



Uruguay's Sovereign Sustainability-Linked Bond (SSLB) Annual Report 2025



May 2025

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Chapter 1

Introduction



Key Features of the Sovereign Sustainability Linked Bond

This third Annual Report of Uruguay's Sovereign Sustainability Linked Bond updates, through the year 2023, the evolution of the Key Performance Indicator linked to the intensity of Greenhouse Gas emissions (GHG) as a share of real Gross Domestic Product (KPI-1). It also presents quantitative and qualitative information tied to the Key Performance Indicator linked to the maintenance of the native forest area (KPI-2), which is updated every four years. In addition, the Report highlights the policy agenda and actions of Uruguay's successive governments, as well as private sector-focused policy measures, designed to achieve the country's sustainability objectives within the specified timeframe.

Uruguay's Sovereign Sustainability-Linked Bond (SSLB) was first issued in October 2022, and links the country's financing strategy and cost of capital to the achievement of Uruguay's climate and environmental care goals set out in the Paris Agreement.¹

To this end, the SSLB incorporates two Key Performance Indicators (KPIs): (i) reducing the intensity of Greenhouse Gas gross emissions in the economy (KPI-1) and (ii) preserving the area of native forests in the country (KPI-2). For each KPI, there are two Sustainability Performance Targets (SPTs), which are based on quantitative goals set for 2025 and are in line with Uruguay's first Nationally Determined Contribution (NDC-1). According to the Second Party Opinion (SPO), the selected KPIs are central and relevant to the country's sustainability objectives, and the SPTs are ambitious.² Furthermore, the bond introduced an innovative step-up/step-down interest rate structure that would reduce the interest rate paid if the country exceeds its NDC targets, while increasing the borrowing cost if the country does not deliver on its targets.

According to Uruguay's SSLB framework, the values of KPI-1 will be reported, verified and published annually, while those of KPI-2 will be reported and verified every four years (corresponding to the publication years 2023, 2027, 2032, and 2036).³

Therefore, this third SSLB Annual Report updates the performance of KPI-1 through 2023.⁴ The data sources and calculation methodologies used to report on the evolution of KPI-1 are the same as those used by Uruguay to report on NDC progress to the United Nations Framework Convention on Climate Change (UNFCCC). Additionally, according to the External Verification Report of KPI-1 through 2023 prepared by the United Nations Development Programme (UNDP), the reported values of this indicator adhere to the methodology and good practices established in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines. As explained below, the UNDP verified that the data and information used to

¹ Information on Uruguay's first Nationally Determined Contribution to the Paris Agreement available [here](#).

² The SPO's report from Sustainalytics can be accessed [here](#).

³ See SSLB Framework can be obtained [here](#).

⁴ For an overview of the evolution of KPI-1 and KPI-2 through 2021 and 2022, check the First and Second SSLB Annual Reports, respectively, [here](#).

report on KPI-1 complies with the quality principles in terms of TACCC (Transparency, Accuracy, Consistency, Comparability, and Completeness) established by the IPCC.

On the other hand, regarding KPI-2, the SSLB framework establishes the commitment to report every four years, based on the official cartography of the native forest at the national level. While the next value of the KPI-2 (with data for 2025) is due to be reported in May 2027, this Report provides updated information on actions undertaken over the last two years for the conservation and promotion of the regeneration of the native forest in Uruguay.

The preparation of this Annual Report followed the International Capital Market Association's voluntary guidelines on post-issuance disclosure, reporting, and verification for sustainability-linked bonds (SLBP, 2023) and the Enhanced Labelled Bond Principles established by the Emerging Markets Investors Alliance (EMIA).⁵ As in the previous two reports, the Ministry of Economy and Finance (MEF, for its Spanish acronym) exchanged with stakeholders to refine the content of the report, considering feedback derived from the two previous publications. This process involved an active dialogue with global asset managers, the Emerging Markets Investors Alliance (EMIA), the Natural Capital Project at Stanford University, and the Assessing Sovereign Climate-related Opportunities and Risks (ASCOR) project group. This report has further been strengthened by the continuous provision of technical and financial support from the IDB and UNDP.

As with Uruguay's first two SSLB Annual Reports, this third Annual Report is the product of a "whole-of-government" approach. This public sector-wide effort involved technical teams from the MEF, the Ministry of Environment (MA, for its Spanish acronym), the Ministry of Industry, Energy and Mining (MIEM, for its Spanish acronym), and the Ministry of Livestock, Agriculture and Fisheries (MGAP, for its Spanish acronym), with the support of the Ministry of Foreign Affairs (MRREE, for its Spanish acronym). Inter-ministerial coordination and collaboration are crucial to ensuring data availability and transparency, as well as clear communication to the market on progress towards achieving sustainability goals.

As outlined under the SSLB Framework, Uruguay will continue publishing, on or before May 31st of each year, an Annual Report with updated information on the KPIs (at the corresponding frequency), as well as an annual External Verification Report. These reports will be kept available and accessible on the SSLB website, and will allow for the evaluation not only of the achievement of the 2025 targets but also of the KPIs' trajectory during the SSLB's lifetime.

⁵ See ICMA's guideline [here](#) and EMIA Guidelines [here](#).



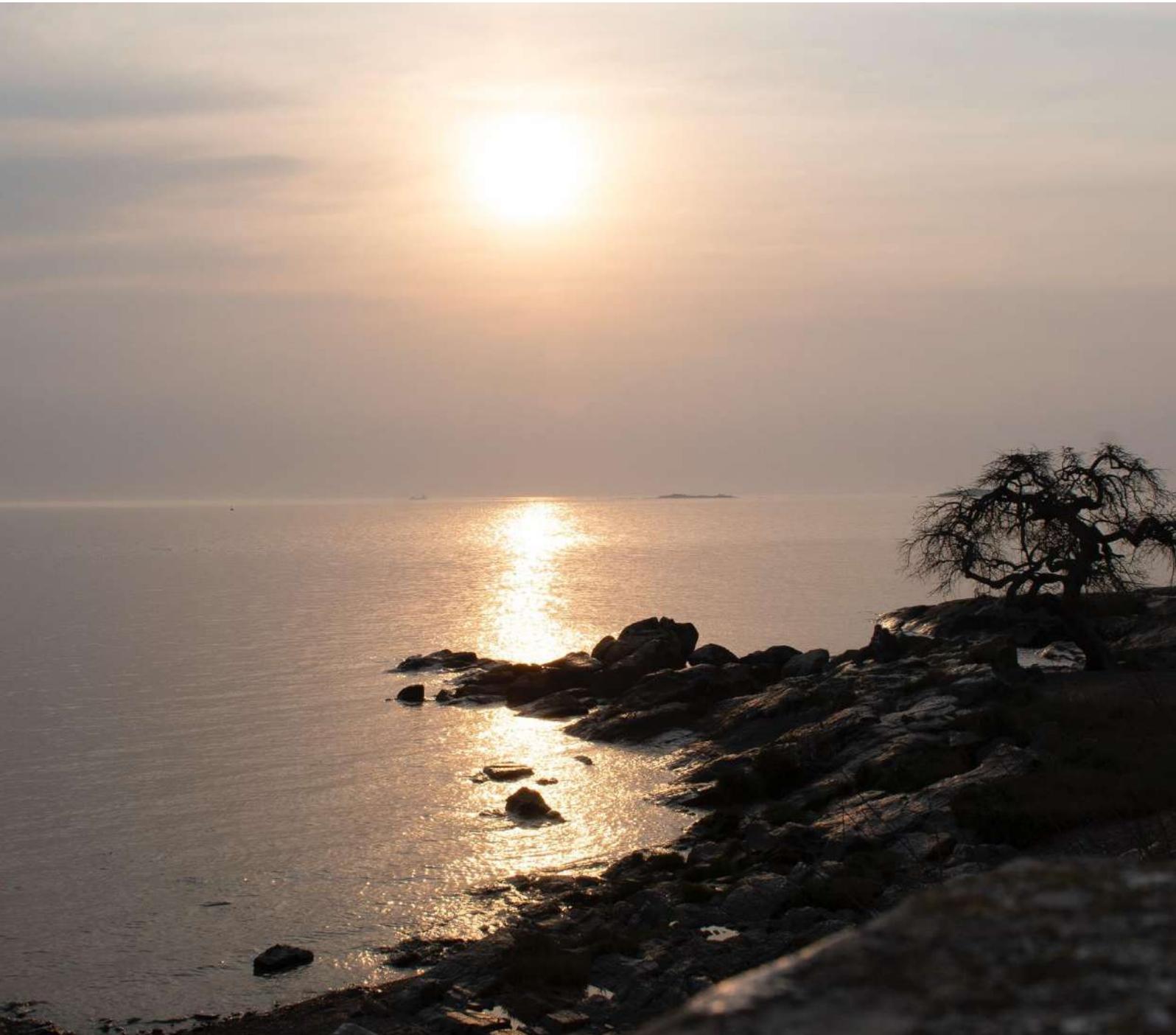
Key characteristics and transaction details of the outstanding SSLB

Issuer:	República Oriental del Uruguay			
ESG label:	Sovereign Sustainability-Linked Bond			
Currency:	US dollar-denominated			
Format:	SEC-Registered			
Bond Issuances:	First issuance: USD 1.5 billion (October 2022)			
	Reopening: USD 700 million (November 2023)			
Bond's Amount Outstanding:	USD 2.2 billion dollars			
Annual Coupon:	5.75%			
Maturity:	October 2034			
Amortization:	3 equal principal payments for the last 3 years			
Key Performance Indicator ("KPI"):	KPI-1		KPI-2	
	Reduction in aggregate gross GHG emissions (in CO ₂ e) per real GDP unit, with respect to reference year 1990 (in %)		Maintenance of native forest area (in hectares), with respect to reference year 2012 (in %)	
KPI Reporting and Verification Frequency:	Every year		Every four years	
Sustainability Performance Target ("SPT"):	SPT 1.1 Based on Uruguay's NDC1 commitment	SPT 1.2 Outperform Uruguay's NDC1 commitment	SPT 2.1 Uruguay's NDC1 commitment	SPT 2.2 Outperform Uruguay's NDC1 commitment
	Achieve at least a 50% reduction in aggregate gross GHG emissions intensity by 2025, from the 1990 reference year	Achieve a reduction of more than 52% in aggregate gross GHG emissions intensity by 2025, from the 1990 reference year	Maintain at least 100% of the native forest area by 2025, compared to reference year 2012	Achieve an increase of more than 3% of the native forest area by 2025, compared to reference year 2012
SPO's Assessment on Degree of Ambition of SPTs:	Ambitious	Ambitious	Ambitious	Highly Ambitious
Two-way interest rate mechanism:	Observation Date:	Year 2025		
	Interest rate step-up trigger:	The annual coupon rate payable on the Bond shall be increased by 15 basis points if SPT 1.1 is not achieved		The annual coupon rate payable on the Bond shall be increased by 15 basis points if SPT 2.1 is not achieved
	Interest rate step-down trigger:		The annual coupon rate payable on the Bond shall be decreased by 15 basis points if SPT 1.2 is achieved	The annual coupon rate payable on the Bond shall be decreased by 15 basis points if SPT 2.2 is achieved
Listing:	Luxembourg Stock Exchange and London Stock Exchange			
Governing Law:	State of New York, United States			
Second Party Opinion ("SPO"):	Sustainalytics			



Chapter 2

Summary of Results

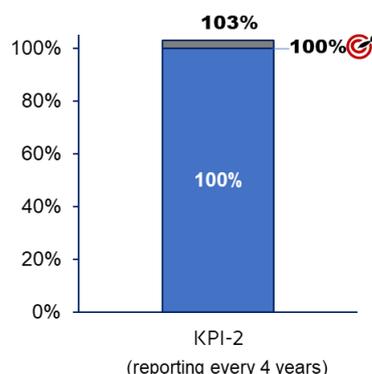
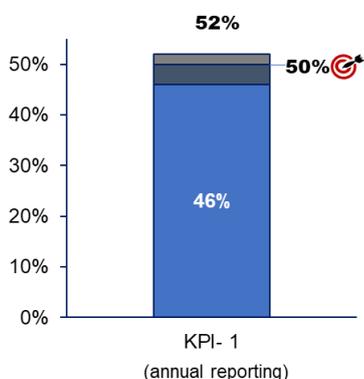


By 2023, the KPI-1 showed a reduction of 46% in the intensity of aggregate gross GHG emissions per real GDP unit, with respect to 1990. Compared with 2022, the value of KPI-1 remained at the same level (to the nearest integer). This reflected the combined effect of a rise in absolute gross GHG emissions of 1.3% in 2023 compared to 2022, and a moderate increase in real GDP of 0.7% over the same period. A substantial part of the increase in gross GHG emissions in 2023 stemmed from higher estimated nitrous oxide emissions (N₂O) tied to the use of synthetic nitrogen fertilizers in agricultural production, which was not completely offset by the decrease in CO₂ emissions associated with lower consumption of fossil fuels in ground transportation and in electricity generation. On the other hand, annual real GDP grew 0.7% in 2023, contributing to the maintenance in the intensity ratio. Therefore, as of 2023 the KPI-1 remained 4 percentage points short of the SPT 1.1 set for 2025.

KPI values as of year 2023, compared to SPTs

 KPI-1: Reduction of GHG emissions intensity (compared to reference year 1990, in percent)	
SPT 1	-50
SPT 2	-52
Latest value	-46 (Year 2023)

 KPI-2: Maintenance of Native Forest area (compared to reference year 2012, in percent)	
SPT 1	100
SPT 2	103
Latest value	100 (Year 2021)



Methodology and calculation for each KPI, and corresponding SPT values, are documented in Uruguay's SSLB Framework. The left blue bar indicating the latest KPI-1 value expresses the percent reduction in absolute terms. Source: SSLB Public Database as of April 2025.



On the other hand, as reported in the First SSLB Annual Report, KPI-2 had achieved full maintenance of native forest area by 2021, relative to the established baseline. Measured native forest cover expanded by 11,832 hectares (approximately 1.4%), with respect to 2016. This was primarily driven by natural regeneration, increased vegetation coverage, and restoration initiatives. During the subsequent years, the Directorate for General Forestry (DGF) has carried out a series of actions aimed at preserving and protecting the native forest, including strengthening its communication strategy through several awareness and information campaigns.

