



EXECUTIVE SUMMARY

**NATCOM 5**

**Uruguay**

**Fifth National Communication**

to the Conference of the Parties to the United Nations  
Framework Convention on Climate Change

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## **Fifth National Communication**

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Framework Convention on Climate Change

**Uruguay, 2019**

The Fifth National Communication was prepared by the Ministry of Housing, Land-Use Planning, and Environment (MVOTMA) within the framework of the National Climate Change Response System (SNRCC).

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and includes the 2016 National Greenhouse Gas Inventory.

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*Al servicio  
de las personas  
y las naciones*



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## CHAPTER 1

# National Circumstances

## Background

Uruguay is a relatively small country, with a strong political, social and economic stability, a well-established democracy and legal soundness. All of these are essential to ensure respect for the human rights and to provide a positive environment for development, investment, and employment.

The country's economy is tied to agro-industrial chains and services. Its geographic location in the continent and the Río de la Plata basin exposes the population, infrastructures, and services to different climate-related threats, making Uruguay particularly vulnerable to the adverse effects of climate change.

Uruguay's contribution of 0.05% to global greenhouse gas (GHG) emissions in 2016 explains the political priority that has been given to the implementation of measures that seek to increase adaptive capacity and the adoption of emission mitigation actions.

The country has sustained a significant decline in poverty rates since 2005, from 39.9% to 8.1%, and a reduction in extreme poverty from 4.7% to 0.3%. Also, a Gini index of 0.38 positioned Uruguay as the most equitable country in Latin America. The widespread availability of public education across the country, a literacy rate of 98.7%, and high nationwide coverage of health systems provide an opportunity to incorporate sustainable practices with low-emission levels and to adopt behaviors to prevent climate-related risk and build resilience to climate change and climate variability.

### Uruguay's position

#### at international level

#### Rule of Law

*(Rule of Law Index 2018-2019)*<sup>1</sup>:

Uruguay ranks first in Latin America and 23<sup>rd</sup> in the world.

#### Democracy Index (2018)<sup>2</sup>:

Uruguay is the first full democracy in Latin America and ranks 15<sup>th</sup> among the 20 full democracies in the world.

#### Corruption Perception Index (2018)<sup>3</sup>:

Uruguay ranks 23<sup>rd</sup> among 180 countries, and first in Latin America as a reliable country with the lowest levels of corruption.

#### Human Development Index (2018)<sup>4</sup>:

Uruguay ranked 55<sup>th</sup> among 189 countries with a 0.804 index.

#### Global Open Data Index<sup>5</sup>:

In 2015 Uruguay ranked 7<sup>th</sup> among the 122 countries under study.

1 Rule of Law Index. Compiled by The World Justice Project. Available at [https://worldjusticeproject.org/sites/default/files/documents/2019%20WJP%20Rule%20of%20Law%20Index%20-%20GlobalESP\\_MR.pdf](https://worldjusticeproject.org/sites/default/files/documents/2019%20WJP%20Rule%20of%20Law%20Index%20-%20GlobalESP_MR.pdf)

2 Democracy Index Compiled by the Economist Intelligence Unit. Available at <https://www.eiu.com/topic/democracy-index>

3 Corruption Perception Index Compiled by Transparency International. Available at <https://www.transparency.org/cpi2018>

4 Human Development Index (HDI): Compiled by the United Nations. Available at <https://www.uy.undp.org/content/uruguay/es/home/presscenter/articles/2018/09/Uruguay-actualizacion-IDH-2018.html>

5 Global Open Data Index. Available at <https://index.okfn.org/>

In addition, the country's natural heritage is characterized by its great variety of ecosystems, biodiversity and water wealth, all of which provide opportunities to develop adaptation and mitigation strategies based on ecosystem conservation.

The main extreme climate events in the country are floods and droughts, and they have had different adverse effects on the country's society and economy. They have had an impact on the population and infrastructure of the most vulnerable communities and on climate-dependent essential services and economic activities. The country suffered severe floods in 2019, affecting over 17,600 evacuees. Future regional climate change scenarios show an increase in rainfall and temperatures in the upcoming years, with a strong influence of both El Niño–Southern Oscillation (ENSO) and La Niña phenomena.

