landfill
879731	Coquimbo	Not active	Dumpsite
96280	Coquimbo	Dumpsite	Dumpsite
4055171	Valparaíso	Not active	Sanitary landfill
5441928	Valparaíso	Not active	Sanitary landfill
5452216	Valparaíso	Dumpsite	Sanitary landfill
5452485	Valparaíso	Not active	Sanitary landfill
5458771	Valparaíso	Dumpsite	Dumpsite
5460838	Valparaíso	Dumpsite	Sanitary landfill
5461652	Valparaíso	Dumpsite	Dumpsite
5463094	Valparaíso	Dumpsite	Dumpsite
5465573	Valparaíso	Dumpsite	Dumpsite
5466461	Valparaíso	Not active	Dumpsite
5467294	Valparaíso	Not active	Sanitary landfill
5477167	Valparaíso	Not active	Sanitary landfill
5477168	Valparaíso	Not active	Sanitary landfill
5482483	Valparaíso	Not active	Sanitary landfill
5483940	Valparaíso	Not active	Dumpsite
6760	Valparaíso	Not active	Sanitary landfill
105675	Metropolitana	Not active	Sanitary landfill
2372	Metropolitana	Not active	Sanitary landfill
245136	Metropolitana	Not active	Dumpsite
3160981	Metropolitana	Not active	Sanitary landfill
319510	Metropolitana	Not active	Sanitary landfill
343016	Metropolitana	Not active	Sanitary landfill
3921963	Metropolitana	Not active	Sanitary landfill
4586042	Metropolitana	Not active	Sanitary landfill
4587547	Metropolitana	Not active	Sanitary landfill
4989	Metropolitana	Not active	Sanitary landfill
5441954	Metropolitana	Not active	Dumpsite
5453558	Metropolitana	Not active	Sanitary landfill
5453616	Metropolitana	Not active	Sanitary landfill
5457683	Metropolitana	Dumpsite	Sanitary landfill
5458093	Metropolitana	Dumpsite	Sanitary landfill
5458853	Metropolitana	Not active	Sanitary landfill
5461099	Metropolitana	Not active	Dumpsite
5461360	Metropolitana	Not active	Sanitary landfill
5461522	Metropolitana	Not active	Sanitary landfill
5461523	Metropolitana	Not active	Sanitary landfill
5461524	Metropolitana	Not active	Sanitary landfill
5461669	Metropolitana	Not active	Sanitary landfill
5461755	Metropolitana	Dumpsite	Dumpsite
5461926	Metropolitana	Not active	Sanitary landfill
5462541	Metropolitana	Not active	Sanitary landfill
5464301	Metropolitana	Not active	Sanitary landfill
5464363	Metropolitana	Not active	Sanitary landfill
5465719	Metropolitana	Not active	Sanitary landfill
5465982	Metropolitana	Open dump	Open dump

Establishment ID	Region	Class 2005	Class 2022
5466006	Metropolitana	Dumpsite	Dumpsite
5466504	Metropolitana	Not active	Sanitary landfill
5466658	Metropolitana	Not active	Sanitary landfill
5466728	Metropolitana	Not active	Sanitary landfill
5466772	Metropolitana	Dumpsite	Dumpsite
5467286	Metropolitana	Not active	Sanitary landfill
5467545	Metropolitana	Not active	Sanitary landfill
5468585	Metropolitana	Not active	Sanitary landfill
5469761	Metropolitana	Not active	Sanitary landfill
5469771	Metropolitana	Not active	Sanitary landfill
5470540	Metropolitana	Not active	Sanitary landfill
5471651	Metropolitana	Not active	Sanitary landfill
5472192	Metropolitana	Not active	Sanitary landfill
5473212	Metropolitana	Not active	Dumpsite
5474233	Metropolitana	Not active	Sanitary landfill
5478506	Metropolitana	Not active	Dumpsite
5479666	Metropolitana	Not active	Sanitary landfill
5480555	Metropolitana	Not active	Sanitary landfill
5482249	Metropolitana	Not active	Sanitary landfill
5484366	Metropolitana	Not active	Sanitary landfill
5955	Metropolitana	Not active	Sanitary landfill
7803	Metropolitana	Dumpsite	Sanitary landfill
78709	Metropolitana	Dumpsite	Sanitary landfill
88827	Metropolitana	Not active	Sanitary landfill
90327	Metropolitana	Not active	Sanitary landfill
9604	Metropolitana	Dumpsite	Sanitary landfill
97614	Metropolitana	Dumpsite	Sanitary landfill
3862963	O’Higgins	Not active	Sanitary landfill
4054478	O’Higgins	Dumpsite	Sanitary landfill
5452838	O’Higgins	Not active	Sanitary landfill
5457604	O’Higgins	Dumpsite	Sanitary landfill
5461587	O’Higgins	Not active	Sanitary landfill
5466764	O’Higgins	Not active	Sanitary landfill
5468692	O’Higgins	Dumpsite	Sanitary landfill
5469309	O’Higgins	Not active	Sanitary landfill
5472941	O’Higgins	Not active	Sanitary landfill
5478404	O’Higgins	Not active	Sanitary landfill
2396	Maule	Not active	Dumpsite
245025	Maule	Dumpsite	Sanitary landfill
3022592	Maule	Not active	Sanitary landfill
4587897	Maule	Dumpsite	Sanitary landfill
5461906	Maule	Not active	Sanitary landfill
5464026	Maule	Dumpsite	Dumpsite
6054	Maule	Dumpsite	Sanitary landfill
85016	Maule	Not active	Dumpsite
244575	Ñuble	Not active	Sanitary landfill
5469739	Ñuble	Not active	Sanitary landfill
85017	Ñuble	Not active	Dumpsite
1965224	Biobío	Not active	Sanitary landfill
2397	Biobío	Dumpsite	Dumpsite
3216	Biobío	Not active	Dumpsite

Establishment ID	Region	Class 2005	Class 2022
33161	Biobío	Dumpsite	Sanitary landfill
3522	Biobío	Not active	Dumpsite
4589480	Biobío	Dumpsite	Sanitary landfill
5453436	Biobío	Dumpsite	Sanitary landfill
5460810	Biobío	Dumpsite	Sanitary landfill
5461913	Biobío	Dumpsite	Dumpsite
5467276	Biobío	Not active	Dumpsite
5475406	Biobío	Not active	Dumpsite
5479845	Biobío	Not active	Sanitary landfill
5480176	Biobío	Not active	Sanitary landfill
5481980	Biobío	Not active	Sanitary landfill
5482328	Biobío	Not active	Sanitary landfill
5486529	Biobío	Not active	Sanitary landfill
633	Biobío	Dumpsite	Sanitary landfill
1965232	Araucanía	Dumpsite	Sanitary landfill
1965237	Araucanía	Not active	Sanitary landfill
322488	Araucanía	Dumpsite	Dumpsite
5460900	Araucanía	Not active	Sanitary landfill
5462349	Araucanía	Not active	Dumpsite
5465078	Araucanía	Dumpsite	Dumpsite
5465241	Araucanía	Not active	Open dump
5465242	Araucanía	Dumpsite	Dumpsite
5473727	Araucanía	Not active	Sanitary landfill
5478555	Araucanía	Not active	Sanitary landfill
5479790	Araucanía	Not active	Dumpsite
5480219	Araucanía	Not active	Sanitary landfill
5482128	Araucanía	Not active	Sanitary landfill
322183	Los Ríos	Not active	Dumpsite
4587637	Los Ríos	Not active	Dumpsite
5462283	Los Ríos	Not active	Dumpsite
5462376	Los Ríos	Not active	Dumpsite
5469337	Los Ríos	Not active	Dumpsite
85018	Los Ríos	Not active	Sanitary landfill
253477	Los Lagos	Not active	Sanitary landfill
44419	Los Lagos	Not active	Dumpsite
4587534	Los Lagos	Dumpsite	Dumpsite
5443290	Los Lagos	Dumpsite	Dumpsite
5460622	Los Lagos	Dumpsite	Dumpsite
5461519	Los Lagos	Dumpsite	Dumpsite
5461631	Los Lagos	Dumpsite	Dumpsite
5461689	Los Lagos	Open dump	Open dump
5462276	Los Lagos	Not active	Dumpsite
5463343	Los Lagos	Not active	Dumpsite
5463344	Los Lagos	Dumpsite	Dumpsite
5463456	Los Lagos	Not active	Dumpsite
5463787	Los Lagos	Dumpsite	Dumpsite
5463828	Los Lagos	Dumpsite	Dumpsite
5464814	Los Lagos	Dumpsite	Dumpsite
5464909	Los Lagos	Dumpsite	Sanitary landfill
5465154	Los Lagos	Not active	Dumpsite
5465162	Los Lagos	Dumpsite	Sanitary landfill

Establishment ID	Region	Class 2005	Class 2022
5465903	Los Lagos	Dumpsite	Dumpsite
5467326	Los Lagos	Not active	Dumpsite
5479786	Los Lagos	Not active	Dumpsite
5479789	Los Lagos	Not active	Dumpsite
5480584	Los Lagos	Not active	Dumpsite
5482440	Los Lagos	Not active	Sanitary landfill
5482694	Los Lagos	Not active	Open dump
59355	Los Lagos	Dumpsite	Dumpsite
911517	Los Lagos	Not active	Dumpsite
911611	Los Lagos	Not active	Dumpsite
912280	Los Lagos	Not active	Dumpsite
4848	Aysén	Not active	Dumpsite
5463347	Aysén	Not active	Sanitary landfill
5465110	Aysén	Not active	Dumpsite
5465986	Aysén	Dumpsite	Dumpsite
911201	Aysén	Not active	Sanitary landfill
3258677	Magallanes	Not active	Open dump
4085310	Magallanes	Not active	Dumpsite
5466567	Magallanes	Dumpsite	Dumpsite
5479791	Magallanes	Not active	Dumpsite
911618	Magallanes	Dumpsite	Dumpsite

Extract: the facility list is complete (all 238 sites); the classification columns show two years (2005 and 2022) of the annual series. *Note:* classifications correspond to 2005 and 2022; "Not active" denotes facilities not active or not reported in the RETC that year (industrial reporting expanded after 2015, so many facilities appear only in 2022). Managed = sanitary landfill, unmanaged = dumpsite and open dump. Each facility carries point coordinates (from the RETC register) used for gridding; coordinates are not listed here.

S3.7 Landfill CH_4 recovery (MMA)

Annual CH_4 recovery at sanitary landfills by region (2004–2022), applied as a recovery term (R) in the SWD balance. Only seven regions report non-zero recovery; all others are zero across the period.

Table S3.7. Landfill CH_4 recovery by region and year (kt CH_4 yr^{-1}). Regions with zero recovery over 2004–2022 are omitted.

Year	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	Los Lagos	National
2004	0.00	0.00	0.00	0.00	0.00	0.08	0.11	0.18
2005	0.00	0.00	0.00	0.00	0.00	0.08	0.11	0.18
2006	0.00	0.33	0.00	0.00	0.00	1.03	0.11	1.46
2007	0.00	2.22	13.24	2.38	0.00	4.55	0.11	22.49
2008	0.00	3.87	26.30	2.71	0.00	4.92	0.11	37.90
2009	0.06	5.26	39.50	3.00	0.00	4.53	0.11	52.46
2010	0.06	6.88	43.55	3.29	0.00	4.70	0.11	58.60
2011	0.06	7.00	45.11	3.56	0.00	5.34	0.11	61.18
2012	0.00	7.28	47.77	3.86	0.00	9.95	0.11	68.96
2013	0.00	0.64	48.06	0.12	0.08	7.25	0.11	56.25
2014	0.00	0.07	55.75	0.06	0.08	7.36	0.11	63.42
2015	0.00	0.84	50.00	0.06	0.08	7.98	0.11	59.06
2016	0.00	6.11	51.19	0.01	0.08	7.98	0.12	65.49
2017	0.00	6.45	45.46	0.00	0.08	4.32	0.24	56.56
2018	0.00	4.62	41.36	0.00	0.07	4.19	0.25	50.49
2019	0.00	3.44	44.67	0.00	0.12	3.54	0.29	52.06
2020	0.00	1.87	38.34	0.00	0.23	4.57	0.44	45.45
2021	0.00	1.87	38.34	0.00	0.23	4.57	0.44	45.45

Year	Coquimbo	Valparaíso	Metropolitana	O'Higgins	Maule	Biobío	Los Lagos	National
2022	0.00	1.87	38.34	0.00	0.23	4.57	0.44	45.45

S3.8 Wastewater-treatment-plant (PTAS) operational series

Operational series of wastewater-treatment plants (SISS, Transparency-Law request): treated volume, sludge, BOD, TOW, IPCC classification, CH_4 emission factor, removal fraction and coordinates, by plant and year (2005–2022). Table S3.8 lists the 314 plants with their IPCC classification and treated volume in 2005 and 2022.