The time series and underlying data for both KPIs between 1990 and 2023, are available in the “SSLB Public Database” published in Uruguay’s SSLB website.⁶

Uruguay remains committed to advancing its transition toward a low-carbon, environmentally sustainable economy. As a global leader in large-scale wind power and clean energy production, the country continues to expand its renewable energy capacity. Additionally, Uruguay is focused on reducing carbon dioxide emissions in hard-to-abate sectors, such as heavy transportation, by promoting electric mobility, developing green sources of hydrogen production, and leveraging its abundant renewable resources, including water, wind, and biomass. As a key food supplier to a growing global population, Uruguay seeks to balance increased agricultural and livestock production with efforts to lower the intensity of methane and nitrous oxide emissions while preserving its unique grassland ecosystem.

The protection of native forests and the prevention of deforestation will continue to be a key part of Uruguay's environmental strategy. The country has made significant investments in the management of its native forests, which are protected by law and subject to tax exemptions. This has ensured that agricultural activity is not, as it is in much of the world, a driver of deforestation.

⁶ See SSLB website [here](#).



Chapter 3

Update on KPI-1 (Annual Frequency)



This section reports on the estimated KPI-1 values through 2023, in accordance with the provisions set forth in Uruguay's SSLB Framework. The methodological reports underpinning the calculation of the KPI-1 series are published on Uruguay's SSLB website, accompanying this Annual Report. Annex 1 contains supplementary information.

Evolution of the KPI-1 through 2023

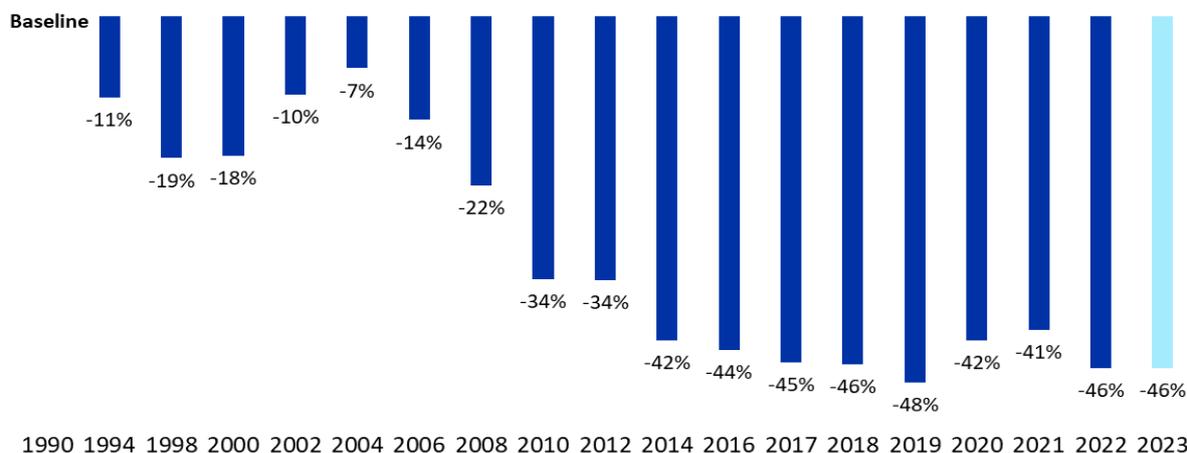
The KPI-1 tracks the trajectory of the economy-wide GHG emissions intensity in Uruguay. This metric is defined as the percent change in the ratio of aggregate gross GHG emissions (expressed in CO₂ equivalent (CO₂eq) units) to real GDP, relative to this ratio in the baseline year of 1990. The indicator aggregates the three main GHGs (CO₂, CH₄, and N₂O) and the main sectors contributing to the emissions of each GHG, as delineated in the NDC-1, presented in 2017. The aggregate gross GHG emissions are then normalized by real GDP to calculate the intensity measure.⁷

In 2023, the Key Performance Indicator recorded a reduction of 46% (i.e., the value of KPI-1 was -46%), unchanged compared with 2022. The GHG emission intensity remained flat compared to the previous year, as the annual increase in gross GHG emissions was almost offset by a modest increase in real GDP (weighed down by the severe drought that affected the country between 2022 and 2023).

Aggregate gross GHG emissions increased 459 Gg with respect to 2022 (a 1.3% increase). The increase in aggregate GHG emissions during 2023 was related to the AFOLU sector (Agriculture, Forestry and Other Land Uses) and, to a lesser extent, the Waste sector, while the Energy and IPPU (Industrial Processes and Product Use) sectors showed a reduction, on aggregate, in emissions between 2022 and 2023. Specifically, within the AFOLU sector, the emissions that experienced growth are those originating from managed soils (N₂O), explained by the use of synthetic nitrogen fertilizers, where imports increased significantly between 2022 and 2023. On the other hand, real GDP growth was a modest 0.7% in 2023 compared to 2022.

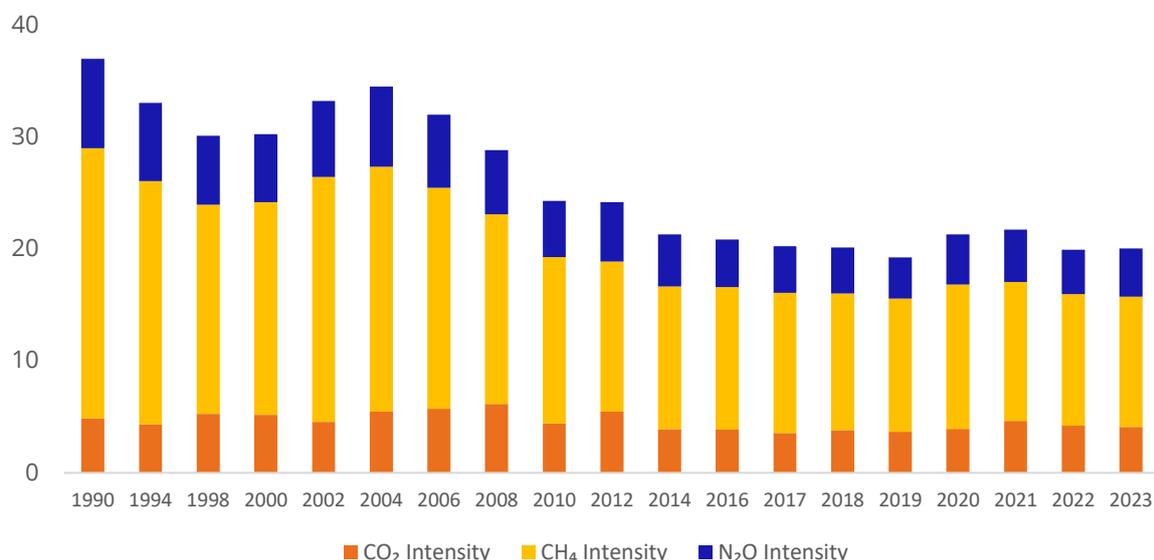
⁷ "Gross Emissions" refers to the fact that it does not account for CO₂ removals by carbon sinks. "Aggregate GHG" refers to the three main economy wide GHGs and all sectors contributing emissions of each GHG, except for Land Use and Land Use Change and Forestry (LULUCF).

KPI-1: Reduction of the Intensity of Aggregate Gross GHG Emissions per real GDP unit change compared to 1990, in percent



Considers the three global GHGs and the main sectors contributing emissions of each GHG, as set out in the 2017 NDC1. Expressed in Gg CO₂eq, metric GWP100 AR5. Real GDP measured in billions of pesos in 2016 constant prices, based on latest official series published by the National Accounts System of the Central Bank, retroplated using the variation rate method as a statistical splicing technique. For the period 1990-2022, data is for years with official NGHGI publication and data for 2023 was estimated for this SSLB Annual Report. Source: SSLB Public Database as of April 2025.

Evolution of Uruguay's Intensity of Gross Greenhouse Gas (GHG) Emissions GHG Emissions as a share of real GDP, by type of gas



Considers the three global GHGs and the main sectors contributing emissions of each GHG, as set out in the 2017 NDC1. Expressed in Gg CO₂eq, metric GWP100 AR5. Real GDP measured in billions of pesos in 2016 constant prices, based on latest official series published by the National Accounts System of the Central Bank retroplated using the variation rate method as a statistical splicing technique. For the period 1990-2022, data is for years with official NGHGI publication and data for 2023 was estimated for this SSLB Annual Report. Source: SSLB Public Database as of April 2025.

The table that follows presents the evolution of the value of KPI-1 for the period 1990 to 2023 (for years with official NGHGH publications) and its fundamental determinants: (i) GHG emissions categorized by gas type, (ii) aggregate gross emissions expressed in CO₂ equivalent, (iii) real GDP, and (iv) GHG intensity within the economy.

KPI-1: Disaggregated Historical Data

1990-2023 series

Year	CO ₂ (Gg)	CH ₄ (Gg, expressed in CO ₂ eq)	N ₂ O (Gg, expressed in CO ₂ eq)	Aggregate gross GHG emissions (CO ₂ eq)	Real GDP (billions of pesos at 2016 constant prices)	Intensity of aggregate gross GHG emissions per real GDP unit	KPI-1: Reduction of aggregate gross GHG emissions per real GDP unit, with respect to 1990 (in percent)
1990	3,851	19,131	6,315	29,298	792	37	
1994	4,222	21,187	6,815	32,224	975	33	-11%
1998	5,876	20,799	6,874	33,549	1,114	30	-19%
2000	5,544	20,345	6,530	32,419	1,071	30	-18%
2002	4,345	20,771	6,466	31,582	950	33	-10%
2004	5,506	22,012	7,190	34,708	1,006	34	-7%
2006	6,448	22,214	7,361	36,023	1,125	32	-13%
2008	7,928	21,762	7,354	37,045	1,285	29	-22%
2010	6,366	21,473	7,244	35,083	1,444	24	-34%
2012	8,597	21,064	8,353	38,015	1,572	24	-35%
2014	6,616	21,691	7,876	36,182	1,699	21	-42%
2016	6,708	22,085	7,362	36,156	1,734	21	-44%
2017	6,284	22,079	7,336	35,699	1,764	20	-45%
2018	6,737	21,596	7,252	35,584	1,767	20	-46%
2019	6,538	21,199	6,603	34,339	1,783	19	-48%
2020	6,496	21,317	7,370	35,183	1,652	21	-42%
2021	8,143	21,686	8,171	38,000	1,749	22	-41%
2022	7,695	21,486	7,234	36,414	1,827	20	-46%
2023	7,555	21,401	7,917	36,873	1,841	20	-46%

Considers the three global GHGs and the main sectors contributing emissions of each GHG, as set out in the 2017 NDC1. Expressed in Gg CO₂eq, metric GWP100 AR5. Real GDP measured in billions of pesos in 2016 constant prices, based on latest official series published by the National Accounts System of the Central Bank retooled using the variation rate method as a statistical splicing technique. For some years the GHG aggregated gross emissions column does not perfectly match the sum of the CO₂, CH₄ and N₂O columns due to rounding. For 2021 the value of CO₂ shows correction due to hydraulic conditions. For purposes of the calculation of the KPI-1 value, the result of the formula is rounded up or down to the nearest integer, as established in the SSLB Framework and consistent with the way the numerical goals were set under Uruguay's 2017 NDC (NDC1). For the period 1990-2022, data is for years with official NGHGI publication and data for 2023 was estimated for this SSLB Annual Report. Source: SSLB Public Database as of April 2025.



In 2023, the country's gross emissions profile remained strongly influenced by non-CO₂ gas emissions. Estimated methane emissions constituted 58% (compared to 59% in 2022) of aggregate emissions, while nitrous oxide emissions comprised 22% (21% in 2022). These non-CO₂ emissions predominantly arise from biological processes, which are connected to food production. On the other hand, carbon dioxide emissions accounted for 20% of the total in 2023 (21% in 2022), primarily originating from the energy sector and mainly generated by the combustion of fossil fuels.

As noted above, during the period 2022-2023, total estimated GHG emissions grew by 1.3%, with an absolute increase of 459 Gg CO₂ equivalent, broken down as follows:

- total CO₂ emissions decreased 139 Gg (-1.8%);
- total CH₄ emissions decreased 85 Gg in CO₂eq (-0.4%);
- total N₂O emissions increased 683 Gg in CO₂eq (9.4%).

Thus, the reduction in CH₄ and CO₂ emissions was not sufficient to offset the increase in N₂O emissions between 2022 and 2023.

Key Drivers on GHG emissions by Sector

The following table present the principal categories contributing to the change in gross GHG emissions, in absolute terms, between 2022 y 2023. The data is organised by emission source, main GHG and sector, with data for the recent years 2021, 2022 and 2023 and the percentage and absolute change for the most recent period reported (2022-2023).

Gross GHG emissions: Main Contributing Categories

expressed in Gg CO₂eq

Source of emissions	Main GHG type	Sector	2021 emissions	2022 emissions	2023 emissions	Absolute variation 2022-2023	Percentage variation 2022-2023
Electricity generation	CO ₂	Energy	1,442	802	614	-188	-23%
Dairy cattle	CH ₄	AFOLU	1,228	1,194	1,157	-37	-3%
Consumption of fossil fuels in ground transportation	CO ₂	Energy	3,912	4,158	4,122	-36	-1%
Sheep farming	CH ₄	AFOLU	1,352	1,334	1,301	-33	-2%
Non-dairy cattle	CH ₄	AFOLU	22,578	22,213	22,211	-2	0,01%
Disposal of urban solid waste	CH ₄	Waste	1,309	1,354	1,408	54	4%
Fossil fuel consumption by manufacturing and construction industries	CO ₂	Energy	1,009	1,027	1,286	259	25%
Use of synthetic nitrogen fertilizers	N ₂ O	AFOLU	1,770	905	1,574	669	74%

Considers the three global GHGs and the main sectors contributing emissions of each GHG, as set out in the 2017 NDC1. Expressed in Gg CO₂eq, metric GWP100 AR5. Main contributing categories are identified based on their percentage change in gross emissions between 2022 and 2023 and corresponding share in total gross GHG emissions in 2022. Data for 2022 corresponds to official NGHGI publication and data for 2023 was estimated for this SSLB Annual Report. Source: SSLB Public Database as of April 2025.