Table 1. Socio-demographic indicators.

Annual population growth	0.4% (2018)
Urban population	95.3% (2018)
Literacy rate	98.7% (2018) 99.0% women and 98.4% men
Life expectancy at birth	77.70 years (2018) 80.85 women and 74.17 men
Birth rate	13.1 0/00
Poverty rate	8.1% (2018)
Household poverty rate	5.3% (2018)
Age poverty rate	17.2% 0 to 6 years
	15% 7 to 12 years
	13.9% 13 to 17 years
	6.6% 18 to 65 years
	1.4% 65 years and over
Unemployment rate	8.3% (2018) 10.1% women and 6.9% men
Gini Index	0.380 (2018)



## CHAPTER 2

# National Greenhouse Gas Inventory

In its Fifth National Communication Uruguay presents the results of the 2016 National Greenhouse Gas Emissions Inventory (NGHGI), as well as a Comparative Study of the Country's Net Greenhouse Gas Emissions for 1990, 1994, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014 and 2016.

The study was conducted following the Guidelines for the Preparation of national communications from Parties not included in Annex I to the Convention (Annex III, Decision 17/CP.8), and following the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. It comprises the entire country and includes carbon dioxide (CO<sub>2</sub>) emissions and removals and methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs, do not occur) and sulphur hexafluoride (SF<sub>6</sub>) emissions.

Also, estimates for the following gases were included: carbon monoxide (CO), non-methane volatile organic compounds (NMVOCs), nitrogen oxides (NOX) and sulphur dioxide (SO<sub>2</sub>). The Revised 1996 IPCC Guidelines and the 2016 European Monitoring and Evaluation Program Guidelines (2016 EMEP/EEA Guidelines) were used to estimate emissions of these gases.

The following national sectors are included in this NGHGI: Energy, Industrial Processes and Product Use (IPPU), Agriculture, Forestry and Other Land Use (AFO-LU) and Waste. Sources and sinks were grouped by sectors, and these, in turn, are sorted by activities, sub-activities, categories, sub-categories, and other divisions, to reflect the measurement of greenhouse gas emissions and removals as accurately as possible.

Since the 2014 NGHGI, the IPCC Inventory Software

version 2.54 was used for the estimation of direct greenhouse gas (GHG) emissions. Supplementary electronic spreadsheets were used for the estimation of indirect GHGs. Information on these gases is documented separately.

The National Greenhouse Gas Inventory System (SINGEI, acronym in Spanish) consists of five components: Institutional Arrangements, Methods and Data Documentation, Quality Control and Quality Assurance, Archiving System, Key Category Analysis and Improvement Planning.

The Ministry of Housing, Land Use Planning and Environment (MVOTMA) is the competent national authority for the implementation of the Convention and, therefore, is responsible for the preparation and submission of the NGHGI.

Since the 2006 NGHGI, the MVOTMA, the Ministry of Livestock, Agriculture and Fisheries (MGAP) and the Ministry of Industry, Energy and Mining (MIEM) introduced collaborative working practices under which each ministry reports greenhouse gas estimates for their specific sectors, as well as their evolution.

Under this working methodology, the MVOTMA is responsible for the general coordination of the inventory and the preparation of the final report, as well as for the estimation of emissions and their evolution for the IPPU and Waste sectors. It also compiles the sectoral information submitted by the other ministries, prepares the general emissions overview from the sectoral reports, and the final NGHGI document to be submitted to the Convention.

The MGAP estimates and reports on greenhouse gas emissions and their evolution in the AFOLU sector and the MIEM estimates and reports on greenhouse gas emissions and their evolution in the Energy sector.

Key categories were identified using the 2006 IPCC Guidelines (Approach 1 and Approach 2), and are assessed by level and trend. Uncertainty assessment was carried out using default parameters and methodology proposed in the 2006 IPCC Guidelines.

This information is included in full in the Fifth National Communication, along with sectoral reports, summary tables of methodologies and activity data and emission factors sources, and sector-specific recording tables such as background tables.