Table S3.8. Wastewater-treatment plants: region, plant, IPCC classification and treated volume in 2005 and 2022 ($Mm^3\ yr^{-1}$).

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
Arica y Parinacota	ES - CHINCHORRO NORTE	Discharge to river/sea	10.2	12.79
Tarapacá	ES - BARRIO INDUSTRIAL (PUNTA NEGRA)	Discharge to river/sea	3.79	5.05
Tarapacá	ES - PLAYA BRAVA	Discharge to river/sea	4.06	12.87
Tarapacá	PTAS - ALTO HOSPICIO	Centralized	1.6	
Tarapacá	PTAS - HUARA	Centralized		0.05
Tarapacá	PTAS - LA TIRANA	Centralized		0.05
Tarapacá	PTAS - PICA	Centralized		0.32
Tarapacá	PTAS - POZO ALMONTE	Centralized	0.27	0.58
Tarapacá	PTAS - PUNTA GRUESA	Centralized		0.03
Antofagasta	ES - GRAN ANTOFAGASTA	Discharge to river/sea	15.38	27.11
Antofagasta	ES - MEJILLONES	Discharge to river/sea	0.31	0.88
Antofagasta	ES - TAL TAL	Discharge to river/sea	0.6	1.06
Antofagasta	ES - TOCOPILLA	Discharge to river/sea	0.81	1.42
Antofagasta	PTAS - BAQUEDANO	Centralized		0.06
Antofagasta	PTAS - CALAMA	Centralized	7.11	10.53
Antofagasta	PTAS - LODOS ANTOFAGASTA	Centralized		3.44
Antofagasta	PTAS - SAN PEDRO COLOSO	Centralized		0.02
Antofagasta	PTAS - SIERRA GORDA	Centralized		0.09
Atacama	ES - CHAÑARAL 9	No information		
Atacama	ES - CHAÑARAL 90	Discharge to river/sea		0.63
Atacama	ES - HUASCO	Discharge to river/sea	0.22	0.42
Atacama	PTAS - CALDERA	Centralized	0.82	1.31
Atacama	PTAS - COPIAPO	Centralized	7.21	10.31
Atacama	PTAS - DIEGO DE ALMAGRO	Centralized	0.33	0.45
Atacama	PTAS - EL SALADO 8	Centralized	0.02	
Atacama	PTAS - EL SALADO 80	Centralized		0.05
Atacama	PTAS - FREIRINA	Centralized	0.13	0.32
Atacama	PTAS - TIERRA AMARILLA	Centralized	0.65	0.7
Atacama	PTAS - VALLENAR	Centralized	5.6	4.22
Coquimbo	ES - COQUIMBO	Discharge to river/sea	4.84	12.2
Coquimbo	ES - LA SERENA	Discharge to river/sea	15.16	16.38
Coquimbo	ES - LOS VILOS	Discharge to river/sea	0.42	1.12
Coquimbo	PTAS - ALGARROBITO	Centralized	0.03	0.05
Coquimbo	PTAS - ANDACOLLO	Centralized	0.25	0.76
Coquimbo	PTAS - CANELA ALTA	Centralized	0.01	0.02
Coquimbo	PTAS - CANELA BAJA	Centralized	0.05	0.06
Coquimbo	PTAS - CHAÑARAL ALTO	Centralized	0.14	0.09
Coquimbo	PTAS - COMBARBALA	Centralized	0.24	0.33

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
Coquimbo	PTAS - EL PALQUI	Centralized	0.14	0.44
Coquimbo	PTAS - EL PEÑON	Centralized		0.04
Coquimbo	PTAS - GUANAQUEROS	Centralized		0.16
Coquimbo	PTAS - ILLAPEL	Centralized	0.3	1.04
Coquimbo	PTAS - MONTEPATRIA	Centralized	0.15	0.26
Coquimbo	PTAS - OVALLE	Centralized	4.7	5.7
Coquimbo	PTAS - PAIHUANO	Centralized	0.04	0.06
Coquimbo	PTAS - PERALILLO IV	Centralized	0.03	0.1
Coquimbo	PTAS - PICHIDANGUI	Centralized		0.06
Coquimbo	PTAS - PUNITAQUI	Centralized	0.18	0.31
Coquimbo	PTAS - SALAMANCA	Centralized	0.84	0.76
Coquimbo	PTAS - SOTAQUI	Centralized	0.05	0.12
Coquimbo	PTAS - TONGOY	Centralized	0.2	0.52
Coquimbo	PTAS - VICUÑA	Centralized	0.58	0.7
Valparaíso	ES - ALGARROBO	Discharge to river/sea	0.89	1.13
Valparaíso	ES - CARTAGENA	Discharge to river/sea	0.84	2.03
Valparaíso	ES - CONCON	Discharge to river/sea	1.43	2.62
Valparaíso	ES - DOS NORTE	Discharge to river/sea		25.03
Valparaíso	ES - EL TABO	Discharge to river/sea	0.91	1.68
Valparaíso	ES - HIGUERILLAS	Discharge to river/sea	0.82	1.83
Valparaíso	ES - LOMA LARGA	Discharge to river/sea	45.23	55.47
Valparaíso	ES - QUINTERO	Discharge to river/sea	1.28	2.04
Valparaíso	ES - SAN ANTONIO	Discharge to river/sea		5.48
Valparaíso	P. T.A.S DE LOS NOGALES	Facultative lagoon	0.4	
Valparaíso	PTAS - CABILDO	Centralized	0.42	0.59
Valparaíso	PTAS - CACHAGUA	Centralized	0.09	0.33
Valparaíso	PTAS - CASABLANCA	Centralized	0.8	1.18
Valparaíso	PTAS - CATEMU	Centralized	1	1.16
Valparaíso	PTAS - CURIMON	Centralized	0.04	0.15
Valparaíso	PTAS - LA LAGUNA	Centralized	0.07	0.29
Valparaíso	PTAS - LA LIGUA	Centralized	0.92	1.26
Valparaíso	PTAS - LLAY - LLAY	Centralized	1.24	1.19
Valparaíso	PTAS - LOS ANDES	Centralized	4.29	3.84
Valparaíso	PTAS - PAPUDO	Centralized	0.33	0.63
Valparaíso	PTAS - PETORCA	Centralized	0.06	0.16
Valparaíso	PTAS - PLACILLA V	Centralized	1.17	3.35
Valparaíso	PTAS - PUCHUNCAVI	Centralized	0.13	0.22
Valparaíso	PTAS - PUTAENDO	Centralized	0.22	0.43
Valparaíso	PTAS - QUILLOTA	Centralized	9.44	12.88
Valparaíso	PTAS - RINCONADA	Centralized	0.12	0.83
Valparaíso	PTAS - SAN ESTEBAN	Centralized	0.16	0.53
Valparaíso	PTAS - SAN FELIPE	Centralized	3.5	4.31
Valparaíso	PTAS - SANTA MARIA	Centralized	0.17	0.46
Valparaíso	PTAS - SANTA MARIA DEL MAR	Anaerobic reactor	0.06	0.13
Valparaíso	PTAS - SANTO DOMINGO	Centralized	0.18	0.56
Valparaíso	PTAS - ZAPALLAR 25	Centralized	0.11	0.16
Valparaíso	PTAS LOS MOLLES	Centralized		0.02
Valparaíso	PTAS La Orilla	Centralized		0.01
Metropolitana	NUEVA PLANTA LA CADELLADA	Centralized		7.41
Metropolitana	P.T.A.S DE CEXAS	Centralized	1.81	
Metropolitana	P.T.A.S DE ESMERALDA	Facultative lagoon	2.43	

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
Metropolitana	PTAS - BARRANCAS	Centralized	0.31	1.27
Metropolitana	PTAS - BUIN MAIPO	Centralized		4.31
Metropolitana	PTAS - CHICUREO	Centralized	0.25	
Metropolitana	PTAS - CURACAVÍ	Centralized		1.37
Metropolitana	PTAS - EL CHAMISERO	No information		
Metropolitana	PTAS - EL MANZANO	Centralized		0.17
Metropolitana	PTAS - EL MONTE	Centralized	1.08	2.87
Metropolitana	PTAS - EL PARRONAL	Centralized		1.3
Metropolitana	PTAS - EL TREBAL	Centralized	96.81	205.37
Metropolitana	PTAS - ESTACION BUIN	Centralized		0.51
Metropolitana	PTAS - HACIENDA BATUCO	Centralized		0.04
Metropolitana	PTAS - ISLA DE MAIPO	Centralized		1.46
Metropolitana	PTAS - IZARRA DE LO AGUIRRE	Centralized		0.39
Metropolitana	PTAS - JARDIN LO PRADO	Centralized	0.13	0.81
Metropolitana	PTAS - JARDINES DE LA ESTACIÓN	No information		
Metropolitana	PTAS - LA CADELLADA	Centralized	6.34	
Metropolitana	PTAS - LA FARFANA	Centralized	172.23	251.64
Metropolitana	PTAS - LA LEONERA	Centralized		0
Metropolitana	PTAS - LARAPINTA	Centralized	0.08	1.1
Metropolitana	PTAS - LAS HIGUERAS	Centralized		1.2
Metropolitana	PTAS - LOMAS DE LO AGUIRRE	Centralized		0.15
Metropolitana	PTAS - LOS TRAPENSES	Centralized	0.84	0.81
Metropolitana	PTAS - MELIPILLA	Centralized		6.42
Metropolitana	PTAS - PAINE	Centralized	1.62	4.44
Metropolitana	PTAS - POMAIRE	Shallow anaerobic lagoon	0.69	0.89
Metropolitana	PTAS - PUERTAS DE PADRE HURTADO	Centralized		1.64
Metropolitana	PTAS - QUILICURA	Centralized	3.09	3.13
Metropolitana	PTAS - SAN JOSE DE MAIPO	Centralized	0.4	0.56
Metropolitana	PTAS - SANTA ELENA	Centralized		0.38
Metropolitana	PTAS - SANTA LUZ	Centralized		0.59
Metropolitana	PTAS - SANTO TOMAS	Centralized		1.75
Metropolitana	PTAS - TALAGANTE	Centralized		10.98
Metropolitana	PTAS - TIL TIL	Centralized		0.35
Metropolitana	PTAS - TRACHISA	Centralized		0.65
Metropolitana	PTAS - VALDIVIA DE PAINE	Discharge to river/sea	0.42	0.31
Metropolitana	PTAS - VILLA GALILEA	Centralized	0.06	
Metropolitana	PTAS CANTILLANA	Centralized		0.02
O'Higgins	NUEVA PTAS - CHEPICA	Centralized		0.22
O'Higgins	P.T.A.S DE ROSARIO	Centralized	0.22	
O'Higgins	P.T.A.S. LAGUNAS ESTABILIACION, DE PALMILLA	Centralized	0.05	
O'Higgins	PTAS - CHEPICA	Centralized	0.29	
O'Higgins	PTAS - CHIMBARONGO	Centralized	0.76	1.07
O'Higgins	PTAS - COINCO	Centralized		0.09
O'Higgins	PTAS - COLTAUCO	Centralized		0.65
O'Higgins	PTAS - COYA	Centralized		0.04
O'Higgins	PTAS - DOÑIHUE	Centralized	2.03	1.53
O'Higgins	PTAS - LAS CABRAS	Centralized	0.55	0.66
O'Higgins	PTAS - LOLOL	Centralized	0.12	0.15
O'Higgins	PTAS - MALLOA	Centralized	0.13	0.18