Energy

In Uruguay, the Energy sector remains the principal source of CO₂ emissions, predominantly due to fossil fuel combustion. In 2023, emissions from the Energy Sector were 7,455 Gg CO₂eq (20% of the total aggregate emissions). Compared to 2022, it decreased 84 Gg CO₂eq (-1%).

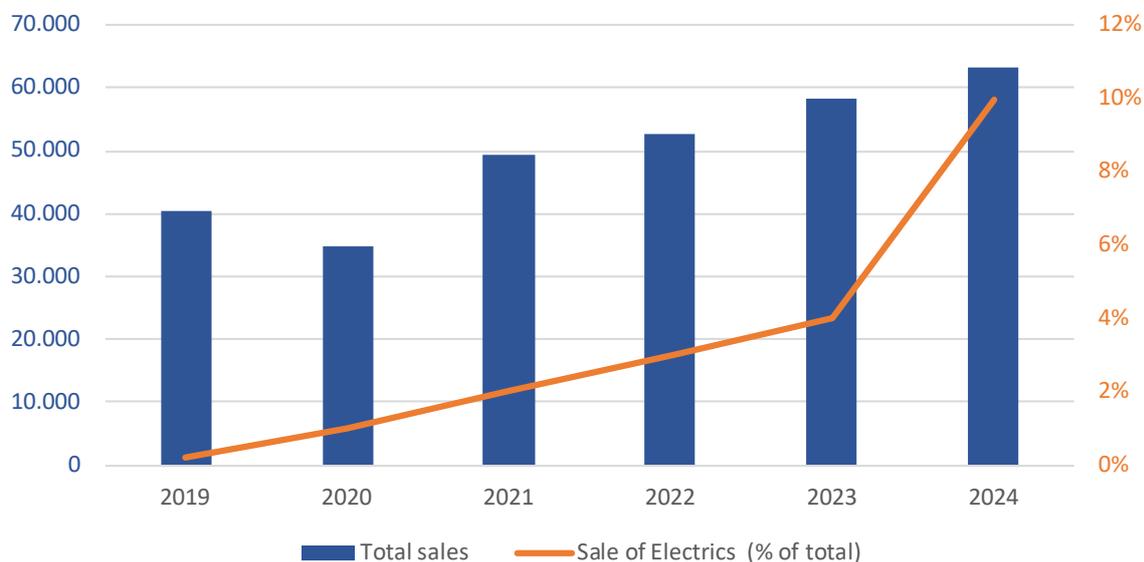
Within the Energy sector, ground transportation was the leading contributor to CO₂ emissions in 2023.

Consumption of fossil fuels in ground transportation. The consumption of fossil fuels in ground transportation has historically been the main contributor to emissions within the sector, largely driven by the growth of vehicle fleet during the period considered (1990-2023). Road freight transport has become one of the most rapidly increasing carbon-intensive segments within the energy transportation sector, driven largely by the expansion of forestry-related and agricultural productions logistics.

Emissions from fuel combustion in ground transportation had been on an upward trend since 1990 (increasing from 1,392 Gg in 1990 to 4,158 Gg in 2022). However, in 2023, CO₂ emissions from fuel combustion were 1% lower than those recorded in 2022. This variation can be attributed to a drop in the transport of agricultural goods in the context of the important drought, and to a decline in domestic fuel consumption in the western littoral and north-eastern areas of the country on the border with Argentina and Brazil, where a significant price disparity was observed. Specifically, in 2023, the price difference with Argentina reached 177% for gasoline and 290% for diesel.

As a result of the implementation of public policies, electric mobility has grown in the country. In the last five years (2019-2024), the share of electric vehicles in total annual new vehicle sales rose to almost 10% (with 69 electric units sold in 2019 to 6.330 in 2024).

Total new vehicles sales and share of electric vehicles sold
number of vehicles and share of Electric Vehicles in total, period 2019-2024



Fuente: Ministry of Industry, Energy and Mining.

Electricity generation. Uruguay made a very significant change to its electricity generation mix, with a strong incorporation of domestic renewable sources, significantly reducing renewable generation variability and dependence on imported fossil fuels. However, due to the intermittent nature of these domestic renewables sources, there remains a margin of variation between 1% and 10% although in the last years generation from renewable sources was on average above 90% of total.

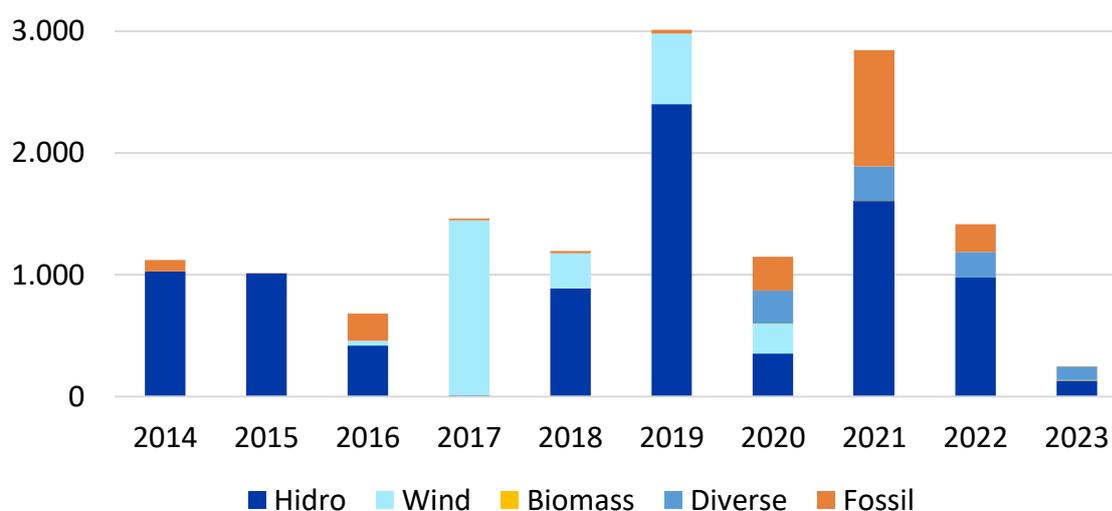
Uruguay's installed capacity for electricity generation has a significant participation of renewable sources. By the end of 2023, the total installed capacity was composed 29% from hydropower, 29% from wind, 22% from thermal fossil, 14% from thermal biomass, and 6% from photovoltaic solar generators. Considering the installed capacity by source, 78% corresponded to local renewable sources (hydro, biomass, wind, and solar) while the remaining 22% was non-renewable energy (gas oil, fuel oil and natural gas). It is worth noting that 35% comes from intermittent renewable sources (wind and solar). The variability in generation is mitigated by relying on hydroelectric generation, depending on the availability of water reserves, bearing in mind that the storage capacity in the dams is limited. In this regard, once wind and solar generation is dispatched (as are under take-or-pay contracts with private generators), hydroelectricity, fossil thermal generation and imports from neighbouring countries are used, if available, with dispatch based on the criteria of lowest marginal cost. Biomass generation forms part of the base load. As a result of this dispatch criteria the country has a highly renewable electricity generation matrix with a low carbon emission factor of the grid.

The country has a strong interconnection of its electrical system with neighbouring countries. With Argentina, systems have shared, for more than four decades, infrastructure both in generation facilities and in extra high voltage lines. More recently, investments have also been made in the development of an electricity interconnection with Brazil, within the framework of the MERCOSUR Structural Convergence Fund. In facilitating the exchange of electricity between countries, these interconnections promote energy complementarity and risk-pooling between systems in the event of deficit or emergency situations. It also presents an opportunity to reduce generation costs, if there is electricity availability at a lower cost from neighbouring countries.

Given the transformation of its electricity generation system, which positions Uruguay among the leading countries worldwide in having a clean electricity generation matrix, the country is also strongly committed to energy integration. This involves creating complementary systems within the region. The benefits of this policy are evident at a global level, not necessarily at the local level. As a result, when electricity is exported, it can lead to an increase in local emissions, just as importing electricity can lead to a reduction in local emissions. In 2023, the total electricity generation decreased by 13%, and particularly, as a result of the severe drought, yet the hydroelectricity declined by 38%. This lower availability of hydropower was offset by imports of electricity mostly from Brazil, primarily during the first half of the year. Notably, 2023 was the year with the highest electricity imports since 2009 (1,398 GWh). Conversely, during 2023, the export of electricity to the region represented only 2% of the total generation for that year, well below the considerably high exports of 2022.

Uruguay's Electricity Exports, by Source of Generation

Total thousands of MWh

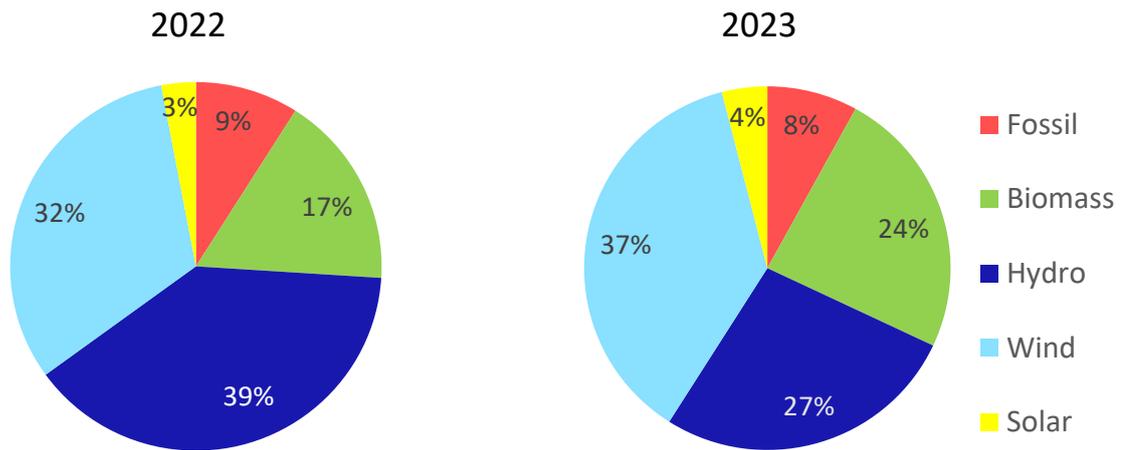


Diverse refers to surplus/overflows from renewable sources of wind, biomass, photovoltaic (under surplus conditions) and hydro (under overflow conditions) units. Source: National Administration of Electric Power Plants and Transmissions, and Ministry of Industry, Energy and Mining.



In 2023, the lower electricity exports were mainly from hydro and diverse sources, and to a much lesser extent from biomass and fossil fuels. Although total generation declined and despite the drought, the share of renewables in 2023 was 92%, very similar to the previous year (91%).

Uruguay's Domestic Electricity Generation, by Source
Percentage of total

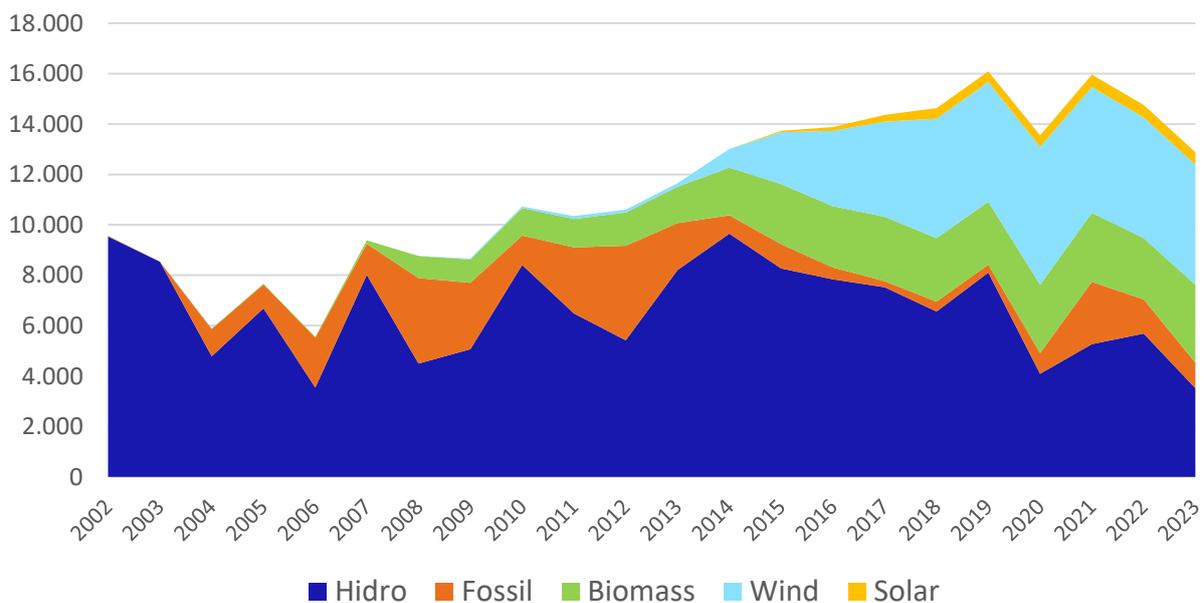


Source: National Energy Balance, 2023, Ministry of Industry, Energy and Mining.

The evolution of the country's electricity generation by source from 2002 to 2023 is shown in the following graph:

Electricity generation by accumulated source

In gigawatt-hour (GWh), 2002-2023 period



Source: National Energy Balance, 2023, Ministry of Industry, Energy and Mining.



Fossil fuel consumption by manufacturing and construction industries. The majority of emissions in this sector stem from the operations of pulp mills located in the country, which exhibit high fuel oil consumption for the generation of direct heat. It is worth noting that between 2022 and 2023, estimated CO₂ emissions from the manufacturing and construction industries increased by 25%, precisely due to the beginning of operations at the third pulp mill, during the first quarter of 2023.

One distinctive feature of the pulp and cellulose industries is their almost complete self-sufficiency of energy, with over 90% of their consumption sourced from their own energy production. Moreover, part of the electricity generated by the mills has been and continues to be supplied to the National Interconnected System (SIN, in Spanish).