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
O'Higgins	PTAS - NANCAGUA	Centralized	0.42	0.51
O'Higgins	PTAS - OLIVAR ALTO	Centralized	0.1	0.23
O'Higgins	PTAS - PERALILLO VI	Centralized	0.23	0.31
O'Higgins	PTAS - PEUMO	Centralized	0.9	0.7
O'Higgins	PTAS - PICHIDEGUA	Centralized	0.49	0.57
O'Higgins	PTAS - PICHILEMU	Centralized		1.27
O'Higgins	PTAS - PLACILLA VI	Centralized	0.54	0.4
O'Higgins	PTAS - POBLACION	Centralized	0.07	0.09
O'Higgins	PTAS - QUINTA DE TILCOCO	Centralized		0.41
O'Higgins	PTAS - RANCAGUA	Centralized	19.3	29.72
O'Higgins	PTAS - RENGO	Centralized	2.69	3.75
O'Higgins	PTAS - REQUINOA	Centralized	0.5	0.86
O'Higgins	PTAS - SAN FERNANDO	Centralized	3.48	5.87
O'Higgins	PTAS - SAN FRANCISCO	Centralized	1.66	1.91
O'Higgins	PTAS - SAN VICENTE	Centralized	0.81	1.63
O'Higgins	PTAS - SANTA CRUZ	Centralized	2.1	3.26
Maule	PTAS - CAUQUENES	Centralized	2.03	2.15
Maule	PTAS - CHANCO	Centralized		0.23
Maule	PTAS - CONSTITUCION	Centralized		2.58
Maule	PTAS - CURANIPE	Centralized	0.11	0.22
Maule	PTAS - CUREPTO	Centralized	0.17	0.16
Maule	PTAS - CURICO	Centralized	14.01	15.2
Maule	PTAS - DONA CARMEN	Centralized		0.14
Maule	PTAS - EMPEDRADO	Centralized	0.09	0.19
Maule	PTAS - GUALLECO	Centralized	0.02	0.02
Maule	PTAS - HUALAÑE	Centralized	0.29	0.52
Maule	PTAS - LICANTEN	Centralized		0.23
Maule	PTAS - LINARES	Centralized		16.23
Maule	PTAS - LONGAVI	Centralized	0.32	0.47
Maule	PTAS - LOS QUEÑES	Centralized	0.01	0.01
Maule	PTAS - MOLINA-LONTUE	Centralized		6.58
Maule	PTAS - PARRAL	Centralized	1.46	2.08
Maule	PTAS - PELARCO	Centralized		0.23
Maule	PTAS - PELLUHUE	Centralized	0.36	0.4
Maule	PTAS - PUTU	Centralized	0.05	0.08
Maule	PTAS - RAUCO	Centralized		0.54
Maule	PTAS - RETIRO	Centralized	0.29	0.38
Maule	PTAS - SAN CLEMENTE	Centralized	0.8	1.48
Maule	PTAS - SAN JAVIER	Centralized		2.63
Maule	PTAS - SAN RAFAEL	Centralized	0.2	0.36
Maule	PTAS - SARMIENTO	Centralized		0.69
Maule	PTAS - TALCA	Centralized		27.25
Maule	PTAS - TENO	Centralized	0.53	0.83
Maule	PTAS - VILLA ALEGRE	Centralized		0.97
Maule	PTAS - YERBAS BUENAS	Centralized	0.21	0.37
Maule	PTAS - ZAPALLAR 1007	Centralized		0.07
Ñuble	PTAS - BULNES	Centralized		0.73
Ñuble	PTAS - CHILLÁN	Centralized	13.33	17.4
Ñuble	PTAS - COBQUECURA	Centralized	0.03	0.1
Ñuble	PTAS - COELEMU	Centralized		0.54
Ñuble	PTAS - COIHUECO	Centralized	0.04	0.68

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
Ñuble	PTAS - EL CARMEN	Centralized		0.45
Ñuble	PTAS - LAS MARIPOSAS	Centralized		0.59
Ñuble	PTAS - NINHUE	Centralized		0.1
Ñuble	PTAS - PEMUCO	Centralized	0.14	0.86
Ñuble	PTAS - PINTO	Centralized		0.39
Ñuble	PTAS - QUILLÓN	Centralized	0.02	0.57
Ñuble	PTAS - QUIRIHUE	Centralized	0.35	0.75
Ñuble	PTAS - SAN CARLOS	Centralized	0.14	3
Ñuble	PTAS - SAN IGNACIO	Centralized	0.11	0.43
Ñuble	PTAS - SANTA CLARA	Centralized	0.08	0.25
Ñuble	PTAS - YUNGAY	Centralized	0.53	0.81
Ñuble	PTAS - ÑIPAS	Centralized		0.12
Biobío	ES - CORONEL NORTE	Discharge to river/sea		3.78
Biobío	ES - CORONEL SUR	Discharge to river/sea	3.11	3.9
Biobío	ES - LEBU	Discharge to river/sea		1.86
Biobío	ES - LOTA	Discharge to river/sea	2.34	2.13
Biobío	ES - PENCO	Discharge to river/sea	2.07	3.05
Biobío	ES - SAN PEDRO	Discharge to river/sea		6.77
Biobío	ES - SAN VICENTE	Discharge to river/sea	14.07	13.43
Biobío	ES - TOME	Discharge to river/sea	1.37	2.65
Biobío	PTAS - ARAUCO	Centralized	0.05	2.16
Biobío	PTAS - CABRERO	Centralized		1.51
Biobío	PTAS - CAÑETE	Centralized	1.03	1.1
Biobío	PTAS - CONTULMO	Centralized	0.31	0.34
Biobío	PTAS - CURANILAHUE	Centralized	1.88	1.89
Biobío	PTAS - DICHATO	Centralized		0.39
Biobío	PTAS - FLORIDA	Centralized		0.38
Biobío	PTAS - GRAN CONCEPCION	Centralized	35.82	36.25
Biobío	PTAS - HUALQUI	Centralized		0.87
Biobío	PTAS - HUEPIL	Centralized	0.4	0.78
Biobío	PTAS - LOS ALAMOS	Centralized	0.35	1.14
Biobío	PTAS - LOS ANGELES	Centralized	9.51	11.48
Biobío	PTAS - MONTE AGUILA	Centralized	0.32	0.55
Biobío	PTAS - MULCHÉN	Centralized	0.05	1.78
Biobío	PTAS - NACIMIENTO	Centralized	0.15	1.67
Biobío	PTAS - NEGRETE	Centralized		0.32
Biobío	PTAS - PARQUE INDUSTRIAL CORONEL	Centralized		3.78
Biobío	PTAS - PUNTA PARRA	Centralized		0.05
Biobío	PTAS - QUILACO	Centralized		0.14
Biobío	PTAS - QUILLECO	Centralized	0.08	0.2
Biobío	PTAS - SAN ROSENDO	Centralized	0.66	1.41
Biobío	PTAS - SANTA BARBARA	Centralized		0.59
Biobío	PTAS - SANTA JUANA	Centralized	0.26	0.59
Biobío	PTAS - YUMBEL	Centralized	0.05	0.98
Araucanía	PTAS - ANGOL	Discharge to river/sea		3.55
Araucanía	PTAS - CAPITAN PASTENE	Centralized	0.14	0.41
Araucanía	PTAS - CARAHUE	Discharge to river/sea		1
Araucanía	PTAS - CHERQUENCO	Centralized	0.1	0.21
Araucanía	PTAS - CHOLCHOL	Centralized		0.47
Araucanía	PTAS - COLLIPULLI	Discharge to river/sea		1.87

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
Araucanía	PTAS - CUNCO	Centralized		1.32
Araucanía	PTAS - CURACAUTÍN	Discharge to river/sea		1.73
Araucanía	PTAS - ERCILLA	Centralized	0.16	0.3
Araucanía	PTAS - GALVARINO	Centralized	0.37	0.49
Araucanía	PTAS - GORBEA	Centralized		1.02
Araucanía	PTAS - LABRANZA	Centralized	0.39	
Araucanía	PTAS - LASTARRIA	Centralized	0.12	0.39
Araucanía	PTAS - LAUTARO	Discharge to river/sea		2.8
Araucanía	PTAS - LONCOCHE	Discharge to river/sea		1.78
Araucanía	PTAS - LONQUIMAY	Centralized		0.48
Araucanía	PTAS - LOS SAUCES	Centralized	0.26	0.4
Araucanía	PTAS - LUMACO	Centralized	0.1	0.18
Araucanía	PTAS - MININCO	Centralized	0.17	0.2
Araucanía	PTAS - NUEVA IMPERIAL	Discharge to river/sea		1.93
Araucanía	PTAS - NUEVA LABRANZA	Centralized		1.39
Araucanía	PTAS - NUEVA TOLTEN	Centralized		0.36
Araucanía	PTAS - PILLANLELBUN	Centralized	0.06	0.31
Araucanía	PTAS - PITRUFQUEN	Discharge to river/sea		2.94
Araucanía	PTAS - PUCON	Centralized	3.86	3.13
Araucanía	PTAS - PUERTO SAAVEDRA	Centralized		0.59
Araucanía	PTAS - PUREN	Centralized	0.58	0.81
Araucanía	PTAS - QUITRATUÉ	Centralized	0.1	0.07
Araucanía	PTAS - RENAICO	Centralized		0.55
Araucanía	PTAS - TEMUCO	Centralized		29.54
Araucanía	PTAS - TRAIGUEN	Centralized	1.39	2.04
Araucanía	PTAS - VICTORIA	Centralized	3.33	3.94
Araucanía	PTAS - VILCUN	Centralized	0.21	0.57
Araucanía	PTAS - VILLARRICA	Discharge to river/sea		4.39
Los Ríos	PTAS - CORRAL	Centralized		0.31
Los Ríos	PTAS - FUTRONO	Centralized		0.35
Los Ríos	PTAS - LAGO RANCO	Centralized		0.18
Los Ríos	PTAS - LANCO	Centralized	0.85	1.24
Los Ríos	PTAS - LOS LAGOS	Centralized	0.55	0.66
Los Ríos	PTAS - MAFIL	Centralized	0.2	0.3
Los Ríos	PTAS - PAILLACO	Centralized	0.94	0.87
Los Ríos	PTAS - PANGUIPULLI	Centralized	0.71	1.34
Los Ríos	PTAS - RIO BUENO	Centralized	2.9	4.32
Los Ríos	PTAS - SAN JOSE DE LA MARIQUINA	Centralized	0.38	0.53
Los Ríos	PTAS - VALDIVIA	Discharge to river/sea	7.63	12.18
Los Lagos	EDAR CHAITEN	Centralized	0.37	
Los Lagos	ES - ACHAO	Discharge to river/sea	0.3	0.42
Los Lagos	ES - PUERTO MONTT	Discharge to river/sea	15.68	20.83
Los Lagos	PTAS - ANCUD	Centralized	2.15	3.13
Los Lagos	PTAS - CALBUCO	Centralized	0.9	1.55
Los Lagos	PTAS - CASTRO	Centralized	1.64	2.04
Los Lagos	PTAS - CHAITEN	Centralized		0.29
Los Lagos	PTAS - CHONCHI	Centralized	0.32	0.46
Los Lagos	PTAS - DALCAHUE	Centralized	0.5	0.45
Los Lagos	PTAS - FRESIA	Centralized	0.35	0.67
Los Lagos	PTAS - FRUTILLAR	Centralized	0.9	1.09
Los Lagos	PTAS - FUTALEUFU	Centralized		0.14

Region	Plant	IPCC class	Vol. 2005	Vol. 2022
Los Lagos	PTAS - LA VARA	Centralized		0.28
Los Lagos	PTAS - LLANQUIHUE	Centralized	3.05	4.42
Los Lagos	PTAS - LOS MUERMOS	Centralized	0.45	0.82
Los Lagos	PTAS - MAULLÍN	Centralized		0.24
Los Lagos	PTAS - OSORNO	Centralized	10.33	14.72
Los Lagos	PTAS - PURRANQUE	Centralized	0.75	1.1
Los Lagos	PTAS - QUELLON	Centralized	1.32	1.19
Los Lagos	PTAS - RIO NEGRO	Centralized	0.36	0.45
Los Lagos	PTAS - SAN PABLO	Centralized	0.31	0.42
Los Lagos	PTAS CHINQUIO	Centralized		0.05
Los Lagos	PTAS PANITAO	Centralized		0.15
Aysén	PTAS - BALMACEDA	Centralized		0.04
Aysén	PTAS - CHILE CHICO	Centralized	0.15	0.24
Aysén	PTAS - COCHRANE	Centralized	0.18	0.29
Aysén	PTAS - COYHAIQUE	Centralized	3.01	3.87
Aysén	PTAS - PUERTO AYSEN	Centralized	1.19	1.29
Aysén	PTAS - PUERTO CHACABUCO	Centralized	0.13	0.17
Aysén	PTAS - PUERTO CISNES	Centralized	0.19	0.25
Aysén	PTAS - PUERTO ING. IBAÑEZ	Centralized		0.05
Magallanes	ES - PORVENIR	Discharge to river/sea		0.89
Magallanes	ES - PUNTA ARENAS	Discharge to river/sea	9.88	10.24
Magallanes	PTAS - PUERTO NATALES	Centralized	1.53	2.66
None	PTAS - QUEPE	No information		0.01
None	PTAS - VALLE GRANDE	No information		

Extract: the plant list is complete (all 314 plants); treated volumes are shown for two years (2005 and 2022) of the full annual operational series (2005–2022). *Note:* blank cells denote plants not operating or not reported by SISS in that year. IPCC classification determines the CH_4 correction factor; only the treated fraction is volume-based, the remainder being estimated from population. Plant coordinates (UTM converted to lat/lon) are used for gridding but not listed here.

S3.9 System-use fractions

Fraction of the population using each sanitation system, by region and urban/rural area (CASEN and INE). These fractions split the population between collected (sewerage) and non-collected systems and, within the latter, identify septic tanks (the only non-collected system carrying NH_3). Table S3.9 gives the fractions for every year 2005–2022, region by region; fractions sum to 1 within each region, area and year.

Table S3.9. Sanitation system-use fractions by region, urban/rural area and year (2005–2022). Fractions sum to 1 within each region, area and year.

Arica y Parinacota

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.999	0.001	0.000	0.001	0.000	0.000	0.000
2006	Urban	0.999	0.001	0.000	0.001	0.000	0.000	0.000
2007	Urban	0.999	0.001	0.000	0.001	0.000	0.000	0.000
2008	Urban	0.999	0.001	0.000	0.001	0.000	0.000	0.000
2009	Urban	0.999	0.001	0.000	0.001	0.000	0.000	0.000
2010	Urban	0.997	0.002	0.000	0.001	0.000	0.000	0.000
2011	Urban	0.995	0.003	0.000	0.001	0.000	0.000	0.000
2012	Urban	0.994	0.003	0.000	0.001	0.000	0.001	0.000
2013	Urban	0.994	0.003	0.000	0.001	0.000	0.002	0.000
2014	Urban	0.996	0.002	0.000	0.000	0.000	0.002	0.000
2015	Urban	0.998	0.000	0.000	0.000	0.000	0.001	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2016	Urban	0.991	0.003	0.003	0.001	0.001	0.001	0.000
2017	Urban	0.983	0.006	0.006	0.002	0.001	0.001	0.000
2018	Urban	0.982	0.006	0.009	0.002	0.001	0.001	0.000
2019	Urban	0.980	0.006	0.011	0.001	0.001	0.001	0.000
2020	Urban	0.979	0.005	0.012	0.001	0.000	0.002	0.000
2021	Urban	0.979	0.005	0.014	0.000	0.000	0.002	0.000
2022	Urban	0.978	0.005	0.015	0.000	0.000	0.002	0.000
2005	Rural	0.134	0.083	0.344	0.311	0.000	0.127	0.000
2006	Rural	0.134	0.083	0.344	0.311	0.000	0.127	0.000
2007	Rural	0.134	0.083	0.344	0.311	0.000	0.127	0.000
2008	Rural	0.134	0.083	0.344	0.311	0.000	0.127	0.000
2009	Rural	0.134	0.083	0.344	0.311	0.000	0.127	0.000
2010	Rural	0.100	0.264	0.247	0.312	0.002	0.074	0.000
2011	Rural	0.068	0.435	0.157	0.313	0.005	0.024	0.000
2012	Rural	0.077	0.411	0.205	0.282	0.002	0.022	0.000
2013	Rural	0.087	0.389	0.251	0.253	0.000	0.020	0.000
2014	Rural	0.060	0.338	0.347	0.205	0.000	0.049	0.000
2015	Rural	0.035	0.290	0.439	0.159	0.000	0.077	0.000
2016	Rural	0.085	0.404	0.333	0.134	0.001	0.043	0.000
2017	Rural	0.135	0.521	0.225	0.109	0.002	0.009	0.000
2018	Rural	0.131	0.486	0.261	0.087	0.002	0.033	0.000
2019	Rural	0.128	0.454	0.293	0.068	0.001	0.055	0.000
2020	Rural	0.126	0.426	0.322	0.051	0.001	0.075	0.000
2021	Rural	0.123	0.401	0.347	0.036	0.000	0.092	0.000
2022	Rural	0.121	0.379	0.370	0.022	0.000	0.108	0.000

Tarapacá

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.958	0.016	0.009	0.010	0.000	0.007	0.000
2006	Urban	0.962	0.015	0.008	0.009	0.000	0.006	0.000
2007	Urban	0.967	0.013	0.007	0.007	0.000	0.006	0.000
2008	Urban	0.974	0.011	0.006	0.004	0.000	0.005	0.000
2009	Urban	0.982	0.008	0.005	0.000	0.000	0.005	0.000
2010	Urban	0.989	0.005	0.003	0.000	0.000	0.003	0.000
2011	Urban	0.995	0.002	0.001	0.000	0.000	0.001	0.000
2012	Urban	0.992	0.004	0.001	0.001	0.000	0.002	0.000
2013	Urban	0.989	0.006	0.001	0.002	0.000	0.002	0.000
2014	Urban	0.989	0.005	0.003	0.001	0.000	0.002	0.000
2015	Urban	0.989	0.005	0.004	0.000	0.000	0.002	0.000
2016	Urban	0.984	0.007	0.005	0.002	0.000	0.001	0.000
2017	Urban	0.979	0.009	0.006	0.004	0.001	0.001	0.000
2018	Urban	0.967	0.011	0.013	0.003	0.001	0.006	0.000
2019	Urban	0.955	0.012	0.020	0.002	0.000	0.010	0.000
2020	Urban	0.944	0.014	0.026	0.001	0.000	0.015	0.000
2021	Urban	0.934	0.015	0.032	0.001	0.000	0.019	0.000
2022	Urban	0.924	0.016	0.038	0.000	0.000	0.022	0.000
2005	Rural	0.174	0.311	0.136	0.263	0.000	0.115	0.000
2006	Rural	0.172	0.324	0.150	0.241	0.000	0.113	0.000
2007	Rural	0.168	0.341	0.169	0.212	0.000	0.110	0.000
2008	Rural	0.163	0.365	0.197	0.170	0.000	0.105	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2009	Rural	0.156	0.403	0.238	0.105	0.000	0.098	0.000
2010	Rural	0.232	0.316	0.212	0.159	0.000	0.081	0.000
2011	Rural	0.299	0.239	0.189	0.206	0.000	0.066	0.000
2012	Rural	0.356	0.275	0.181	0.149	0.000	0.040	0.000
2013	Rural	0.411	0.309	0.172	0.093	0.000	0.015	0.000
2014	Rural	0.336	0.439	0.123	0.079	0.000	0.023	0.000
2015	Rural	0.265	0.561	0.075	0.067	0.000	0.032	0.000
2016	Rural	0.236	0.347	0.157	0.197	0.003	0.053	0.006
2017	Rural	0.214	0.182	0.221	0.297	0.006	0.069	0.011
2018	Rural	0.244	0.235	0.210	0.240	0.005	0.057	0.009
2019	Rural	0.275	0.288	0.200	0.181	0.004	0.045	0.007
2020	Rural	0.307	0.343	0.189	0.121	0.002	0.033	0.005
2021	Rural	0.338	0.398	0.179	0.061	0.001	0.020	0.002
2022	Rural	0.371	0.454	0.168	0.000	0.000	0.008	0.000

Antofagasta

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.988	0.004	0.004	0.004	0.000	0.000	0.000
2006	Urban	0.987	0.004	0.004	0.003	0.000	0.001	0.000
2007	Urban	0.987	0.005	0.004	0.002	0.000	0.002	0.000
2008	Urban	0.987	0.005	0.004	0.001	0.000	0.003	0.000
2009	Urban	0.987	0.005	0.004	0.000	0.000	0.004	0.000
2010	Urban	0.990	0.004	0.002	0.001	0.000	0.003	0.000
2011	Urban	0.993	0.003	0.000	0.002	0.000	0.001	0.000
2012	Urban	0.995	0.003	0.001	0.001	0.000	0.001	0.000
2013	Urban	0.996	0.002	0.001	0.000	0.000	0.001	0.000
2014	Urban	0.995	0.002	0.001	0.000	0.000	0.001	0.000
2015	Urban	0.995	0.002	0.001	0.000	0.000	0.002	0.000
2016	Urban	0.995	0.002	0.001	0.001	0.000	0.002	0.000
2017	Urban	0.994	0.002	0.000	0.001	0.000	0.002	0.000
2018	Urban	0.987	0.007	0.001	0.001	0.000	0.004	0.000
2019	Urban	0.980	0.013	0.002	0.001	0.000	0.005	0.000
2020	Urban	0.973	0.017	0.003	0.000	0.000	0.006	0.000
2021	Urban	0.967	0.022	0.004	0.000	0.000	0.007	0.000
2022	Urban	0.961	0.026	0.004	0.000	0.000	0.008	0.000
2005	Rural	0.471	0.307	0.103	0.055	0.000	0.064	0.000
2006	Rural	0.402	0.360	0.123	0.051	0.000	0.064	0.000
2007	Rural	0.335	0.410	0.143	0.047	0.000	0.064	0.000
2008	Rural	0.272	0.458	0.162	0.044	0.000	0.064	0.000
2009	Rural	0.212	0.503	0.180	0.041	0.000	0.064	0.000
2010	Rural	0.238	0.485	0.175	0.055	0.000	0.047	0.000
2011	Rural	0.262	0.468	0.171	0.068	0.000	0.031	0.000
2012	Rural	0.407	0.355	0.142	0.071	0.000	0.024	0.000
2013	Rural	0.544	0.247	0.116	0.075	0.000	0.018	0.000
2014	Rural	0.417	0.284	0.153	0.117	0.001	0.028	0.000
2015	Rural	0.295	0.319	0.188	0.157	0.003	0.038	0.000
2016	Rural	0.350	0.282	0.162	0.095	0.019	0.087	0.005
2017	Rural	0.403	0.247	0.137	0.035	0.034	0.134	0.010
2018	Rural	0.346	0.359	0.102	0.024	0.021	0.142	0.006
2019	Rural	0.309	0.431	0.079	0.017	0.013	0.147	0.004

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2020	Rural	0.284	0.480	0.064	0.012	0.007	0.150	0.002
2021	Rural	0.266	0.517	0.052	0.009	0.003	0.153	0.001
2022	Rural	0.251	0.544	0.044	0.006	0.000	0.155	0.000

Atacama

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.983	0.001	0.003	0.009	0.000	0.003	0.001
2006	Urban	0.982	0.003	0.004	0.007	0.000	0.004	0.001
2007	Urban	0.980	0.004	0.005	0.006	0.000	0.004	0.001
2008	Urban	0.979	0.006	0.006	0.004	0.000	0.005	0.000
2009	Urban	0.977	0.007	0.008	0.003	0.000	0.005	0.000
2010	Urban	0.985	0.006	0.004	0.002	0.000	0.003	0.000
2011	Urban	0.992	0.005	0.001	0.001	0.000	0.001	0.000
2012	Urban	0.976	0.007	0.015	0.002	0.000	0.000	0.000
2013	Urban	0.960	0.009	0.029	0.002	0.000	0.000	0.000
2014	Urban	0.969	0.009	0.016	0.004	0.000	0.002	0.000
2015	Urban	0.978	0.009	0.003	0.005	0.000	0.004	0.000
2016	Urban	0.982	0.006	0.002	0.004	0.000	0.005	0.000
2017	Urban	0.987	0.003	0.002	0.002	0.000	0.006	0.000
2018	Urban	0.971	0.011	0.007	0.002	0.000	0.009	0.000
2019	Urban	0.956	0.019	0.011	0.001	0.000	0.012	0.000
2020	Urban	0.941	0.027	0.016	0.001	0.000	0.015	0.000
2021	Urban	0.927	0.034	0.020	0.000	0.000	0.018	0.000
2022	Urban	0.914	0.041	0.024	0.000	0.000	0.020	0.000
2005	Rural	0.087	0.334	0.160	0.400	0.000	0.017	0.002
2006	Rural	0.153	0.351	0.139	0.334	0.000	0.021	0.002
2007	Rural	0.218	0.368	0.119	0.269	0.000	0.026	0.001
2008	Rural	0.281	0.384	0.099	0.205	0.000	0.030	0.000
2009	Rural	0.343	0.400	0.080	0.143	0.000	0.034	0.000
2010	Rural	0.307	0.433	0.085	0.146	0.000	0.030	0.000
2011	Rural	0.271	0.465	0.090	0.149	0.000	0.025	0.000
2012	Rural	0.331	0.469	0.070	0.102	0.000	0.027	0.000
2013	Rural	0.388	0.473	0.052	0.058	0.001	0.028	0.000
2014	Rural	0.334	0.510	0.045	0.089	0.002	0.020	0.000
2015	Rural	0.281	0.546	0.037	0.120	0.003	0.012	0.000
2016	Rural	0.311	0.478	0.106	0.085	0.006	0.015	0.000
2017	Rural	0.339	0.412	0.171	0.052	0.009	0.018	0.000
2018	Rural	0.323	0.457	0.152	0.040	0.007	0.021	0.000
2019	Rural	0.307	0.499	0.135	0.030	0.005	0.024	0.000
2020	Rural	0.293	0.540	0.118	0.019	0.003	0.027	0.000
2021	Rural	0.279	0.578	0.101	0.009	0.002	0.030	0.000
2022	Rural	0.266	0.615	0.086	0.000	0.000	0.033	0.000