In terms of the country's renewable energy consumption matrix, the industrial sector has been the main consumer of final energy, since 2008. Due to the emergence of the pulp industry, the consumption of biomass waste has increased significantly.⁸ About 80% of the biomass waste, mainly black liquor, is consumed by these industries. Furthermore, the start-up of the third pulp mill in 2023 had a direct impact on the increase in final energy consumption in that year, with biomass waste consumption increasing by 30%.⁹



AFOLU (Agriculture, Forestry and Other Land Uses) Sector

AFOLU (Agriculture, Forestry and Other Land Uses) is one of the two sectors (alongside the Waste sector, to a lesser extent) that recorded, on aggregate, an increase in GHG emissions in 2023, contributing to the rise in aggregate emissions.

Non-dairy and dairy cattle production, and sheep farming. Fluctuations in aggregate emissions associated with cattle and sheep farming are fundamentally linked to changes in the level and composition of livestock inventory. Specifically, the estimation of GHG emissions of enteric fermentation and manure management from cattle and sheep farming is determined by a set of variables which include the animal inventory, as well as characteristics in terms of age, weight, energy requirements, diet, and its digestibility, for a given agroecological zone of the country. Consequently, shifts in the quality of animal-based food

⁸ Biomass waste refers to forestry and sawmill residues, black liquor, bagasse, rice husks, sunflower husks, barley husks and others.

⁹ Regarding CO₂ emissions from the burning of biomass fuels, it is important to highlight that they are not included in the totals estimated for the energy sector in the NGHGI, as established in the guidelines of the IPCC. This is because the emission of this GHG (when biomass is burned) is accompanied by a process of absorption of this gas (through photosynthesis) by plant species during their growth. These two processes should be considered together. Therefore, the calculation of CO₂ emissions and removals from biomass has been included in the AFOLU sector of the NGHGI. However, CO₂ emissions from biomass combustion are estimated and presented as "Information items" in the energy sector of the Inventory, without being added to the totals.

sources, attributable to enhanced forage resources, together with changes in the relative proportions of various categories (e.g., owing to variations in age at slaughter, augmented breeding performance, weaning rate, among other factors), will exert an influence on herd composition and energy requirements. This, in turn, will affect the corresponding estimated GHG emissions of methane and nitrous oxide.¹⁰

Regarding non-dairy cattle farming, during the 2022-2023 period, the number of livestock heads recorded a very slight decrease (less than 0.1%). Additionally, over the past two decades, the proportion of young animals within the cattle stock has increased, signifying a rejuvenation of the herd. In 2023, the number of serviced breeding cows reached 4.2 million, resulting in the birth of 2.9 million calves, whereas in 2000, there were 3.5 million serviced breeding cows, producing approximately 2.1 million calves. This shift in stock composition reflects enhanced breeding efficiency. Overall, non-dairy cattle farming in Uruguay is becoming increasingly efficient. This is due, on the one hand, to rising slaughter rates, with younger animals achieving appropriate slaughter weights at a younger age. Additionally, the area of pasture improvements has expanded, particularly annual forage crops, contributing to increased productivity. As previously stated, estimates of GHG from cattle production consider the distribution of livestock, various categories of animals, and land use according to agro-ecological zones, which has a bearing on animal nutrition and energy requirements.

Meanwhile, emissions from dairy cattle farming experienced another decrease during the 2022–2023 period (3%), primarily due to a reduction in the total number of dairy cows, while the herd's characteristics (composition and its territorial distribution) remained broadly unaltered.

Moreover, the dairy cattle farming production has improved its emission efficiency over the period 1990-2023. The sector has managed to increase its production while keeping its GHG emissions stable. In fact, between 1990 and 2023, commercial milk production increased twice as fast as total emissions from dairy cattle farming.

As for sheep farming, emissions from this category decreased 2% between 2022 and 2023. This year a decline in the livestock inventory was also observed.

Use of synthetic nitrogen fertilizers. Emissions from the use of synthetic nitrogen fertilizers registered a significant increase compared to 2022 (74%, from 905 to 1574 in CO₂eq Gg).

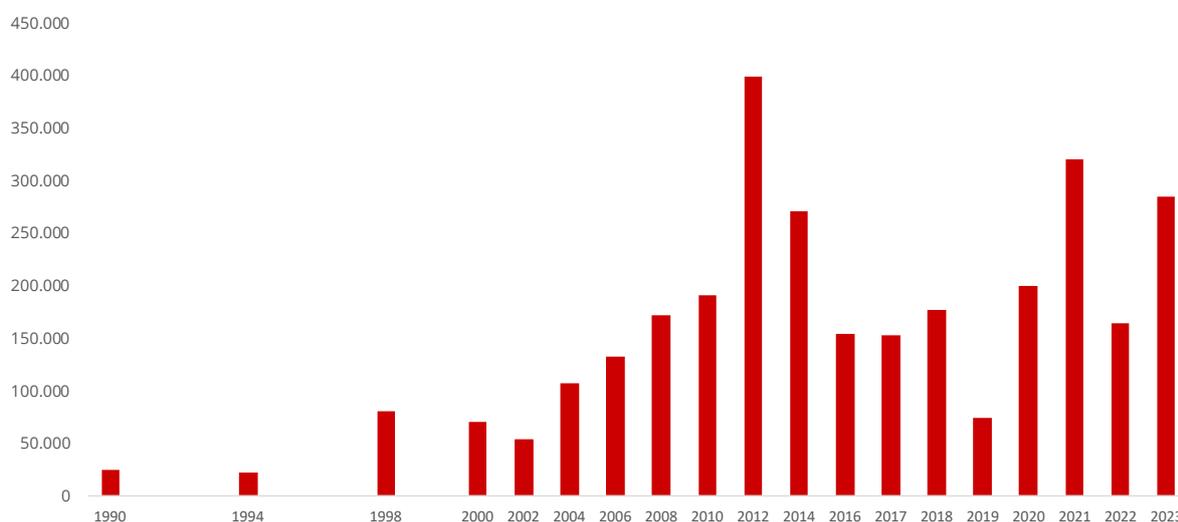
¹⁰ In line with the guidelines established in the methodology proposed by the IPCC, the calculation of this emission factor occurs on an annual basis, with data derived from the DICOSE Affidavits. The factor is calculated each year, reflecting the temporal variations inherent to the livestock sector. DICOSE is a unique and mandatory registration number assigned by the MGAP to farmers and entities related to the livestock sector. It serves as an identifier for individuals and legal entities that own livestock or engage in commercial activities related to livestock farming. This registration code enables: i. the identification of farmers and livestock entities, as the number is unique and non-replicable; ii. livestock monitoring and data management, as the information associated with DICOSE is utilized by the MGAP for tracking and controlling livestock production, as well as ensuring regulatory compliance; iii. DICOSE holders are required to submit an annual Affidavits, which includes information on livestock ownership, land use, and other related activities.

These emissions are estimated based on the volume of nitrogen in synthetic fertilizer imports within a given calendar year.

The increase in direct and indirect N₂O emissions from managed soils during 2023 is primarily explained by a rise in total nitrogen content of fertilizers imported. The volume of nitrogen content, exhibits considerable year-to-year variability, as illustrated in the graph below.¹¹ Its dynamics are broadly linked to variations in agricultural activity. However, in some years, external factors, such as fluctuations in international market prices and inventory decisions from import companies, can disrupt this correlation, as observed in 2023.

Estimated Nitrogen Content of Imported Fertilizers

in tons of nitrogen by year, 1990-2023 period



Source: Agricultural Programming and Policy Office (OPYPA) based on National Directorate of Agricultural Services (DGSA) of the MGAP. Data is available for years with official NGHGI publication.

Regarding agricultural activity, the use of nitrogen fertilizers is associated with winter and summer crops, which rely on nitrogen-based fertilizers for their growth, which is not the case of soy, the main summer crop in Uruguay. During the 2023 agricultural cycle, imported synthetic nitrogen fertilizers were applied for both winter and summer crops, including wheat, barley, rapeseed and carinata, corn, sorghum, and rice. The amount of nitrogen fertilizer required is largely determined by crop type, soil conditions, and climate factors.

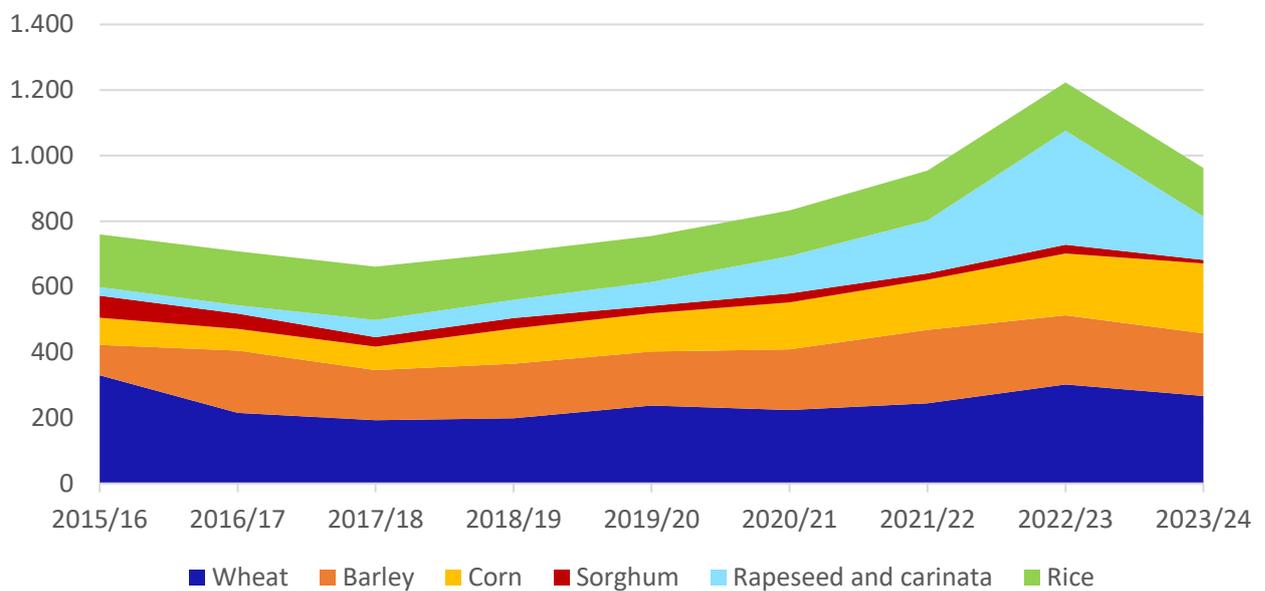
During the 2023/24 agricultural harvest, while the area allocated to summer crops remained relatively stable (sorghum, corn and rice), the area dedicated to winter crops contracted by

¹¹ The data, measured in tonnes of nitrogen per year, is derived from information supplied by the National Directorate of Agricultural Services (DGSA, for its Spanish acronym) of the MGAP. By applying this parameter alongside the emission factors outlined in the 2006 IPCC Guidelines, both direct and indirect N₂O emissions are calculated.

600,000 hectares (31%) compared to the previous season. This decline was primarily driven by a sharp drop in prices and forecasts related to the "El Niño" phenomenon, which resulted in excessive rainfall affecting the harvest. Through this period, the wheat-growing area was reduced by 11% (covering 260,000 hectares), while the rapeseed planting area saw a significant drop of 62% (down to 132,000 hectares), largely due to crop rotation dynamics and sowing dates, in addition to lower prices.

Area planted with selected crops, by agricultural year

In thousands of hectares



Source: Agricultural Programming and Policy Office (OPYPA) and Agricultural Statistics Office (DIEA) of the Ministry of Livestock, Agriculture and Fisheries (MGAP). Selected crops are: Wheat, Barley, Corn, Sorghum, Rapeseed and carinata, and Rice.

Despite the contraction in agricultural area in the agricultural cycle 2023/24, imports of nitrogen in fertilizers increased in calendar year 2023. Therefore, other factors appear to be influencing this trend. These factors include international prices, both for inputs, including nitrogen-based fertilizers, and for the crops to be produced, as witnessed in 2022, when prices spiked due to the conflict between Russia and Ukraine. Additionally, technological advancements that enhance production efficiency (such as the incorporation of slow-release fertilizers and adjusting the timing of nitrogen applications) may also affect fertilizer usage patterns, across within years.



IPPU (Industrial Processes and Product Use) Sector

The Industrial Processes and Product Use (IPPU) sector accounts for a relatively small share of total CO₂ emissions, and primarily originate from cement and lime production.¹² Over 99% of GHG emissions in this sector stem from the production of clinker, the primary component of cement (approximately 85%), and the production of lime (approximately 15%).

Emissions within the cement industry fluctuate based on clinker production activity levels. Between 2022 and 2023, several major infrastructure projects either reached completion or entered their final stages. These projects, which previously engaged a substantial portion of the construction industry, have subsequently resulted in an 8% decline in CO₂ emissions between 2022 and 2023.

The second source of emissions is lime production. Emission trends are similarly influenced by activity levels, with commercial production playing a prominent role, followed by self-consumption within pulp production facilities. The estimated CO₂ emissions for lime production in 2023 remained practically at the same level as in 2022.



Waste Sector

In the Waste sector, CH₄ and N₂O emissions are estimated to result from the decomposition processes of organic matter contained in municipal solid waste and in wastewater of domestic and industrial origin, related to a per capita waste generation rate, as calculated under KPI-1.

Regarding CH₄ emissions in the country, the waste sector accounts for approximately 7%, primarily stemming from landfill sites. Between 1990 and 2023, the emissions resulting from solid waste disposal have experienced a notable increase. This rise is attributed to a greater volume of waste produced, driven by population growth, higher individual income levels, and the expansion of services such as municipal waste collection and transportation to disposal facilities. Particularly, between 2022 and 2023, total methane emissions increased by 4%, mainly explained by the rising quantity of urban solid waste disposed of in landfills.

¹² The largest portion of CO₂ emissions is linked to the Energy sector.

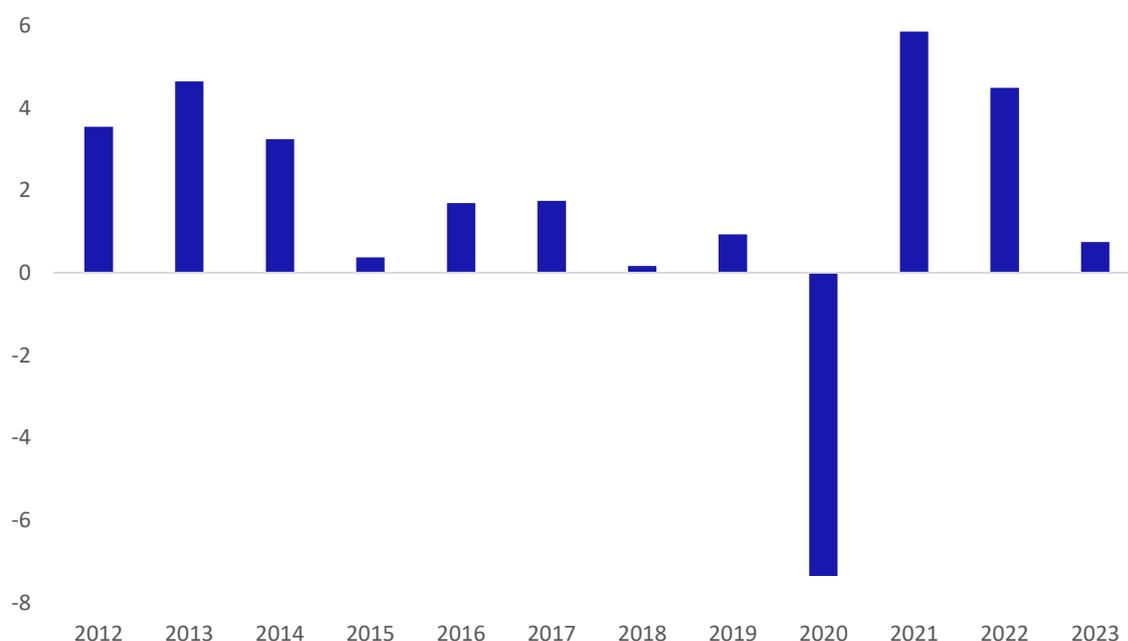
As per N₂O, the estimated emissions for the 2022-2023 period remained unchanged, reflecting stability aligned with population trends and per capita protein consumption patterns.



In 2023, the GDP recorded a slow real growth of 0.7%. This upward trend was driven by the expansion of activities related to inbound tourism during the summer season, the beginning of production at the third pulp mill, and the positive impact in the last quarter of the year from improved agricultural yields compared to the year's first harvest. This growth was partially offset. Between 2022 and 2023, the country experienced a severe drought, which adversely affected agricultural production, particularly in the first half of 2023. It also led to negative performance in the electricity generation sector. Furthermore, during the 2022-2023 period, the construction sector contracted due to the completion of projects such as the third pulp mill and the “Ferrocarril Central” project. There was also a decline in the manufacturing industry, largely impacted by ANCAP's refinery's extended technical maintenance shutdown, which lasted longer than anticipated and counterbalanced the boost from pulp production.

Uruguay's Real Gross Domestic Product

Annual percent change



The latest official series published by the National Accounts System of the Central Bank of Uruguay, retooled using the variation rate method as a statistical splicing technique. Source: SSLB Public Database as of April 2025.



Chapter 4

KPI with Reporting every 4 years (KPI-2)



KPI-2 tracks the maintenance of the native forest area in Uruguay, measured in hectares, with respect to the reference year 2012. As outlined in Uruguay's SSLB Framework, this KPI is officially reported every four years, corresponding to 2021 and subsequently to 2025, 2029, 2033, based on national cartography derived from satellite imaging. In the interim years, the country provides updates on policies, regulations, and management actions aimed at protecting and promoting native forests.¹³

According to the most recent cartographic measurement (2021), the area of native forest was estimated at 847,318 hectares, corresponding to 100% of the baseline reference. Since then, Uruguay has continued its efforts to strengthen the institutional framework and implement effective measures to ensure the conservation and sustainable management of native forest ecosystems, in a context of increasing pressures from land use change, climate variability, and invasive species.

Recent Management and Protection Actions on Native Forests through 2024

New native forest registration and management plans. Forest registration continues to be a cornerstone of Uruguay's native forest conservation policy. During 2024, the Directorate General Forestry (DGF in Spanish) recorded 60 new forest registrations. A record number of 101 management plans were also submitted, indicating increased engagement from landowners. These management plans authorized during 2024 correspond to 164 interventions across 4,231 hectares, with an approved extraction of 31,775 tons of biomass under sustainable management.

Regarding authorized interventions in 2024, 28.7% corresponded to advance clearing. This represented 71.1% of the authorized area and 49.8% of the total tons allowed to be extracted. Additionally, 15.9% corresponds to thinning, representing 21.4% of the authorized area and 22.4% of the total tons permitted for extraction; and 7.9% corresponds to clear-cutting, representing 4.2% of the authorized area and 10.9% of the total tons permitted for extraction.

The DGF authorizes the intervention of native forests when owners submit a management plan that complies with current technical, environmental, and legal criteria. Interventions that decrease the area of native forest include clear-cutting, road construction, and clearing of native forest. In terms of the mapped area of native forest in 2021, these interventions represent 0.06%.

Monitoring, enforcement, and regulatory developments. Over the last 3 years, the government has enhanced its regulatory framework of incentives and enforcement of penalties to promote the management and conservation of native forests, combined with ongoing investments in monitoring, restoration, data transparency and communications.

¹³ Information on the measuring methodology can be found in the Technical Data Sheet of KPI-2 [here](#).



In 2023, the conditions for accessing tax exemptions granted to family farmers with native forest areas on their land were modified, with the objective of continuing to contribute to the conservation and valorisation of the ecosystem (Law 20,075, articles 477, 478, and 491).¹⁴

In addition, new requirements, and instructions for the “Native Forest Register” and the “Application for Native Forest Management or Cutting Plans” were established, as part of the process of developing and implementing the National Forest Information System (SNIB, in Spanish). The DGF issued Resolution No. 781/24, which introduces new technical requirements for forest registration and management plan submissions, effective as of December 10, 2024. These changes aim to improve traceability and align domestic policies with the EUDR.¹⁵

Consistent with these actions, the number of inspections by report or remote sensing has increased over the last three years. This is consistent with a change in the methodology for monitoring changes in native forest cover, as part of the reporting process required by the new European Union regulation (EUDR 1115/23). The DGF enhanced its monitoring and enforcement mechanisms in 2024 by conducting 141 inspections (in 2023 there were 127 inspections), including 54 triggered by satellite alerts or public reports. Additionally, 40 complaints were submitted through various channels, marking the highest annual figure to date. Following investigations, 38 illegal activities were confirmed, impacting 192 hectares of native forest. While certain interventions such as selective logging or clearing for fencing or forest health are allowed under approved plans, only 0.08% of the total mapped native forest area (approximately 678 hectares) was affected by any kind of intervention in 2024. This minimal proportion suggests no significant loss in native forest coverage, particularly considering ongoing natural regeneration processes.¹⁶

Public engagement and communication. The Senda Nativa communication campaign remained active in 2024, reinforcing public awareness of forest conservation issues through radio and press releases. "Senda Nativa" is a communication campaign on the sustainable management of native forests to promote their protection among Uruguayan citizens. Senda Nativa emerges within the framework of the MGAP policies for the conservation of our natural heritage, in this case, native forests, which are rich in biodiversity, both in fauna and flora. In addition, the campaign seeks to increase the registration of properties with native forests, encourage producers to request authorization before logging, raise awareness among transporters who transport firewood that they must request a transit guide from the owner, and inform the public when they can consume firewood from native forests. Communication regarding the registration of native forests is being strengthened. This initiative aims to enhance the registration of properties within the native forest area. It seeks to cultivate a culture of producer authorization for felling activities. Furthermore, it endeavours to raise

¹⁴ See Law 20,075, articles 477, 478, and 491 [here](#).

¹⁵ See the Resolution No. 781/24 [here](#).

¹⁶ EUDR 1115/23. See [here](#).



awareness among transporters of their responsibility to demand the transit guide from the property owner. Additionally, the initiative aims to educate the public on the circumstances under which they are permitted to utilize firewood from the native forest.

New videos focusing on the management of invasive exotic tree species such as *Ligustrum lucidum* and *Gleditsia triacanthos*, are incorporated in 2025. The purpose of these efforts is to raise awareness regarding the significance of controlling these species and the current methods that exist.

The results of the communication actions include an increase in online reports of native forests, as well as an increase in traffic on social networks and web page consultations. The campaign contributed to increased web traffic, which reached over 42,700 visits, and encouraged more citizens to use digital platforms for reporting infractions.

Institutional strengthening and research. In a major digitalization effort, the DGF launched the forest management module of the SNIB, enabling online services such as registration, management plan submission, inspection requests, and ownership updates. Over 5,000 paper records are being converted to digital format, improving access to and management of forest data.

Additionally, the Germplasm Centre expanded its research and production capacity, yielding 12,625 native plants and 555 cuttings. It also collected 84.8 kilograms of seeds to support reforestation initiatives.

Certification and international standards. Uruguay launched pilot initiatives for certifying agro-export products from native forest areas, aimed at complying with the EUDR requirements. In 2024, a shipment of wood chips to Portugal successfully demonstrated the feasibility of traceability systems and due diligence processes. This certification marks a key step toward positioning Uruguay as a responsible and sustainable agro-exporting country.¹⁷

¹⁷ Further information on this matter can be found in Chapter 6 of this report.



Chapter 5

External Verification of Annual KPI-1





In May 2025, UNDP published the External Verification Report for the KPI-1 values through the year 2023. The UNDP verification report concludes that *“In UNDP’s opinion, KPI-1 reported in the 2023 Key Performance Indicators Report for the Sovereign Sustainability-Linked Bond has been prepared in accordance with the methodologies established in Uruguay’s Sovereign Sustainability-Linked Bond (SSLB) Framework.”*¹⁸

The verification additionally corroborates that: *“KPI-1 adheres to the methodology and good practices established in the 2006 IPCC Guidelines for the preparation of National Greenhouse Gas Inventories and to the requirements of Decisions 17/CP.8 and 18/CMA.1.”*¹⁹

Also, it asserts: *“The Emissions Report 1990-2023 and the 2023 KPI Report comply with the quality principles in terms of Transparency, Accuracy, Consistency, Comparability and Completeness established by the 2006 IPCC Guidelines.”*

At last, the UNDP verification states that: *“The KPI-1 Emission Reporting process has a robust system of quality control and review of historical values for inclusion of improvements and implementation of recalculations according to the good practice of the 2006 IPCC Guidelines under a continuous improvement framework.”*, and wraps up by stating: *“The institutional arrangements for inter-ministerial coordination through the SSLB, pMRV and NGHGI Working Groups of the National Climate Change Response System, following the 2006 IPCC Guidelines, providing a robust institutional framework that enables effective planning, oversight, management, and implementation of annual KPI-1 estimation and ensure the effective operationalization of Uruguay’s Sovereign Sustainability-Linked Bond.”*

¹⁸ See External Verification Report 2025 [here](#).

¹⁹ Decision 18/CMA.1 applies as of December 2024. See [here](#).



Chapter 6

Future Pathways: Actions to Drive Progress on KPIs



Uruguay is firmly committed to advancing the transition toward a low-carbon and environmentally sustainable economy. The country is actively pursuing a clean energy future through strategic policies aimed at the decarbonization of key economic sectors, with focus on ground transportation and industrial activities. In the AFOLU sector, policy initiatives are being designed to promote sustainable production practices, safeguard and restore ecosystems, and enhance carbon sequestration. Additionally, the government is firmly committed to the pursuit of sustainable economic development through the implementation of innovative sustainable finance initiatives. This section presents an updated overview of the policy measures across different sectors that are expected to contribute to the achievement of goals for Uruguay's KPIs.²⁰

Public Policy Initiatives, and Incentives to the Private Sector

Two cross-cutting national strategies on Circular Economy and on Sustainable Bioeconomy have been recently approved to guide sectoral transformations and reinforce the coherence of Uruguay's climate and sustainability agenda. These frameworks provide overarching direction to the diverse sectoral policies analysed in the sections that follow.

- **The National Circular Economy Strategy (ENEC, in Spanish)** was formally approved in 2024, establishing a long-term vision for Uruguay's transition toward a regenerative, resource-efficient economy, as part of interinstitutional coordination between MIEM, MA, MGAP and MEF. Aligned with the United Nations 2030 Agenda, the strategy sets its main implementation horizon for 2050. The ENEC promotes the redesign of value chains to eliminate waste and reduce greenhouse gas emissions, the extended use of materials and products, and the regeneration of ecosystems to enhance carbon sequestration. The actions proposed under the ENEC are framed as drivers of climate mitigation, green employment, and innovation-based competitiveness. It is worth highlighting key sectors in which Uruguay shows progress in terms of Circular Economy. In the Waste sector, the National Waste Management Plan recognizes the importance of integrated waste management and the circular economy for climate change mitigation and adaptation, by identifying waste as a resource, capable of generating value and employment, and promoting methane capture at final disposal sites. In the agriculture sector, through various actions supported by the national government and with international reimbursable and non-reimbursable financing, it was possible to develop circularity schemes for dairy effluents that reach more than 50% of the dairy farms in the Santa Lucía River basin with actions to improve processes to minimize effluents. In the energy sector, the use of renewable sources puts the

²⁰ For additional information, please refer to the section "Pathways to Environmental and Climate Progress" in Chapter 3 of the [SSLB Framework](#) published in September 2022, as well as the [First](#) and [Second](#) Annual Report of the SSLB, published in 2023 and 2024, respectively.

principles of the circular economy into practice, as energy is generated from renewable sources that can be replenished, reused and are non-depletable.²¹

- **Uruguay's National Strategy for a Sustainable Bioeconomy (ENBS, in Spanish)**, launched in December 2024, was elaborated with the leadership of MGAP and the participation of MIEM, MEF, MA, Ministry of Education and Culture (MEC, for its Spanish acronym), Ministry of Labour and Social Welfare (MTSS, for its Spanish acronym), Ministry of Tourism (MINTUR, for its Spanish acronym), Ministry of Housing and Territorial Planning (MVOT, for its Spanish acronym), Office of Planning and Budget (OPP, for its Spanish acronym), National Agricultural Research Institute (INIA, for its Spanish acronym), and National Agency for Research and Innovation (ANII, for its Spanish acronym), and other national government agencies and the academic community. The Strategy promotes the responsible and efficient use of biological resources, which directly contributes to the reduction of emissions in the production phase by optimizing the use of soil, water, and nutrients. Research for the valorisation of native forest is also promoted by the ENBS. It aims to generate value from biomass and renewable energy through innovation and knowledge-intensive production across agriculture, forestry, bioindustry, and emerging sectors. The strategy's 2024-2026 Action Plan defines short- and medium-term priorities while its long-term goals are aligned with Uruguay's 2050 development vision. Structured around four strategic pillars - Sustainable production and consumption; International integration based on environmental added value, Science, technology, and innovation focused on the bioeconomy, and Inclusive territorial development - the strategy encourages cross-sector collaboration and public-private partnerships to foster rural development, environmental resilience, and economic diversification. The bioeconomic production complexes emphasised in the Strategy are: food and beverages; forestry resources; chemicals and pharmaceuticals; aquatic biological resources; waste and by-products recovery.²²

²¹ See ENEC [here](#).