Coquimbo

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.946	0.024	0.001	0.022	0.000	0.006	0.000
2006	Urban	0.950	0.024	0.002	0.018	0.000	0.006	0.000
2007	Urban	0.954	0.023	0.003	0.014	0.000	0.006	0.000
2008	Urban	0.958	0.023	0.004	0.010	0.000	0.005	0.000
2009	Urban	0.961	0.023	0.005	0.006	0.000	0.005	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2010	Urban	0.976	0.014	0.003	0.004	0.000	0.003	0.000
2011	Urban	0.990	0.004	0.002	0.002	0.000	0.002	0.000
2012	Urban	0.975	0.021	0.001	0.001	0.000	0.001	0.000
2013	Urban	0.961	0.036	0.000	0.001	0.000	0.001	0.000
2014	Urban	0.973	0.022	0.001	0.002	0.000	0.001	0.000
2015	Urban	0.984	0.009	0.003	0.003	0.000	0.002	0.000
2016	Urban	0.981	0.008	0.002	0.004	0.002	0.002	0.000
2017	Urban	0.979	0.008	0.002	0.006	0.003	0.002	0.000
2018	Urban	0.977	0.009	0.002	0.005	0.003	0.006	0.000
2019	Urban	0.974	0.010	0.002	0.003	0.002	0.009	0.000
2020	Urban	0.972	0.011	0.002	0.002	0.001	0.012	0.000
2021	Urban	0.969	0.012	0.002	0.001	0.001	0.015	0.000
2022	Urban	0.967	0.013	0.002	0.000	0.000	0.018	0.000
2005	Rural	0.219	0.365	0.094	0.300	0.000	0.020	0.001
2006	Rural	0.234	0.384	0.088	0.272	0.000	0.022	0.001
2007	Rural	0.248	0.403	0.082	0.243	0.000	0.023	0.001
2008	Rural	0.262	0.422	0.077	0.215	0.000	0.025	0.000
2009	Rural	0.276	0.440	0.071	0.187	0.000	0.026	0.000
2010	Rural	0.280	0.430	0.096	0.178	0.000	0.016	0.000
2011	Rural	0.284	0.419	0.122	0.170	0.000	0.005	0.000
2012	Rural	0.289	0.469	0.099	0.136	0.000	0.007	0.000
2013	Rural	0.294	0.518	0.077	0.102	0.000	0.009	0.000
2014	Rural	0.272	0.531	0.074	0.112	0.000	0.012	0.000
2015	Rural	0.249	0.544	0.071	0.121	0.000	0.014	0.000
2016	Rural	0.216	0.541	0.131	0.090	0.000	0.022	0.000
2017	Rural	0.183	0.537	0.190	0.059	0.001	0.030	0.000
2018	Rural	0.193	0.552	0.158	0.046	0.001	0.050	0.000
2019	Rural	0.203	0.566	0.127	0.034	0.001	0.070	0.000
2020	Rural	0.212	0.579	0.097	0.023	0.001	0.089	0.000
2021	Rural	0.221	0.591	0.069	0.011	0.001	0.108	0.000
2022	Rural	0.229	0.604	0.041	0.001	0.000	0.125	0.000

Valparaíso

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.904	0.064	0.014	0.013	0.000	0.006	0.000
2006	Urban	0.903	0.065	0.011	0.015	0.000	0.007	0.000
2007	Urban	0.902	0.065	0.009	0.016	0.000	0.008	0.000
2008	Urban	0.901	0.066	0.007	0.018	0.000	0.008	0.000
2009	Urban	0.900	0.067	0.004	0.020	0.000	0.009	0.000
2010	Urban	0.933	0.045	0.003	0.011	0.000	0.006	0.000
2011	Urban	0.966	0.025	0.003	0.003	0.000	0.003	0.000
2012	Urban	0.955	0.031	0.004	0.004	0.000	0.004	0.001
2013	Urban	0.944	0.038	0.006	0.005	0.000	0.006	0.001
2014	Urban	0.946	0.038	0.006	0.004	0.000	0.005	0.001
2015	Urban	0.947	0.037	0.007	0.003	0.000	0.005	0.000
2016	Urban	0.953	0.032	0.005	0.003	0.002	0.005	0.000
2017	Urban	0.959	0.027	0.003	0.002	0.004	0.004	0.000
2018	Urban	0.954	0.031	0.003	0.002	0.003	0.006	0.000
2019	Urban	0.950	0.035	0.004	0.001	0.002	0.008	0.000
2020	Urban	0.945	0.039	0.004	0.001	0.002	0.009	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2021	Urban	0.941	0.043	0.004	0.000	0.001	0.011	0.000
2022	Urban	0.936	0.046	0.005	0.000	0.000	0.012	0.000
2005	Rural	-0.004	0.713	0.078	0.197	0.000	0.015	0.000
2006	Rural	0.114	0.638	0.070	0.162	0.000	0.015	0.000
2007	Rural	0.230	0.565	0.062	0.128	0.000	0.015	0.000
2008	Rural	0.343	0.493	0.054	0.095	0.000	0.014	0.000
2009	Rural	0.455	0.423	0.046	0.063	0.000	0.014	0.000
2010	Rural	0.308	0.554	0.055	0.072	0.000	0.010	0.000
2011	Rural	0.171	0.676	0.064	0.081	0.000	0.007	0.000
2012	Rural	0.167	0.688	0.071	0.070	0.000	0.004	0.000
2013	Rural	0.163	0.700	0.077	0.058	0.000	0.001	0.000
2014	Rural	0.171	0.713	0.060	0.050	0.000	0.006	0.000
2015	Rural	0.179	0.725	0.043	0.042	0.000	0.011	0.000
2016	Rural	0.196	0.662	0.070	0.052	0.002	0.019	0.000
2017	Rural	0.212	0.601	0.097	0.061	0.003	0.026	0.001
2018	Rural	0.206	0.632	0.083	0.049	0.003	0.028	0.000
2019	Rural	0.199	0.662	0.069	0.037	0.003	0.030	0.000
2020	Rural	0.193	0.692	0.055	0.025	0.003	0.032	0.000
2021	Rural	0.187	0.721	0.042	0.013	0.003	0.034	0.000
2022	Rural	0.181	0.750	0.029	0.002	0.003	0.036	0.000

Metropolitana

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.957	0.015	0.004	0.002	0.000	0.022	0.001
2006	Urban	0.960	0.016	0.003	0.002	0.000	0.018	0.000
2007	Urban	0.963	0.017	0.003	0.002	0.000	0.015	0.000
2008	Urban	0.966	0.018	0.002	0.002	0.000	0.011	0.000
2009	Urban	0.969	0.019	0.002	0.002	0.000	0.008	0.000
2010	Urban	0.977	0.015	0.001	0.001	0.000	0.005	0.000
2011	Urban	0.984	0.012	0.001	0.001	0.000	0.002	0.000
2012	Urban	0.981	0.014	0.001	0.000	0.000	0.003	0.000
2013	Urban	0.978	0.017	0.001	0.000	0.000	0.004	0.001
2014	Urban	0.982	0.013	0.001	0.000	0.000	0.003	0.000
2015	Urban	0.986	0.010	0.001	0.000	0.000	0.003	0.000
2016	Urban	0.983	0.010	0.001	0.001	0.002	0.003	0.000
2017	Urban	0.981	0.010	0.001	0.003	0.003	0.003	0.000
2018	Urban	0.981	0.011	0.001	0.002	0.002	0.003	0.000
2019	Urban	0.981	0.012	0.001	0.002	0.002	0.003	0.000
2020	Urban	0.981	0.013	0.001	0.001	0.001	0.003	0.000
2021	Urban	0.981	0.013	0.001	0.001	0.001	0.003	0.000
2022	Urban	0.981	0.014	0.001	0.000	0.000	0.004	0.000
2005	Rural	0.167	0.553	0.098	0.116	0.000	0.051	0.015
2006	Rural	0.211	0.547	0.086	0.101	0.000	0.044	0.011
2007	Rural	0.253	0.542	0.075	0.086	0.000	0.037	0.007
2008	Rural	0.294	0.537	0.064	0.072	0.000	0.030	0.004
2009	Rural	0.334	0.532	0.053	0.058	0.000	0.023	0.000
2010	Rural	0.301	0.536	0.075	0.070	0.000	0.019	0.000
2011	Rural	0.272	0.539	0.094	0.081	0.000	0.015	0.000
2012	Rural	0.222	0.624	0.071	0.069	0.004	0.010	0.000
2013	Rural	0.173	0.708	0.049	0.058	0.007	0.005	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2014	Rural	0.189	0.698	0.058	0.043	0.005	0.006	0.000
2015	Rural	0.204	0.690	0.067	0.029	0.004	0.006	0.000
2016	Rural	0.206	0.695	0.058	0.032	0.002	0.006	0.001
2017	Rural	0.207	0.701	0.048	0.034	0.001	0.007	0.001
2018	Rural	0.193	0.715	0.051	0.027	0.001	0.012	0.001
2019	Rural	0.180	0.728	0.053	0.020	0.001	0.017	0.001
2020	Rural	0.168	0.740	0.056	0.013	0.001	0.022	0.000
2021	Rural	0.157	0.751	0.058	0.007	0.001	0.026	0.000
2022	Rural	0.147	0.761	0.060	0.002	0.000	0.030	0.000

O'Higgins

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.859	0.107	0.005	0.027	0.000	0.003	0.000
2006	Urban	0.853	0.107	0.008	0.026	0.000	0.005	0.000
2007	Urban	0.848	0.108	0.011	0.026	0.000	0.007	0.000
2008	Urban	0.843	0.108	0.013	0.025	0.000	0.010	0.000
2009	Urban	0.839	0.109	0.016	0.024	0.000	0.012	0.000
2010	Urban	0.888	0.077	0.012	0.015	0.000	0.008	0.000
2011	Urban	0.936	0.045	0.008	0.006	0.000	0.004	0.000
2012	Urban	0.936	0.046	0.006	0.007	0.000	0.005	0.000
2013	Urban	0.935	0.047	0.005	0.008	0.000	0.006	0.000
2014	Urban	0.926	0.057	0.004	0.007	0.000	0.006	0.000
2015	Urban	0.917	0.067	0.004	0.006	0.000	0.006	0.000
2016	Urban	0.920	0.066	0.005	0.004	0.000	0.004	0.000
2017	Urban	0.924	0.064	0.006	0.002	0.001	0.003	0.000
2018	Urban	0.919	0.068	0.007	0.002	0.001	0.003	0.000
2019	Urban	0.915	0.071	0.008	0.001	0.000	0.004	0.000
2020	Urban	0.911	0.074	0.009	0.001	0.000	0.005	0.000
2021	Urban	0.907	0.077	0.010	0.001	0.000	0.005	0.000
2022	Urban	0.903	0.080	0.011	0.000	0.000	0.006	0.000
2005	Rural	0.084	0.503	0.043	0.352	0.000	0.018	0.000
2006	Rural	0.098	0.531	0.059	0.295	0.000	0.017	0.000
2007	Rural	0.112	0.558	0.074	0.240	0.000	0.016	0.000
2008	Rural	0.125	0.585	0.090	0.185	0.000	0.015	0.000
2009	Rural	0.139	0.612	0.105	0.132	0.000	0.013	0.000
2010	Rural	0.127	0.637	0.103	0.119	0.000	0.014	0.000
2011	Rural	0.115	0.662	0.101	0.106	0.000	0.015	0.000
2012	Rural	0.144	0.664	0.076	0.097	0.001	0.017	0.001
2013	Rural	0.173	0.665	0.051	0.089	0.002	0.019	0.001
2014	Rural	0.194	0.678	0.050	0.063	0.001	0.014	0.001
2015	Rural	0.214	0.691	0.049	0.038	0.000	0.008	0.000
2016	Rural	0.180	0.691	0.084	0.033	0.001	0.010	0.001
2017	Rural	0.145	0.691	0.119	0.028	0.003	0.012	0.002
2018	Rural	0.134	0.720	0.105	0.024	0.002	0.013	0.002
2019	Rural	0.122	0.750	0.090	0.021	0.002	0.014	0.002
2020	Rural	0.110	0.780	0.075	0.017	0.001	0.016	0.001
2021	Rural	0.098	0.812	0.059	0.013	0.001	0.017	0.001
2022	Rural	0.085	0.845	0.043	0.009	0.000	0.018	0.000

Maule

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.851	0.068	0.024	0.050	0.000	0.007	0.000
2006	Urban	0.875	0.060	0.019	0.039	0.000	0.007	0.000
2007	Urban	0.898	0.052	0.013	0.029	0.000	0.007	0.000
2008	Urban	0.921	0.045	0.008	0.018	0.000	0.007	0.000
2009	Urban	0.943	0.037	0.003	0.008	0.000	0.008	0.000
2010	Urban	0.949	0.032	0.003	0.008	0.000	0.008	0.000
2011	Urban	0.955	0.026	0.002	0.009	0.000	0.009	0.000
2012	Urban	0.960	0.026	0.002	0.006	0.000	0.005	0.000
2013	Urban	0.965	0.027	0.002	0.003	0.000	0.002	0.000
2014	Urban	0.967	0.025	0.002	0.003	0.000	0.003	0.000
2015	Urban	0.968	0.023	0.002	0.003	0.000	0.003	0.000
2016	Urban	0.968	0.023	0.003	0.004	0.000	0.003	0.001
2017	Urban	0.968	0.022	0.003	0.004	0.000	0.002	0.001
2018	Urban	0.967	0.024	0.002	0.003	0.000	0.002	0.001
2019	Urban	0.965	0.027	0.002	0.003	0.000	0.003	0.001
2020	Urban	0.964	0.029	0.001	0.002	0.000	0.003	0.000
2021	Urban	0.963	0.031	0.001	0.001	0.000	0.004	0.000
2022	Urban	0.962	0.033	0.000	0.000	0.000	0.004	0.000
2005	Rural	0.062	0.495	0.091	0.345	0.000	0.006	0.000
2006	Rural	0.117	0.485	0.089	0.298	0.000	0.010	0.000
2007	Rural	0.172	0.474	0.087	0.252	0.000	0.014	0.000
2008	Rural	0.226	0.464	0.086	0.206	0.000	0.018	0.000
2009	Rural	0.280	0.454	0.084	0.160	0.000	0.022	0.000
2010	Rural	0.266	0.475	0.065	0.173	0.000	0.020	0.000
2011	Rural	0.253	0.497	0.046	0.185	0.001	0.018	0.000
2012	Rural	0.245	0.537	0.051	0.151	0.000	0.016	0.000
2013	Rural	0.236	0.577	0.055	0.117	0.000	0.014	0.001
2014	Rural	0.242	0.610	0.043	0.090	0.000	0.015	0.000
2015	Rural	0.247	0.643	0.031	0.063	0.000	0.015	0.000
2016	Rural	0.246	0.613	0.059	0.066	0.002	0.014	0.001
2017	Rural	0.244	0.583	0.085	0.068	0.003	0.013	0.003
2018	Rural	0.240	0.607	0.078	0.057	0.003	0.013	0.002
2019	Rural	0.235	0.632	0.070	0.045	0.002	0.014	0.002
2020	Rural	0.230	0.658	0.062	0.032	0.001	0.014	0.001
2021	Rural	0.225	0.687	0.053	0.019	0.001	0.015	0.001
2022	Rural	0.220	0.717	0.044	0.004	0.000	0.015	0.000

Ñuble

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.917	0.050	0.014	0.016	0.000	0.002	0.000
2006	Urban	0.922	0.049	0.012	0.014	0.000	0.003	0.000
2007	Urban	0.926	0.048	0.010	0.012	0.000	0.004	0.000
2008	Urban	0.931	0.047	0.008	0.010	0.000	0.004	0.000
2009	Urban	0.935	0.046	0.006	0.008	0.000	0.005	0.000
2010	Urban	0.940	0.044	0.005	0.007	0.000	0.004	0.000
2011	Urban	0.945	0.042	0.003	0.007	0.000	0.003	0.000
2012	Urban	0.939	0.049	0.003	0.006	0.000	0.003	0.000
2013	Urban	0.934	0.056	0.002	0.005	0.000	0.002	0.000
2014	Urban	0.934	0.056	0.002	0.005	0.000	0.002	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2015	Urban	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2016	Urban	0.959	0.031	0.004	0.002	0.002	0.002	0.000
2017	Urban	0.959	0.031	0.004	0.002	0.002	0.002	0.000
2018	Urban	0.949	0.039	0.004	0.002	0.002	0.005	0.000
2019	Urban	0.940	0.046	0.003	0.002	0.001	0.007	0.000
2020	Urban	0.931	0.053	0.003	0.002	0.001	0.010	0.000
2021	Urban	0.923	0.060	0.003	0.001	0.000	0.012	0.000
2022	Urban	0.915	0.066	0.002	0.001	0.000	0.015	0.000
2005	Rural	0.073	0.363	0.128	0.396	0.000	0.030	0.011
2006	Rural	0.077	0.406	0.118	0.364	0.000	0.026	0.008
2007	Rural	0.082	0.449	0.108	0.332	0.000	0.023	0.005
2008	Rural	0.087	0.492	0.099	0.300	0.000	0.019	0.003
2009	Rural	0.092	0.535	0.089	0.268	0.000	0.016	0.000
2010	Rural	0.091	0.564	0.096	0.237	0.001	0.011	0.000
2011	Rural	0.091	0.591	0.103	0.207	0.001	0.007	0.000
2012	Rural	0.077	0.661	0.089	0.164	0.002	0.007	0.000
2013	Rural	0.064	0.730	0.075	0.121	0.003	0.007	0.000
2014	Rural	0.064	0.730	0.075	0.121	0.003	0.007	0.000
2015	Rural	0.000	0.000	0.000	0.000	0.000	0.000	0.000
2016	Rural	0.104	0.691	0.109	0.083	0.001	0.012	0.000
2017	Rural	0.104	0.691	0.109	0.083	0.001	0.012	0.000
2018	Rural	0.108	0.709	0.097	0.066	0.001	0.019	0.000
2019	Rural	0.113	0.727	0.085	0.049	0.001	0.025	0.000
2020	Rural	0.117	0.744	0.074	0.033	0.000	0.031	0.000
2021	Rural	0.121	0.761	0.063	0.018	0.000	0.037	0.000
2022	Rural	0.125	0.777	0.053	0.003	0.000	0.042	0.000

Biobío

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.909	0.037	0.006	0.033	0.000	0.014	0.000
2006	Urban	0.909	0.043	0.005	0.028	0.000	0.016	0.000
2007	Urban	0.909	0.048	0.005	0.022	0.000	0.017	0.000
2008	Urban	0.908	0.053	0.004	0.017	0.000	0.018	0.000
2009	Urban	0.908	0.057	0.004	0.011	0.000	0.019	0.000
2010	Urban	0.936	0.037	0.004	0.009	0.000	0.014	0.000
2011	Urban	0.964	0.017	0.003	0.007	0.000	0.008	0.000
2012	Urban	0.962	0.021	0.003	0.007	0.000	0.007	0.000
2013	Urban	0.959	0.026	0.004	0.006	0.000	0.005	0.001
2014	Urban	0.962	0.027	0.003	0.004	0.000	0.005	0.000
2015	Urban	0.964	0.027	0.002	0.002	0.000	0.005	0.000
2016	Urban	0.963	0.025	0.003	0.003	0.002	0.004	0.000
2017	Urban	0.963	0.022	0.003	0.004	0.004	0.004	0.000
2018	Urban	0.964	0.022	0.003	0.003	0.003	0.004	0.000
2019	Urban	0.964	0.022	0.003	0.002	0.003	0.005	0.000
2020	Urban	0.965	0.023	0.004	0.002	0.002	0.005	0.000
2021	Urban	0.965	0.023	0.004	0.001	0.001	0.006	0.000
2022	Urban	0.966	0.023	0.004	0.000	0.000	0.006	0.000
2005	Rural	0.050	0.329	0.102	0.498	0.000	0.022	0.000
2006	Rural	0.055	0.385	0.099	0.439	0.000	0.022	0.000
2007	Rural	0.060	0.441	0.096	0.381	0.000	0.022	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2008	Rural	0.066	0.497	0.093	0.323	0.000	0.022	0.000
2009	Rural	0.071	0.553	0.090	0.265	0.000	0.022	0.000
2010	Rural	0.081	0.548	0.095	0.260	0.001	0.016	0.000
2011	Rural	0.091	0.543	0.100	0.255	0.002	0.009	0.000
2012	Rural	0.086	0.582	0.092	0.231	0.001	0.007	0.001
2013	Rural	0.081	0.621	0.084	0.207	0.000	0.005	0.001
2014	Rural	0.086	0.689	0.074	0.141	0.001	0.009	0.000
2015	Rural	0.088	0.725	0.069	0.106	0.002	0.011	0.000
2016	Rural	0.100	0.697	0.083	0.104	0.002	0.014	0.000
2017	Rural	0.120	0.648	0.107	0.102	0.002	0.021	0.001
2018	Rural	0.118	0.673	0.098	0.084	0.002	0.025	0.001
2019	Rural	0.115	0.699	0.088	0.067	0.001	0.029	0.001
2020	Rural	0.113	0.725	0.078	0.049	0.001	0.034	0.000
2021	Rural	0.111	0.751	0.068	0.031	0.001	0.038	0.000
2022	Rural	0.109	0.778	0.057	0.012	0.000	0.043	0.000

Araucanía

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.878	0.083	0.006	0.027	0.000	0.006	0.001
2006	Urban	0.896	0.070	0.005	0.022	0.000	0.006	0.001
2007	Urban	0.914	0.057	0.005	0.018	0.000	0.006	0.000
2008	Urban	0.931	0.045	0.004	0.013	0.000	0.006	0.000
2009	Urban	0.949	0.032	0.004	0.009	0.000	0.006	0.000
2010	Urban	0.962	0.024	0.003	0.007	0.001	0.004	0.000
2011	Urban	0.974	0.016	0.002	0.005	0.001	0.002	0.000
2012	Urban	0.979	0.014	0.001	0.003	0.001	0.002	0.000
2013	Urban	0.984	0.012	0.000	0.002	0.000	0.002	0.000
2014	Urban	0.974	0.018	0.002	0.004	0.000	0.002	0.000
2015	Urban	0.964	0.023	0.004	0.006	0.000	0.002	0.000
2016	Urban	0.967	0.019	0.005	0.006	0.000	0.002	0.000
2017	Urban	0.971	0.015	0.005	0.006	0.001	0.002	0.000
2018	Urban	0.969	0.017	0.005	0.005	0.001	0.003	0.000
2019	Urban	0.967	0.019	0.004	0.004	0.000	0.005	0.000
2020	Urban	0.966	0.021	0.004	0.003	0.000	0.006	0.000
2021	Urban	0.964	0.023	0.004	0.001	0.000	0.007	0.000
2022	Urban	0.963	0.025	0.003	0.000	0.000	0.008	0.000
2005	Rural	0.043	0.243	0.039	0.667	0.000	0.009	0.000
2006	Rural	0.055	0.258	0.054	0.624	0.000	0.009	0.000
2007	Rural	0.066	0.274	0.070	0.581	0.000	0.009	0.000
2008	Rural	0.078	0.289	0.085	0.539	0.000	0.009	0.000
2009	Rural	0.089	0.303	0.100	0.498	0.000	0.009	0.000
2010	Rural	0.098	0.318	0.095	0.483	0.000	0.006	0.000
2011	Rural	0.107	0.332	0.089	0.468	0.000	0.003	0.000
2012	Rural	0.092	0.353	0.085	0.463	0.000	0.005	0.002
2013	Rural	0.077	0.374	0.081	0.458	0.000	0.006	0.004
2014	Rural	0.076	0.437	0.094	0.382	0.000	0.008	0.002
2015	Rural	0.075	0.500	0.107	0.307	0.000	0.010	0.000
2016	Rural	0.098	0.432	0.172	0.282	0.002	0.013	0.000
2017	Rural	0.121	0.365	0.237	0.256	0.004	0.017	0.000
2018	Rural	0.120	0.412	0.219	0.215	0.003	0.030	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2019	Rural	0.119	0.461	0.201	0.172	0.002	0.045	0.000
2020	Rural	0.118	0.511	0.181	0.127	0.002	0.060	0.000
2021	Rural	0.118	0.565	0.161	0.080	0.001	0.075	0.000
2022	Rural	0.117	0.620	0.140	0.031	0.000	0.092	0.000