²² See ENBS [here](#).



Energy and Industrial Processes

Uruguay has achieved a 92% renewable electricity matrix, on average over the period 2019-2023, and under regular climatic conditions, and now faces the challenge of decarbonizing the remaining segments of the energy sector, namely industry and transportation. Following the National Energy Efficiency Plan 2015-2024, the country is advancing towards a more profound Energy Transition. The key objectives of this second stage include the direct electrification of end-use applications, the development of a green hydrogen economy, the consolidation of a smart grid to efficiently coordinate energy supply and demand, the integration of energy storage technologies, energy generation from agricultural waste, and the energy valorisation of urban solid waste. Additionally, the transition seeks to incorporate clean energy into the transportation sector by leveraging the latest available technologies.²³

Electric Mobility. In the transport sector, the decarbonization of the electric matrix represents a significant opportunity for the country to progress in the reduction of emissions through the development of electric mobility.

In terms of infrastructure, Uruguay currently has 314 charging stations in publicly accessible locations, offering both slow and fast charging, thus achieving the goal of providing a charging point every 50 kilometres. In addition, UTE introduced a subsidy for users who purchase an electric vehicle supply system to support the expansion of the network (Plan Movilidad Eléctrica).²⁴ Also, the charging tariff was revised by setting a uniform rate, applicable across the entire day regardless of the charging time, a departure from the previous pricing scheme.

Efforts to promote the conversion of private vehicles continue, supported by a consistent fiscal policy for hybrid and electric vehicles under Decree No. 390/021 of 2021. For instance, electric utility vehicles have been included in the cleaner production indicator in the Investment Promotion Law. This addition permits access to tax exemptions.²⁵

Additionally, the Specific Internal Tax (IMESI, in Spanish) was reduced to 0%, while diesel vehicles are subject to a 115% tax and gasoline vehicles to a tax ranging between 23% and 46% under Decree 390/021. Furthermore, the global tariff rate (TGA, in Spanish) is exempted, meaning that import duties on electric vehicles, lithium batteries, and chargers for electric mobility are set at 0%.

²³ The National Energy Efficiency Plan 2015-2024 incorporates various instruments designed to achieve an energy savings target of 1,690 ktep over the period 2015–2024, compared to a baseline scenario with no significant structural changes in consumption patterns. The plan encompasses sector-specific measures, awareness campaigns, and educational programs, along with the development and enhancement of financial instruments, among other initiatives. Further information can be accessed [here](#).

²⁴ See “Plan Movilidad Eléctrica” [here](#).

²⁵ See Decree No. 390/021 [here](#).



Regarding public transportation, the Sustainable Mobility Trust Fund was officially regulated in 2024 through Decree No. 143/024, following its establishment in 2023 under Law No. 20.212, Article No. 584. This new regulation restructures the diesel price reimbursement scheme granted to public transport companies, promoting the adoption of more efficient technologies in fleet renewal. Additionally, it introduces maximum age criteria for vehicle fleets, driven by environmental concerns, energy efficiency goals, and road safety considerations. In 2024, 57 new electric buses were incorporated into the public system.²⁶

Additionally, in 2024, the National Policy on Sustainable Urban Mobility (PMUS, in Spanish) was launched and regulated in March 2025 through Decree No. 50/025. This policy considers the social, environmental, economic and enabling dimensions of urban mobility with a time frame up to 2050. It provides strategic guidelines, together with short and medium-term measures including issues of electric mobility, financing, planning and capacity building, to be implemented in an inter-sectoral and inter-institutional manner by the national and sub-national public sector, as well as the private sector, academia and civil society.²⁷

Energy Efficiency. Uruguay continues to implement a variety of initiatives aimed at promoting the purchase of Class A electrical appliances and the issuance of energy efficiency certificates. These efforts contribute to the replacement of older technologies and the promotion of more efficient energy use in households. The “*Renovate*” Program for the acquisition of energy-efficient appliances, implemented by MIEM in 2023, successfully contributed to the development of a more efficient stock of appliances and influenced household consumption patterns.²⁸ In addition, UTE relaunched the Plan 2022, inaugurated in 2022, the program offers subsidies and incentives for the adoption of efficient home appliances and systems. UTE also established the “*Confort Central*” program, with incentives for residential and office buildings to encourage the installation of heat pumps, promoting greater energy efficiency and reducing environmental impact.²⁹ Additionally, regulatory updates have improved access to the energy efficiency certifications scheme for small- and medium-sized consumers.³⁰

In this line, UTE has successfully completed the nationwide deployment of smart meters, reaching 100% coverage by the end of 2024. This infrastructure is enabling more precise monitoring of energy consumption, as well as the design of innovative electricity tariffs and products that encourage efficient energy use and integration of renewable sources. Consumers with smart meters are increasingly accessing time-of-use pricing options and participating in demand-side response schemes, leading to measurable improvements in energy savings and grid flexibility.

²⁶ See Decree No. 143/024 [here](#).

²⁷ Further information on the National Policy on Sustainable Urban Mobility, see Decree No. 50/025 [here](#).

²⁸ See “Programa Renovate” [here](#).

²⁹ See UTE “Confort Central” program [here](#).

³⁰ See Energy Efficiency Certificates [here](#).

In order to provide users with accurate technical and economic information to help them identify and implement energy efficiency measures, the MIEM is carrying out the Energy Efficiency Assistance Line (LAEE). This Line consists of non-reimbursable funds that partially cover the cost of preliminary studies prior to the implementation of energy efficiency investment projects. These studies include energy diagnostics or audits, as well as the technical-economic formulation of the energy efficiency measures to be implemented.³¹

Electricity generation. Uruguay continues to expand its installed renewable energy capacity, with new photovoltaic solar parks scheduled to be installed in the coming years. In November 2024, UTE inaugurated its first large-scale photovoltaic solar generation plant, which is expected to generate approximately 47 GWh of electricity during its first year of operation, supplying an average of 15,000 households. This project lays the groundwork for the next expansion of the country's solar generation capacity. In April 2025, UTE launched a competitive auction to add up to 200 MW of new solar capacity, aiming to diversify the renewable energy mix and strengthen electricity export capabilities, particularly to neighbouring Brazil and Argentina.

Moreover, construction of the extra-high-voltage power line (500 kV) between the Tacuarembó and Salto Departments is in progress, led by UTE and was the first green transmission line financed by IDB Invest worldwide. This project, with a total cost of US\$204 million, involves the design, construction, operation, and maintenance of a 365-kilometer-long transmission line, interconnecting substations in the Departments of Tacuarembó and Salto. The initiative aims to enhance the robustness of Uruguay's National Interconnected System (SIN, in Spanish) and facilitate the transmission of energy from renewable sources, such as wind, hydro, solar, and sustainable biomass.

Uruguay has also continued to make progress in implementing actions aimed at developing the green hydrogen economy, under the long-term guidelines set out in the Roadmap for Green Hydrogen and derivatives, and the implementation of concrete initiatives through the H2U Program. Among these initiatives, the "Final investment decision" of the country's first green hydrogen production facility was confirmed in 2024. This project will produce green hydrogen from solar photovoltaic energy for use in fuel cell vehicles, particularly forestry trucks, aiming to replace fossil fuels in the heavy transport sector. This shift is especially relevant given that road freight transport has become one of the most carbon-intensive segments within the energy sector, driven largely by the expansion of forestry-related logistics. In the first phase, starting operations in 2026, the plant will supply six forestry trucks, each with a range exceeding 700 kilometres and a charging time of just 12 minutes. The facility will span approximately 8.4 hectares and will include a 3.9 MW solar park, a 2 MW

³¹ See the LAEE program [here](#).



electrolyser, a hydrogen production capacity of 76,700 kilograms per year, and an on-site storage and refuelling station.



Agriculture and Livestock Management

In the agriculture and livestock production sector, there are ongoing transformations towards a more sustainable production with less impact on the environment. Sustainable production with less impact on the environment continues to be strengthened in the country. These transformations result in increased productivity, as well as enhanced environmental practices, which consequently reduce the intensity of GHG emissions per unit of product and boost the resilience of the systems. The integration of optimal management practices within the natural habitat of livestock herds within livestock establishments has been demonstrated to enhance the efficiency of production systems. This approach is concomitant with the preservation of the natural range, the promotion of enhanced productivity, and the optimization of natural resource use. These policy guidelines are framed within Uruguay's Long-term Climate Strategy vision and are delivered through the NDCs and climate roadmaps for the agricultural sector. These roadmaps incorporate an integrated and coherent approach with the policies, programs and strategies that are being designed and implemented in the country, on the path to sustainable and resilient production.³²

Within the framework of Uruguay's National Strategy for a Sustainable Bioeconomy, officially presented in 2024, concrete measures have been outlined for transforming agriculture and livestock systems by 2050, with an initial implementation phase defined for 2024–2026. The strategy promotes sustainable and circular production models that reduce dependence on synthetic inputs and support the transition to agroecology. Cross-cutting actions include the adaptation of the regulatory framework, creation of new bioproduct value chains, capacity building, and development of monitoring systems and financing instruments. These measures aim to strengthen rural livelihoods, biodiversity conservation, and Uruguay's positioning in international bio-based markets.

National Bioinputs Plan. In February 2025, Uruguay officially approved the National Bioinputs Plan through Decree No. 042/025. This initiative, developed by the MGAP, aims to promote sustainable agricultural development by encouraging the use of biological products and fostering the growth of new sectors within the national economy. The plan outlines four strategic axes: Innovation and Research, Strengthening Regulatory Capacities, Information

³² See the six Roadmaps for Sustainable Agriculture and Livestock Management [here](#).

and Knowledge Management, and Financing Tools. It also includes a cross-cutting axis to promote collaboration between public, private, academic, and productive sector actors.³³

Sustainable livestock farming and production. The MGAP, in coordination with the MA and the MEF, is in an advanced stage of developing a program aimed at promoting the adoption of technologies in livestock farming, with particular focus on breeding, in line with Uruguay's NDCs. The program seeks to enhance productive efficiency and reduce methane emission intensity in meat production, while simultaneously improving producers' incomes and advocates for biodiversity, incorporating insights and lessons learned from previous projects.

In addition, the MGAP, the MA, and the Uruguayan Agency for International Cooperation (AUCI, in Spanish) are implementing the project "Strengthening Sustainable Livestock Farming in Uruguay," funded by the European Union through the EUROCLIMA+ program. The objective of this initiative is to strengthen national capacities for monitoring, management, and policy design for livestock sustainability, with a gender and generational approach. It promotes actions in three key aspects: monitoring sustainability, strengthening capacities in the territory for the adoption of good practices in livestock production and the design of incentive policies adapted to the reality of national production.

Aligned with the commitments established in Uruguay's Third NDC and the Roadmaps for Sustainable Agriculture and Livestock Management, the country continues to make progress on multiple fronts to reduce greenhouse gas emissions in livestock systems. Key measures include the adoption of good livestock and grassland management practices, such as the use of sown legumes with high tannin content, to enhance soil carbon sequestration and reduce methane emissions. Efforts are also focused on developing an animal breeding platform to select more feed-efficient animals and integrate genomics into breeding programs, with demonstrated results in the Hereford breed by the National Institute of Agricultural Research (INIA). In parallel, research is ongoing to assess the effectiveness of methanogenesis inhibitors across various livestock systems, and to estimate their potential environmental and productive benefits. Additionally, the role of animal health in methane reduction is being evaluated, alongside co-benefits for climate adaptation. The Departmental Animal Welfare Institutions, operational since 2021, continue to support decentralized coordination, monitoring, and the design of future policies at the municipal level.^{34, 35}

Reducing use of synthetic nitrogen fertilizers. Uruguay continues to allocate resources to promote research on the benefits of incorporating slow-release fertilizers and adjusting the timing of nitrogen applications. These efforts are complemented by knowledge exchange with

³³ See Decree No. 042/025 [here](#).

³⁴ See Uruguay's Third Nationally Determined Contribution to the Paris Agreement (NDC3) [here](#).

³⁵ See the six Roadmaps for Sustainable Agriculture and Livestock Management [here](#).

farmers to improve the efficiency of nitrogen use on crops and pastures. Based on ongoing research, existing economic and fiscal instruments are being reviewed to encourage the adoption of slow-release fertilizers.

Agroecological production. Uruguay continues to make steady progress in promoting agroecological and environmentally responsible agricultural practices. The “Agroecological and Resilient Systems in Uruguay” project (SARU), led by the MGAP, has advanced significantly in strengthening productive systems and building capacity among rural producers. The project has shown concrete results across its planned actions, demonstrating the viability and effectiveness of its implementation. In parallel, Uruguay reinforces its commitment to sustainable agriculture through the development of specific regulations for the use of bio-inputs. This includes the advancement of a regulatory framework for botanical products already registered under existing decrees.

Organic agricultural production continues to grow, particularly among certified beef cattle farmers working with the industry. This approach avoids the use of synthetic fertilizers and agrochemicals, reduces energy consumption, and promotes biodiversity and carbon sequestration in soils. The MGAP has consolidated a national certification system for organic and integrated agricultural and aquaculture production, established by Presidential Decree in May 2022. This system enables voluntary participation from producers and helps align production practices with evolving consumer preferences and sustainability standards. Together, these initiatives reflect Uruguay’s commitment to a transition toward a more resilient, climate-smart agricultural model.