Los Ríos

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.800	0.156	0.013	0.022	0.000	0.009	0.000
2006	Urban	0.800	0.156	0.013	0.022	0.000	0.009	0.000
2007	Urban	0.800	0.156	0.013	0.022	0.000	0.009	0.000
2008	Urban	0.800	0.156	0.013	0.022	0.000	0.009	0.000
2009	Urban	0.800	0.156	0.013	0.022	0.000	0.009	0.000
2010	Urban	0.880	0.092	0.008	0.013	0.000	0.006	0.000
2011	Urban	0.959	0.028	0.003	0.005	0.000	0.004	0.000
2012	Urban	0.951	0.036	0.004	0.006	0.000	0.003	0.000
2013	Urban	0.942	0.044	0.006	0.006	0.000	0.002	0.000
2014	Urban	0.938	0.047	0.005	0.005	0.000	0.004	0.000
2015	Urban	0.935	0.050	0.004	0.005	0.000	0.006	0.000
2016	Urban	0.928	0.048	0.013	0.005	0.000	0.006	0.000
2017	Urban	0.921	0.046	0.022	0.005	0.000	0.007	0.000
2018	Urban	0.909	0.057	0.021	0.004	0.000	0.009	0.000
2019	Urban	0.898	0.067	0.019	0.003	0.000	0.012	0.000
2020	Urban	0.888	0.077	0.018	0.002	0.000	0.015	0.000
2021	Urban	0.879	0.086	0.017	0.001	0.000	0.017	0.000
2022	Urban	0.870	0.094	0.016	0.000	0.000	0.019	0.000
2005	Rural	0.263	0.394	0.079	0.259	0.000	0.005	0.000
2006	Rural	0.263	0.394	0.079	0.259	0.000	0.005	0.000
2007	Rural	0.263	0.394	0.079	0.259	0.000	0.005	0.000
2008	Rural	0.263	0.394	0.079	0.259	0.000	0.005	0.000
2009	Rural	0.263	0.394	0.079	0.259	0.000	0.005	0.000
2010	Rural	0.184	0.492	0.088	0.231	0.000	0.005	0.000
2011	Rural	0.106	0.589	0.096	0.202	0.000	0.006	0.000
2012	Rural	0.104	0.570	0.126	0.194	0.000	0.007	0.000
2013	Rural	0.101	0.552	0.154	0.186	0.000	0.007	0.000
2014	Rural	0.104	0.592	0.148	0.146	0.000	0.011	0.000
2015	Rural	0.106	0.633	0.141	0.106	0.000	0.015	0.000
2016	Rural	0.135	0.576	0.173	0.096	0.001	0.017	0.000
2017	Rural	0.164	0.521	0.205	0.087	0.002	0.020	0.001
2018	Rural	0.141	0.556	0.198	0.072	0.002	0.030	0.001
2019	Rural	0.117	0.593	0.190	0.058	0.001	0.040	0.001
2020	Rural	0.093	0.630	0.182	0.042	0.001	0.051	0.000
2021	Rural	0.069	0.668	0.174	0.027	0.000	0.062	0.000
2022	Rural	0.043	0.707	0.165	0.011	0.000	0.073	0.000

Los Lagos

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.871	0.079	0.011	0.022	0.000	0.016	0.000
2006	Urban	0.882	0.071	0.010	0.021	0.000	0.016	0.000
2007	Urban	0.896	0.062	0.009	0.018	0.000	0.015	0.000
2008	Urban	0.912	0.050	0.007	0.016	0.000	0.014	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2009	Urban	0.934	0.035	0.005	0.012	0.000	0.014	0.000
2010	Urban	0.946	0.027	0.007	0.013	0.000	0.008	0.000
2011	Urban	0.958	0.018	0.008	0.013	0.000	0.003	0.000
2012	Urban	0.950	0.032	0.006	0.009	0.000	0.004	0.000
2013	Urban	0.942	0.045	0.005	0.005	0.000	0.004	0.000
2014	Urban	0.948	0.039	0.006	0.004	0.000	0.004	0.000
2015	Urban	0.954	0.033	0.008	0.003	0.000	0.003	0.000
2016	Urban	0.948	0.027	0.012	0.006	0.002	0.005	0.000
2017	Urban	0.941	0.022	0.016	0.010	0.004	0.007	0.000
2018	Urban	0.935	0.028	0.019	0.008	0.004	0.007	0.000
2019	Urban	0.929	0.035	0.021	0.006	0.003	0.006	0.000
2020	Urban	0.923	0.042	0.023	0.004	0.002	0.006	0.000
2021	Urban	0.917	0.048	0.025	0.002	0.001	0.006	0.000
2022	Urban	0.912	0.054	0.028	0.000	0.000	0.006	0.000
2005	Rural	0.081	0.411	0.133	0.375	0.000	-0.001	0.001
2006	Rural	0.076	0.437	0.133	0.346	0.000	0.008	0.001
2007	Rural	0.071	0.468	0.134	0.309	0.000	0.018	0.000
2008	Rural	0.064	0.507	0.135	0.263	0.000	0.030	0.000
2009	Rural	0.055	0.559	0.137	0.202	0.000	0.047	0.000
2010	Rural	0.097	0.411	0.286	0.174	0.000	0.031	0.000
2011	Rural	0.139	0.265	0.435	0.146	0.000	0.016	0.000
2012	Rural	0.103	0.410	0.340	0.131	0.000	0.016	0.000
2013	Rural	0.069	0.553	0.246	0.117	0.000	0.015	0.000
2014	Rural	0.106	0.553	0.213	0.113	0.001	0.013	0.000
2015	Rural	0.142	0.554	0.181	0.110	0.001	0.011	0.000
2016	Rural	0.136	0.465	0.254	0.124	0.001	0.018	0.001
2017	Rural	0.130	0.377	0.327	0.139	0.001	0.024	0.002
2018	Rural	0.125	0.407	0.324	0.115	0.001	0.027	0.001
2019	Rural	0.119	0.439	0.321	0.089	0.001	0.030	0.001
2020	Rural	0.113	0.472	0.317	0.063	0.000	0.033	0.001
2021	Rural	0.106	0.507	0.314	0.036	0.000	0.036	0.000
2022	Rural	0.100	0.543	0.310	0.007	0.000	0.039	0.000

Aysén

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.926	0.040	0.023	0.007	0.000	0.004	0.000
2006	Urban	0.939	0.034	0.018	0.005	0.000	0.004	0.000
2007	Urban	0.951	0.028	0.013	0.004	0.000	0.004	0.000
2008	Urban	0.963	0.022	0.008	0.002	0.000	0.005	0.000
2009	Urban	0.975	0.017	0.003	0.001	0.000	0.005	0.000
2010	Urban	0.981	0.011	0.002	0.003	0.000	0.003	0.000
2011	Urban	0.987	0.005	0.001	0.006	0.000	0.002	0.000
2012	Urban	0.984	0.005	0.002	0.006	0.000	0.004	0.000
2013	Urban	0.981	0.005	0.003	0.006	0.000	0.006	0.000
2014	Urban	0.983	0.005	0.002	0.005	0.000	0.005	0.000
2015	Urban	0.985	0.006	0.001	0.004	0.000	0.004	0.000
2016	Urban	0.985	0.008	0.002	0.003	0.000	0.002	0.000
2017	Urban	0.985	0.010	0.003	0.002	0.000	0.001	0.000
2018	Urban	0.982	0.012	0.002	0.002	0.000	0.002	0.000
2019	Urban	0.980	0.014	0.002	0.002	0.000	0.002	0.000

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2020	Urban	0.977	0.015	0.002	0.002	0.000	0.003	0.000
2021	Urban	0.975	0.017	0.001	0.002	0.000	0.004	0.000
2022	Urban	0.972	0.019	0.001	0.003	0.000	0.005	0.000
2005	Rural	0.332	0.339	0.145	0.146	0.000	0.038	0.000
2006	Rural	0.322	0.380	0.122	0.137	0.000	0.039	0.000
2007	Rural	0.312	0.422	0.097	0.128	0.000	0.040	0.000
2008	Rural	0.301	0.465	0.073	0.119	0.000	0.042	0.000
2009	Rural	0.291	0.509	0.047	0.110	0.000	0.043	0.000
2010	Rural	0.318	0.458	0.071	0.131	0.000	0.022	0.000
2011	Rural	0.343	0.413	0.091	0.149	0.000	0.003	0.000
2012	Rural	0.415	0.350	0.076	0.140	0.002	0.019	0.000
2013	Rural	0.488	0.284	0.060	0.130	0.004	0.034	0.000
2014	Rural	0.359	0.334	0.127	0.156	0.002	0.022	0.000
2015	Rural	0.228	0.384	0.196	0.183	0.000	0.009	0.000
2016	Rural	0.274	0.379	0.197	0.117	0.002	0.031	0.001
2017	Rural	0.320	0.373	0.198	0.050	0.004	0.053	0.002
2018	Rural	0.359	0.394	0.160	0.037	0.003	0.046	0.001
2019	Rural	0.391	0.411	0.128	0.027	0.003	0.039	0.001
2020	Rural	0.418	0.426	0.102	0.018	0.002	0.034	0.001
2021	Rural	0.442	0.438	0.079	0.011	0.002	0.029	0.000
2022	Rural	0.462	0.449	0.059	0.004	0.001	0.025	0.000

Magallanes

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2005	Urban	0.978	0.017	0.000	0.002	0.000	0.002	0.000
2006	Urban	0.983	0.013	0.000	0.002	0.000	0.001	0.000
2007	Urban	0.989	0.009	0.000	0.001	0.000	0.001	0.000
2008	Urban	0.994	0.005	0.001	0.001	0.000	0.000	0.000
2009	Urban	0.999	0.000	0.001	0.000	0.000	0.000	0.000
2010	Urban	0.998	0.001	0.001	0.000	0.000	0.000	0.000
2011	Urban	0.998	0.001	0.001	0.000	0.000	0.000	0.000
2012	Urban	0.995	0.003	0.000	0.000	0.000	0.001	0.000
2013	Urban	0.992	0.005	0.000	0.000	0.000	0.002	0.000
2014	Urban	0.994	0.003	0.002	0.000	0.000	0.001	0.000
2015	Urban	0.995	0.001	0.003	0.000	0.000	0.000	0.000
2016	Urban	0.992	0.003	0.002	0.000	0.002	0.001	0.000
2017	Urban	0.988	0.006	0.001	0.001	0.003	0.001	0.000
2018	Urban	0.987	0.007	0.001	0.001	0.002	0.001	0.000
2019	Urban	0.986	0.009	0.002	0.001	0.002	0.002	0.000
2020	Urban	0.984	0.010	0.002	0.000	0.001	0.002	0.000
2021	Urban	0.983	0.012	0.003	0.000	0.001	0.002	0.000
2022	Urban	0.982	0.013	0.003	0.000	0.000	0.002	0.000
2005	Rural	0.248	0.461	0.154	0.100	0.000	0.037	0.000
2006	Rural	0.224	0.433	0.192	0.121	0.000	0.029	0.000
2007	Rural	0.200	0.406	0.232	0.142	0.000	0.021	0.000
2008	Rural	0.175	0.377	0.272	0.164	0.000	0.012	0.000
2009	Rural	0.150	0.349	0.312	0.186	0.000	0.004	0.000
2010	Rural	0.155	0.397	0.260	0.177	0.000	0.011	0.000
2011	Rural	0.164	0.473	0.176	0.162	0.000	0.024	0.000
2012	Rural	0.085	0.578	0.167	0.117	0.001	0.032	0.021

Year	Area	Sewerage	Septic tank	Sanitary latrine	Pit (cajón)	Chemical toilet	No system	No data
2013	Rural	0.044	0.631	0.162	0.094	0.002	0.036	0.031
2014	Rural	0.231	0.551	0.085	0.064	0.015	0.038	0.016
2015	Rural	0.420	0.471	0.008	0.034	0.028	0.041	0.000
2016	Rural	0.328	0.478	0.089	0.051	0.014	0.041	0.000
2017	Rural	0.237	0.484	0.168	0.068	0.000	0.042	0.000
2018	Rural	0.269	0.505	0.119	0.045	0.001	0.062	0.000
2019	Rural	0.291	0.518	0.086	0.029	0.001	0.076	0.000
2020	Rural	0.306	0.528	0.062	0.018	0.001	0.085	0.000
2021	Rural	0.318	0.535	0.044	0.010	0.002	0.092	0.000
2022	Rural	0.326	0.540	0.030	0.003	0.002	0.098	0.000

Note: Sewerage is the only collected (sewer-connected) system; the remaining systems are non-collected (on-site). Septic tank is the only non-collected system carrying NH_3. "No system" denotes households without a sanitation facility. Fractions were interpolated and extrapolated between CASEN waves over 2005–2022.

S3.10 Treated/untreated coverage

Population served by collected wastewater that is treated vs. untreated, by locality and year (SISS, 2005–2022). Within the collected population, the treated share was obtained from SISS sanitary-coverage reports; the untreated share is the remainder. Table S3.10 reports the regional totals for 2005 and 2022.

Table S3.10. Collected-wastewater population by region: treated vs. untreated, 2005 and 2022 (inhabitants).

Region	2005		2022	
	Treated	Untreated	Treated	Untreated
Arica y Parinacota	187,901	681	233,978	0
Tarapacá	239,014	2,248	355,591	0
Antofagasta	510,049	0	665,519	0
Atacama	245,168	0	273,156	0
Coquimbo	503,157	14,866	717,264	0
Valparaíso	1,352,197	602	1,743,081	248
Metropolitana	4,495,884	1,587,752	7,896,186	75
O'Higgins	528,876	1,656	709,804	0
Maule	541,639	41,797	889,207	3,063
Ñuble	290,949	0	354,650	0
Biobío	1,210,617	964	1,461,112	0
Araucanía	479,376	83,511	742,716	0
Los Ríos	234,642	1,191	264,087	0
Los Lagos	483,124	3,041	637,491	0
Aysén	76,582	0	95,044	0
Magallanes	143,884	0	168,671	0
National total	**11,523,059**	**1,738,309**	**17,207,557**	**3,386**

Extract: this table gives the regional totals for 2005 and 2022 of the full locality-by-year series (2005–2022, 297 localities). *Note:* the untreated collected population fell sharply over the period (from ≈ 1.7 million in 2005 to negligible in 2022) as wastewater treatment coverage expanded to nearly the entire collected population.

S4 Results

Section S4 summarizes the inventory results by sub-sector and provides supporting activity-data series and gridded-emission figures.

Table S4.1. National emissions by sub-sector and pollutant for 2005 and 2022 (Gg yr^{-1}). LEF = enteric fermentation; LMM = manure management; SWD = solid-waste disposal; WWTD = wastewater treatment and discharge. NATIONAL is the sum of the contributing sub-sectors for each pollutant.

Sub-sector	CH_4		N_2O		NH_3		NMVOC	
	2005	2022	2005	2022	2005	2022	2005	2022
LEF	268.87	244.40	0	0	0	0	0	0
LMM	18.34	38.06	2.32	3.34	24.77	41.04	13.22	20.53
SWD	117.24	278.73	0	0	0	0	0.42	1.00
WWTD	15.28	13.24	0.80	1.13	2.29	3.28	0.01	0.02
NATIONAL	**419.73**	**574.43**	**3.12**	**4.47**	**27.06**	**44.32**	**13.65**	**21.55**

S4.2 Livestock population series

Table S4.2 reports the annual national head counts by species group (2005–2022) underlying the livestock activity data, derived from the CR2 – Water Use dataset (Table S2.1) at the commune level and aggregated to the national total.

Table S4.2. National livestock population by species group, 2005–2022 (10^3 head).

Year	Cattle	Sheep	Goats	Swine	Poultry	Camelids	Equids
2005	4,372	3,893	842	2,979	50,174	88	728
2006	4,324	3,916	790	3,136	51,216	84	708
2007	4,276	3,939	739	3,293	52,258	79	687
2008	4,228	3,962	688	3,457	53,499	75	667
2009	4,182	3,986	641	3,625	54,939	73	647
2010	4,137	4,010	596	3,794	56,445	73	627
2011	4,093	4,035	556	3,963	57,980	73	607
2012	4,053	4,061	519	4,133	59,522	74	587
2013	4,013	4,089	486	4,304	61,070	75	568
2014	3,976	4,118	457	4,476	62,621	75	550
2015	3,942	4,146	430	4,651	64,175	76	532
2016	3,911	4,175	405	4,827	65,769	76	515
2017	3,883	4,205	383	5,003	67,375	77	499
2018	3,859	4,235	365	5,180	68,997	78	483
2019	3,838	4,265	350	5,358	70,631	78	468
2020	3,820	4,297	338	5,536	72,304	79	454
2021	3,805	4,328	329	5,715	73,992	79	440
2022	3,805	4,328	329	5,715	73,992	79	440

Note: values in 10^3 head (thousands of animals). National totals aggregated from the commune-level series; poultry are dominated by broilers.

S4.3 Leading emission sector maps

This subsection maps the leading emission sector per grid cell for the pollutants other than CH_4 (the CH_4 equivalent is Fig. 5 in the main text).

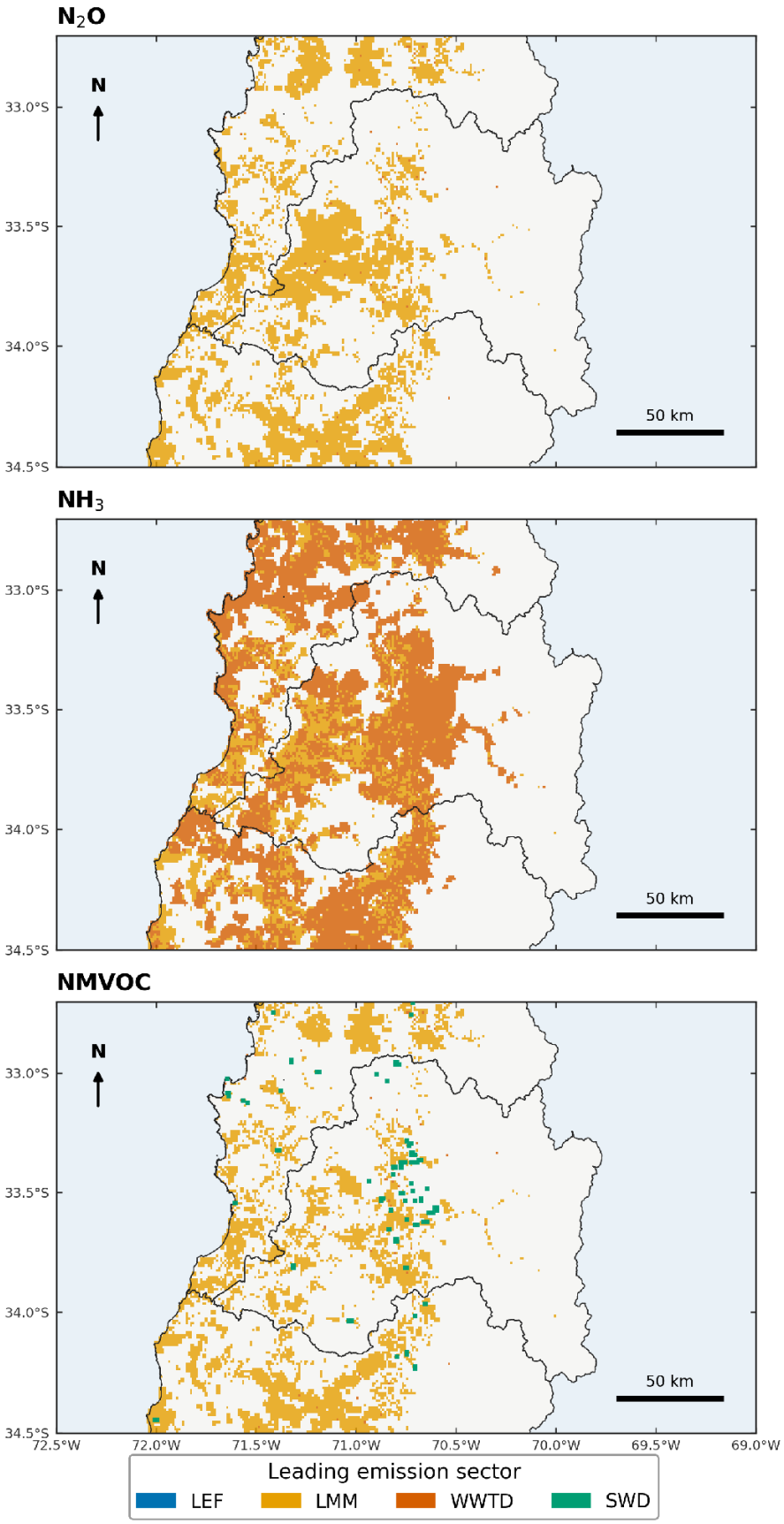


Figure S4.1. Leading emission sector per 0.01° grid cell for N_2O, NH_3 and NMVOC over central Chile, 2022 (the equivalent of Fig. 5, which shows CH_4). Colour shows the highest-emitting sector per cell, not its magnitude. LEF and SWD do not emit N_2O or NH_3, so only LMM and WWTD appear in those panels.

S4.4 Spatial comparison with EDGAR

This subsection compares the INEMA and EDGAR gridded products for the pollutants other than CH_4 (CH_4 comparison is Fig. 7 in the main text).

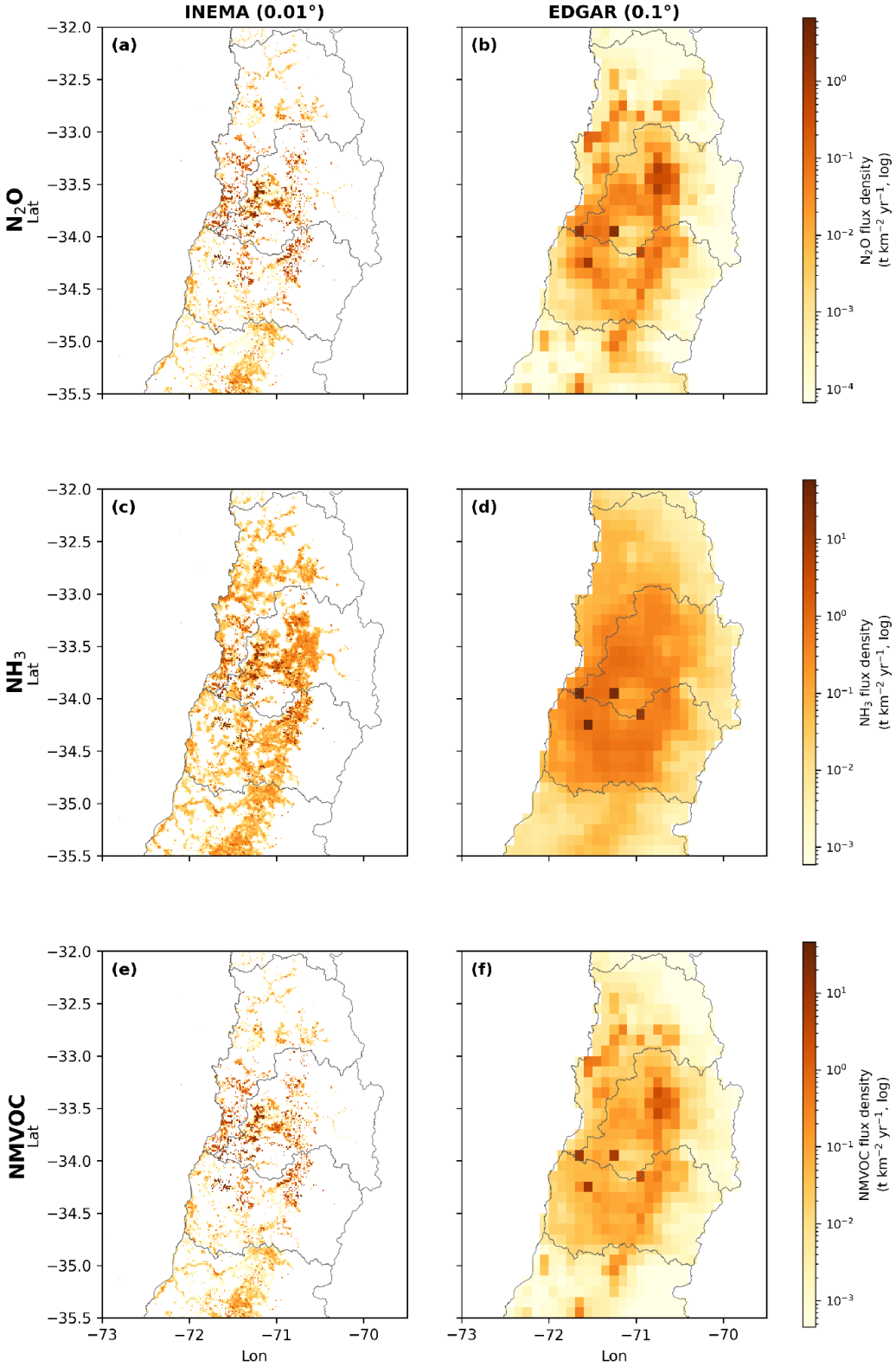


Figure S4.2. Spatial comparison of INEMA (0.01°) and EDGAR v8.0 (0.1°) emissions over central Chile in 2022, expressed as flux density (t km^{-2} yr^{-1}, log scale). Rows show N_2O, NH_3 and NMVOC; the left column is INEMA and the right column is EDGAR at its native resolution. Each row shares a common colour scale. Panels (a, c, e) INEMA; panels (b, d, f) EDGAR.