Waste Management

Progress in the Implementation of the National Waste Management Plan. Since 2024, Uruguay has made significant progress in implementing its National Waste Management Plan (PNGR 2022–2032), particularly through institutional strengthening and financial support to subnational governments. The MA signed cooperation agreements with 15 departments, committing over USD 36 million to the closure of open-air dumps, the construction of environmentally adequate final disposal sites, and the development of transfer stations. As a result, 28 open-air dumps had been closed by the end of 2024, with another 16 undergoing closure works. Additionally, seven departments have planned new sanitary landfills, and regional agreements have been established between departments like Durazno and Flores or Florida and Lavalleja to consolidate final disposal infrastructure.

In parallel, Uruguay is advancing toward circular and low-emission waste logistics. By 2024, five departments had centralized final disposal of household waste, and ten new transfer stations were completed, with seven more under construction. Notably, Canelones and Rocha integrated 14 electric vehicles into their recyclable collection fleets, and several municipalities incorporated electric tricycles. A technical study conducted under the Renewable Energy Innovation Fund (REIF) project confirmed the feasibility of transitioning toward low-emission waste collection fleets, particularly for light-duty recyclable routes. These transformations, supported by national and local investments, reflect Uruguay's commitment to sustainable waste management aligned with climate and circular economy goals.³⁶

In addition to infrastructure improvements, Uruguay has advanced the digital and participatory components of its waste strategy through the development of the Integrated Waste Information System (SUIR, in Spanish). In 2024, key milestones included a national map of final disposal sites, a prototype for industrial waste traceability, and the updated Where to Recycle app ("*Dónde Reciclo*"). These tools, integrated into the Uruguay Circular Observatory, enhance monitoring of PNR indicators and foster transparency and public engagement in the shift toward a circular economy.³⁷



Forestry and Other Land Uses

Advancing certification for deforestation-free agro-exports. In 2024, Uruguay made significant progress in designing a public certification system for agro-exportable products originating from native forest land. The initiative, coordinated by the Directorate of Forestry (DGF) of MGAP and executed by the Centre for Applied Research in Agroforestry Development (IDAF in Spanish) under the EU-funded AL-INVEST Verde program, aimed to facilitate compliance with Regulation (EU) 2023/1115 on deforestation-free supply chains. After its launch in April 2023, the project carried out a diagnostic assessment in the littoral region, identified key value chains and actors, and mapped relevant international certification experiences. It also organized participatory workshops to gather input from stakeholders, which informed the proposal of a preliminary certification system and an incentive framework for producers.³⁸

Two pilot exports of deforestation-free timber were successfully conducted: one to Portugal and a second to the United States (for wood products later destined for the European market). These experiences validated traceability protocols and demonstrated Uruguay's

³⁶ For further information see Progress Report, January 2025 [here](#).

³⁷ For further information see "*Observatorio Uruguay más circular: Plan Nacional de Residuos*" [here](#).

³⁸ See AL-INVEST Verde program [here](#).

capacity to meet new market requirements. Building on this progress, MGAP is developing a digital platform that will serve as the backbone of the certification system. The platform will be unique, universal, and voluntary, interoperable with the National Livestock Information System (SNIG in Spanish), the National Agricultural Information System (SNIA in Spanish), and the National Forest Information System (SNIB in Spanish). It will provide two key tools: a native forest change map and digital certificates verifying that products originate from land free of deforestation - ready to be shared with European operators and other stakeholders in global supply chains.

Improving transparency and efficiency in forest governance. In 2024, Uruguay implemented the National Forest Information System (SNIB in Spanish), aforementioned, a digital platform that modernizes the management of native forests by replacing paper-based procedures with an integrated online system. SNIB allows users to register native forests, submit and update forest management plans, request inspections, and transfer property ownership—all through a secure and accessible interface. The system also enhances data precision by incorporating updated satellite imagery to verify forest coverage. This transition to digital records strengthens transparency, reduces administrative delays, and supports more effective conservation and oversight of Uruguay's native forest resources.³⁹



Sustainable Finance Initiatives

Green Credit Guarantees for Small Firms. Uruguay introduced *SiGa Ambiente* as a new financing tool to promote environmentally sustainable investments by micro, small, and medium-sized enterprises (MSMEs). Designed by the MEF and MA, and the National Development Agency, the initiative aims to support innovation and cleaner production models among smaller firms. The instrument offers a 50% reduction in the guarantee fee under the National Guarantee System for Enterprises (SiGa) for businesses in the waste management sector or those investing in environmentally sustainable activities, as defined in a list of eligible investments. SiGa guarantees up to 70% of the credit for MSMEs that lack sufficient collateral, improving access to credit on favourable terms. This instrument aligns with Uruguay's broader sustainable finance strategy, alongside sovereign climate bonds and investment incentives for green infrastructure.⁴⁰

³⁹ See SNIB [here](#).

⁴⁰ See *SiGa Ambiente* [here](#)



Climate and Nature Fund. In November 2024, the Uruguayan Executive Branch submitted to Parliament a draft bill to create the Climate and Nature Fund. This proposal reflects a strategic vision that prioritizes the conservation of natural resources and ecosystems for the benefit of present and future generations. The fund is also intended to reinforce Uruguay's international positioning by leveraging its environmental track record to attract investment and non-reimbursable resources. If established, the fund could serve as a mechanism to channel the financial benefits or co-benefits (such as interest rate reductions or grants) associated with Uruguay's sustainable debt instruments into concrete climate and nature actions at the national level, strengthening the link between financial innovation, delivery of international commitments, and on-the-ground implementation.



Chapter 7

Case Studies





A Data-Driven Approach to Forest Carbon Accounting

The preservation of native forests and the mitigation of deforestation have constituted fundamental pillars of Uruguay's environmental policy. Significant investments have been made by the country in the management of its native forests, which is protected by law and subject to tax exemptions. The National Strategy for Native Forests (ENBN in Spanish), from 2018, sets out as national policy for the conservation and enhancement of native forest carbon stocks, sustainable forest management, and the reduction of emissions from deforestation.⁴¹

A key component of the strategy is maintaining the carbon stock of native forests to avoid GHG emissions and foster long-term carbon sequestration. The data-driven approach combines rigorous carbon stock estimation methodologies, spatial analysis, and a robust legal framework.

The REDD+ Project (MA-MGAP, 2020) estimated the total carbon stock contained in the living biomass (both aboveground and belowground) of Uruguay's native forests. This estimate was derived from the following methodological steps:

1. Carbon content was estimated for each of the 1,467 forest plots surveyed in Uruguay's First National Forest Inventory (IFN). Plot data included species-specific stem volume (m³ ha⁻¹), basic wood density (D), and default parameters from IPCC guidelines (BEF, R, CF). Wood density values were sourced from national literature, regional databases (IntiCetema), and the Global Wood Density Database.
2. Based on the IFN data, a carbon map of living forest biomass was developed. Each pixel in the native forest map (generated using Landsat 8 imagery for 2016) was assigned a carbon estimate through geostatistical modelling (kriging interpolation).

The maintenance of 100% of native forest area ensures the full preservation of its living biomass carbon stock (100%). This action not only prevents GHG emissions, but also enables continuous carbon sequestration. Uruguay's Forest Law, in force since 1987, prohibits deforestation of native forests, making avoided deforestation a non-applicable counterfactual scenario. Given this legal safeguard, the measure focuses on conserving existing carbon stocks rather than quantifying hypothetical emissions reductions. The results support Uruguay's broader climate policy, affirming that the legal and policy framework is a fundamental pillar of the country's mitigation strategy.

This case explains how the combination of detailed forest inventory data, spatial analysis techniques, and legal protection mechanisms can effectively support climate mitigation efforts. Uruguay's approach illustrates that conservation, when backed by strong institutional commitments, can generate measurable outcomes for climate action. Furthermore, the methodology ensures transparency and replicability, providing a model for similar initiatives in other countries or ecosystems.

⁴¹ See Public Law N° 15939 of 1987 [here](#) and the National Strategy for Native Forests [here](#).



Renewable Energy Innovation Fund (REIF): Unlocking Private Capital for Uruguay's Sustainable Energy Transition

The Renewable Energy Innovation Fund (REIF) is a program of the United Nations and the Government of Uruguay, financed by the Joint SDG Fund, which successfully structured a trust fund with UNIDO as the trustee. The REIF is possible because Uruguay was selected among the four countries in the world from 155 nations (with Fiji, Indonesia y Malawi). This trust fund operates as a blended finance instrument designed to accelerate the country's Second Energy Transition by mobilizing private investment in clean technologies for key sectors such as industry and transport. Through concessional financing and technical assistance, REIF enhances the impact of each project, while promoting innovation, economic development, competitiveness, and climate action. Its operations are guided by a cross-cutting commitment to gender equality and social inclusion.

Investment and impact in figures

Since launching operations in 2023, REIF has become a key player in Uruguay's sustainable finance ecosystem by co-financing 14 private investment projects. Through more than USD 3.8 million in concessional funding, the fund has mobilized USD 23.2 million in total investments, supporting initiatives that will collectively avoid approximately 100,000 tonnes of CO₂ emissions. This translates into 25 tonnes of CO₂ avoided per USD 1,000 invested by REIF, positioning the fund as a high-impact, cost-effective financing mechanism within the region's sustainable finance landscape.

REIF's partnerships with seven commercial banks have helped embed impact criteria into credit analysis and contributed to shifting the financial sector toward impact-driven decision-making. To ensure rigorous evaluation, REIF applies an impact assessment methodology grounded in leading international standards—such as IRIS+, UNDP's SDG Impact Standards, and the IFC Performance Standards—capturing the full economic, environmental, and social value of each investment.

Supporting investments beyond financing

In addition to concessional financing, REIF provides technical assistance that enhances project design, implementation, and impact measurement. It also supports feasibility studies and technology validation for early-stage ventures, helping reduce risks and accelerate technology adoption. By promoting training, technology transfer, and strategic studies in areas such as electric mobility, green hydrogen, and gender, REIF facilitates access to international solutions adapted to Uruguay's industrial context and contributes to close information gaps. By fostering enabling conditions for decarbonization, REIF reinforces its role as a catalyst for systemic change.

Looking ahead, REIF seeks to scale its operations, broaden its scope, and deepen partnerships across public and private stakeholders. As it enters a new phase, the fund reaffirms its commitment to transforming Uruguay's financial system into a driver of inclusive and sustainable development.

Electricity Grid and Energy Dispatch in Uruguay

Uruguay's electricity system stands out for its high share of renewable energy and the implementation of a centralized, cost-optimized dispatch mechanism. This dispatch system is designed to minimize total operating costs while reliably meeting electricity demand. It is based on a merit order, which ranks generation units by their variable costs in ascending order. Those with the lowest costs are dispatched first.

The country's power mix is characterized by a significant presence of hydroelectric plants with reservoirs, extensive deployment of wind and photovoltaic (PV) solar power, and strong interconnections with Brazil and Argentina, which enable flexible import and export strategies. This regional connectivity plays a central role in Uruguay's energy strategy, enabling both imports during shortages and exports during surplus conditions. The figure below illustrates the historical trend of electricity imports and exports between 2007 and 2023. It highlights Uruguay's growing capacity to act as a net exporter in years with favourable renewable generation, particularly since the large-scale deployment of wind and solar capacity.

Import and export of electricity

In kilotons of oil equivalent (Ktoe), 2007-2023 period



Source: National Energy Balance, 2023, Ministry of Industry, Energy and Mining.

Dispatch decisions are based on an economic merit order; whereby power plants are scheduled according to their variable generation costs. The goal is to meet forecasted electricity demand at the lowest possible total operating cost, within a given planning horizon (e.g., daily, weekly, or semi-annual). During periods of low hydro availability (e.g., droughts), the country can either rely on thermal power plants or import electricity, depending on which option is more cost-effective. The system operates under a principle of opportunity, meaning that generation or import decisions are made to minimize system-wide costs.

The following table summarizes the main types of electricity generation and their role in Uruguay's dispatch system, based on cost and operational priority.

Dispatch Criteria by Generation Type

Generation Source	Variable Dispatch Cost	Dispatch Priority	Notes
Wind and PV solar	0 (by regulation)	Highest (base dispatch)	Dispatched whenever available
Hydroelectric (with reservoir)	Value of water (opportunity cost)	Variable	Depends on reservoir levels and inflow forecasts
Thermal (fossil fuel)	Fuel + variable O&M	Lower	Used when cheaper sources are insufficient
Imports	Offer price	Comparable to thermal	Used if cheaper than domestic generation
Self-Producers	Offer price	Comparable to thermal	Inject surplus generation into the grid
Small-scale plants (<5 MW)	0	Optional participation	Mostly biomass, small wind/PV; may opt into dispatch

The value of water for hydroelectric plants plays a central role in the system. It is computed dynamically through simulations by ADME (Electricity Market Administration), incorporating inflow forecasts, reservoir levels, and operational constraints such as flood control and navigation. For instance, Bonete's large storage capacity positions it as strategic reserve, while Palmar and Salto Grande (Uruguayan share) typically operate to meet peak demand. Wind and solar generation are always dispatched when available. Their output is modelled using historical meteorological data and synthetic generation profiles to account for variability. These resources, having no fuel cost, are prioritized.

Thermal plants are dispatched only when lower-cost renewable resources are insufficient. Their higher variable costs—driven by fossil fuel prices and operation and maintenance (O&M)—place them lower in the merit order. Imports and electricity from self-producers are dispatched if their offer prices are lower than domestic generation costs, following the same merit-based logic as thermal and hydroelectric plants. Additionally, small-scale generators (with an installed capacity of 5 MW or less)—mainly composed of biomass, wind, or solar technologies—can either participate in centralized dispatch or operate independently.

The system includes a model for rationing based on fictitious "failure units" that simulate unmet demand. These units are only activated as a last resort and are assigned progressively higher dispatch costs to reflect the increasing severity of energy shortages. This approach is formally regulated by Decree No. 105/013 (April 2, 2013).⁴²

⁴² See Decree No. 105/013 of April 2, 2013, [here](#)



A key outcome of the dispatch process is the short-term marginal generation cost, which sets the hourly spot market price. This price corresponds to the cost of the last (most expensive) dispatched unit, and is capped at USD 250/MWh by regulation to ensure price stability under extreme conditions.



Chapter 8

Third Nationally Determined Contribution to the Paris Agreement



Uruguay submitted its third NDC to the Paris Agreement in December 2024. It strengthens the country's commitment to addressing climate change and compliance with the Paris Agreement through an innovative NDC. The third NDC is submitted a short two years after the second NDC, fulfilling the country's commitments under the UNFCCC in a timely manner.^{43, 44}

In light of these circumstances, this NDC3, setting targets for 2035, maintains the quantitative objectives presented in the second NDC, where the ambition to reduce GHG emissions had been increased significantly compared to the first NDC.

The previous point led to the following characteristics for de NDC3: (i) global objectives for GHG emissions intensity regarding the evolution of the economy (specifically, CO₂, CH₄ y N₂O) continue to be expressed in absolute terms - the previous NDC (NDC2) introduced absolute mitigation targets for the three main GHGs at the global level; (ii) the specific objectives for GHG emission intensity regarding food, i.e. methane and nitrous oxide emissions from beef production, continue to be expressed in terms of emissions intensity per unit of beef produced, maintaining the increased commitment on the emission reduction goals set out in the second NDC; (iii) maintaining the consumption reduction goal for hydrofluorocarbons (HFCs), added in the second NDC; (iv) objectives of preserving and increase carbon stocks in the native forest by maintaining its area, as well as maintaining the forest plantations and the shade and shelter forest plantations area, including the silvopastoral systems - NDC2 remained committed to preserving 100% of native forest and increasing carbon stocks through forest management.

The elaboration of the NDC3 involved a broad and intensive process of exchange and consultation with the main actors and stakeholders related to the AFOLU, Energy, IPPU, as well as Industrial Wastewater sectors. This participatory mechanism strengthens the coherence and flexibility of Uruguay's third NDC and contributes to its transparency. This approach is innovative in the NDCs, adds qualitative ambition in relation to the previous national contribution, and incorporates in a coherent and integrated way the strategic processes existing in the country to achieve the established objectives.

In addition, NDC3 presents a comprehensive set of measures and actions that have been proposed, need to be implemented and/or are underway in the country to move towards the goals of increasing resilience and enhancing adaptive capacity in a broad set of areas and sectors. Some of these guidelines are formalized in Strategic Lines and Sectorial Roadmaps.⁴⁵

Other central elements articulated in the NDC3 are the cross-cutting aspects. In order to make the actions that will be implemented to achieve the objectives of the new NDC viable, it is essential to incorporate the social and economic dimensions, gender aspects, generations,

⁴³ Uruguay's third NDC is available [here](#).

⁴⁴ As a producer of food for the world, Uruguay has addressed the challenges that agriculture faces in regards to climate change, with a long-standing institutional and regulatory framework. The First NDC was submitted in 2017 and the Second NDC in 2022. From the latter NDC onwards, Contributions will be submitted in 2025, 2030, 2035 and so on. This is because, recently, the countries under the UNFCCC agreed to have a common timeframe for submitting NDCs (Glasgow COP 26).

⁴⁵ For further information on Roadmaps for Sustainable Agriculture and Livestock Management, see Chapter 6.



capacity building, the involvement of the private sector, investment needs and financing, among other aspects.



Annex 1

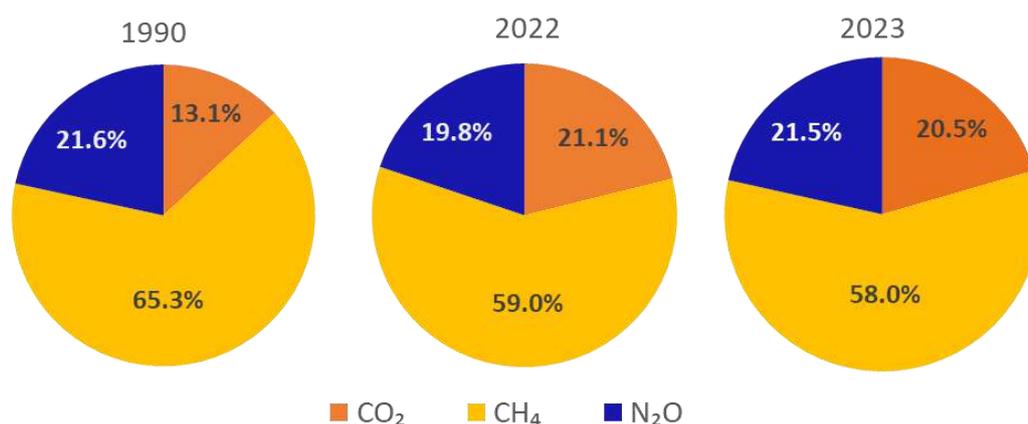
Descriptive Statistics on Greenhouse Gas Emissions in 2023



In 2023, Uruguay's emission profile continues to be strongly determined by non-CO₂ GHG emissions. Estimated CH₄ (methane) emissions represented 58% of aggregate gross national emissions and N₂O (nitrous oxide) accounted for 21%. Both non-CO₂ emissions are almost completely generated in biological processes. Lastly, CO₂ (carbon dioxide) emissions made up 21% of the total.

The chart below shows the evolution of the composition of Uruguay's emissions profile in 1990 (reference year), and years 2022 and 2023. Compared to the previously available data for 2022, in 2023 the proportion of CH₄ emissions has decreased mostly at the expense of the share of CO₂ emissions, while the share of N₂O in aggregate emissions has remained relatively stable.

Evolution of Uruguay's Gross Greenhouse Gas Emissions Profile
By gas, percentage of total each year



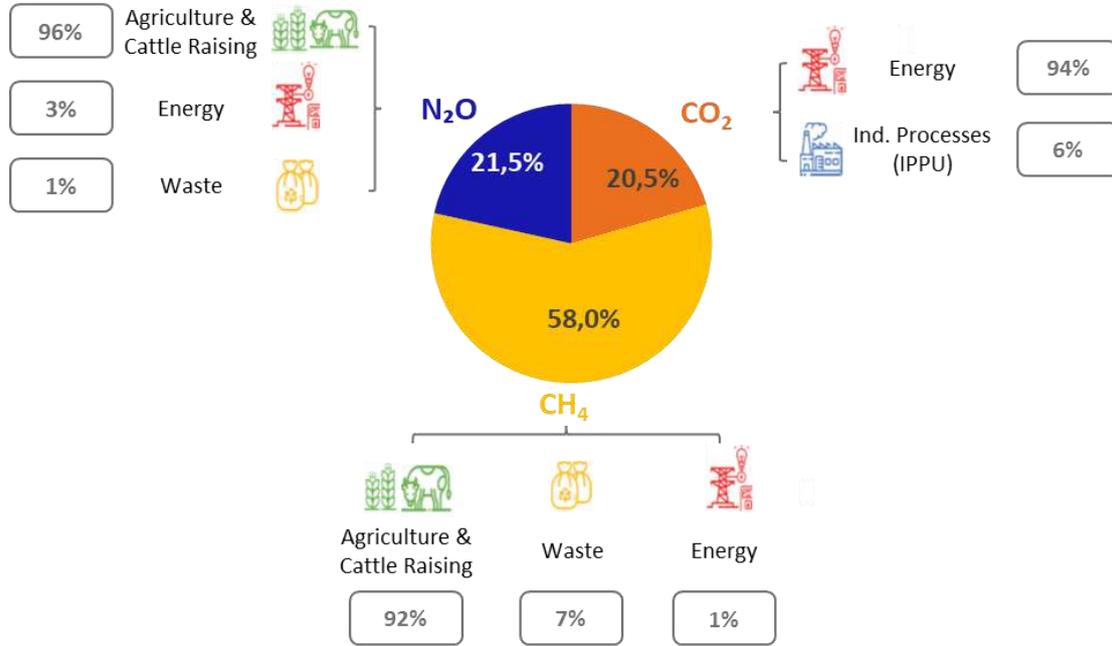
Considers the three global GHGs and the main sectors contributing emissions of each GHG, as set out in the 2017 NDC. Expressed in Gg CO₂eq, Metric GWP100 AR5. Source: SSLB Public Source Database as of April 2025.

In Uruguay, CO₂ emissions are generated mainly in the Energy sector, specifically from the burning of fossil fuels. In 2023, CO₂ emissions from the Energy sector represented 94% of total CO₂ emissions. Within the Energy sector, transport represents the main driver of CO₂ emissions. Finally, the Industrial Processes sector represented less than 6% of CO₂ emissions (mostly related to cement production).

CH₄ emissions and N₂O emissions are generated almost entirely in the agriculture (including livestock) sector, as methane and nitrous oxide greenhouse gases are strongly linked to primary food production (crops and beef). This sector accounted for 92% of total CH₄ and 96% of total N₂O emissions in 2023. Finally, the Waste sector represented 7% of all CH₄ and slightly less than 1% of N₂O emissions (mostly from disposal of solid urban waste).

According to the latest available data for 2023, cattle raising continues to be the most GHG emission-intensive economic activity within the agricultural sector. This activity accounts for approximately 90% of CH₄ emissions (mostly due to enteric fermentation, 87,6%) and 65,1% of total N₂O emissions within sector.

Uruguay's Gross Greenhouse Gas Emissions Profile, by sector
 Percentage of total within each type of gas, 2023



Considers the three global GHGs and the main sectors contributing emissions of each GHG, as set out in the 2017 NDC. Expressed in Gg CO₂eq, metric GWP100 AR5. Source: SSLB Emissions Report (EMR).

Sector-wise, in 2023 emissions considered in KPI-1 from AFOLU sector accounted for 27,311 Gg CO₂eq and were mainly explained by CH₄ emissions from livestock production (17,235 Gg CO₂eq) and by N₂O emissions from all livestock manure deposition and management (5,761 Gg CO₂eq), the nitrogen from crop residues (305 Gg CO₂eq) and from the use of synthetic nitrogen fertilizers in crop production (1,574 Gg CO₂eq).



Annex 2

Reporting and External Verification of KPI-1



Reporting

The KPI-1 covers gross GHG emissions of CO₂, CH₄, and N₂O, corresponding to the gases, sectors, categories, and sources set out in the 2012 NGHGI, on which the 2017 Nationally Determined Contribution's emissions intensity reduction commitments were established. The economy-wide emissions of these greenhouse gases are aggregated in CO₂-equivalent units using the 100-year Global Warming Potential metric established in the Fifth Assessment Report (GWP-AR5) of the Intergovernmental Panel on Climate Change (IPCC).⁴⁶

The GHG emissions reported for 2023 (estimated during 2024), as well as any adjustments to historical values made for the inclusion of additional data sources and recalculations due to methodological improvements or corrections, have been carried out according to the good practices and scientific standards of the 2006 IPCC Guidelines for the preparation of the NGHGI. The resulting historical series from 1990 to 2023 of GHG estimates are contained in the Emissions Report (EMR, or IEM for its Spanish acronym), delivered to the SSLB inter-ministerial Working Group in December of 2024.

To obtain the GHG intensity measure through 2023, aggregated gross emissions are normalized by real GDP (measured in billions of constant 2016 pesos). For these purposes, the latest available official time series of the National Accounts System of the Central Bank of Uruguay is used (as published in March 2025), retro-polated to 1990 using the variation rate method as a statistical splicing technique.⁴⁷

Finally, to calculate the performance of the KPI with respect to its baseline year, the 2023 KPI Report (KPIR, or INI for its Spanish acronym) contains the calculation of the KPI-1 following the formula established in Uruguay's SSLB Framework. The KPIR was put together by the Programming, Monitoring, Reporting and Verification Working Group (pMRV) and the final version was delivered to the inter-ministerial SSLB Working Group in May 2025.⁴⁸

These two detailed methodological reports (EMR and KPIR) are published in Uruguay's SSLB website together with this third Annual Report.⁴⁹ The underlying historical data for the corresponding KPIs between 1990 and 2023 can be found in the "Public Source Database" published on Uruguay's SSLB website.⁵⁰

⁴⁶ See Uruguay's NGHGI [here](#), and the Uruguay's First NDC [here](#).

⁴⁷ In line with international standards, the Central Bank of Uruguay (BCU) reviews national accounts estimates, particularly gross domestic product (GDP) data, on an annual basis pursuant to its "Data Review and Release Calendar Policy." According to this policy, annual GDP estimates for a given year can undergo up to four annual revision rounds until they become firm (i.e., the fourth vintage is the final one).

⁴⁸ More information on the estimation methodologies for the KPIs and the time series for real GDP can be found in the Technical Data Sheets in the SSLB's [website](#).

⁴⁹ In the "SSLB Annual Report" section of the SSLB [website](#).

⁵⁰ See website SSLB [here](#).



This reporting work was developed through close coordination between the four ministries involved and complying with the work schedule initially established, fulfilling the SSLB's reporting commitments, and further developing its already strong internal governance system.⁵¹

External Verification

UNDP has externally and independently verified the key performance indicator KPI-1 included in the Sovereign Sustainability-Linked Bond (SSLB) Framework, as reported in the 2023 KPIR prepared by the Government of Uruguay.⁵²

The technical review of the EMR time series 1990-2023 of CO₂, CH₄, and N₂O from the Energy, Industrial Processes, Agriculture, and Waste Sectors was conducted according to the methodology contained in the United Nations Framework Convention on Climate Change's (UNFCCC) Guide for Peer Review of National Greenhouse Gas Inventories. Since the KPI is an intensity metric, the denominator (the time series for real GDP) being used was also externally verified.

Uruguay and UNDP have set up an accelerated four-month external review process for the KPI. Despite the complexities of collecting and externally validating the country's annual GHG emissions, Uruguay's publication of annual, externally verified GHG data, with a lag of approximately one year and five months from the end of the observation year (2023), enhances the current reporting and peer-reviewed verification process applicable to the country as established under the requirements of the UNFCCC.

⁵¹ More information on the work-streams for the reporting of KPIs can be found at Uruguay's SSLB website section "Inter-Ministerial SSLB Governance." See [here](#).

⁵² See KPIR [here](#).