The IPCC Fifth Assessment Report<sup>1</sup> established common metrics to calculate the carbon dioxide equivalent of greenhouse gas (GHG) emissions and removals, such as the Global Warming Potential (GWP) and the Global Temperature Potential (GTP), which can be used to quantify and report absolute and relative contributions of GHG emission from different substances and emissions from regions/countries or sources/sectors.

According to the IPCC Fifth Assessment Report, *the GWP is not directly related to a temperature threshold, such as the 2°C target (Manne and Richels, 2001; Shine et al., 2007; Manning and Reisinger, 2011; Smith et al., 2012; Tol et al., 2012; Tanaka et al., 2013), while some economic indicators and physical end-point metrics such as the GTP may be more appropriate for this purpose.*

In 2016, Uruguay's total net GHG emissions, measured using the GWP<sub>100AR2</sub> metric, were 24,492.4±49.5 Gg CO<sub>2</sub>-eq<sup>2</sup>, which accounts for 0.05% of global anthropogenic GHG emissions. (This estimation was calculated con-

sidering the 2016 global emissions value reported by the UN Environment<sup>3</sup> (52.8 Gt CO<sub>2</sub>-eq).

Net methane emissions expressed in Gg of CO<sub>2</sub>-eq, based on the GWP<sub>100AR2</sub> metric and without considering CO<sub>2</sub> removals, accounted for 51.6% of total national emissions. Nitrous oxide net emissions accounted for 26.7%; carbon dioxide emissions accounted for 21.3%, and HFCs and SF<sub>6</sub> emissions, despite their great global warming potential, only accounted for 0.4% of total national emissions.

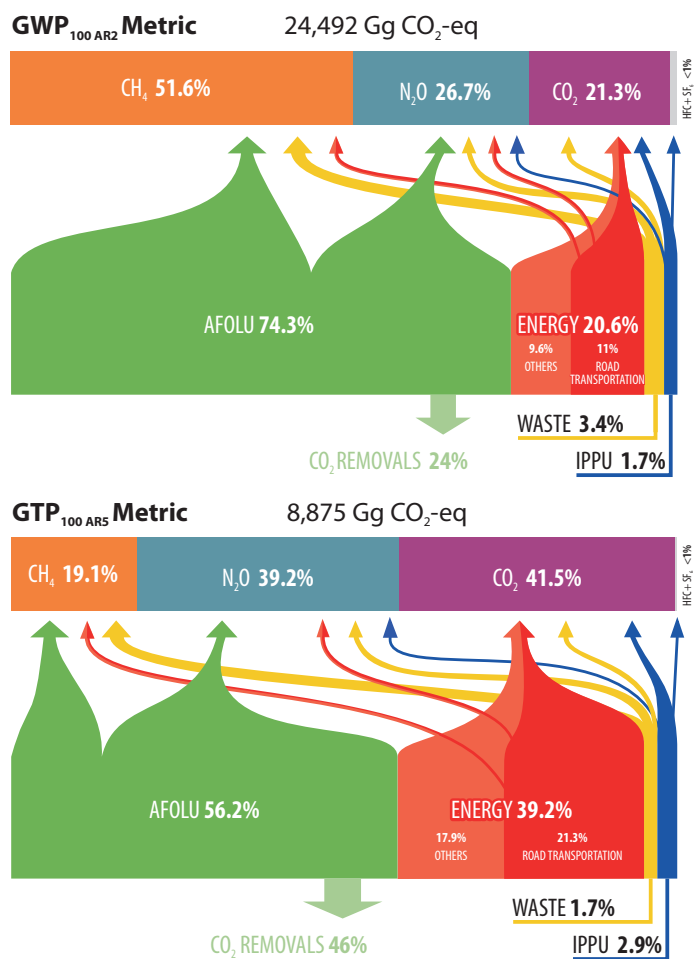


Figure 1. Distribution of GHG emissions and net removals, 2016

According to the GWP<sub>100AR2</sub> metric, the AFOLU sector was the most significant contributor to total emissions (excluding removals), accounting for 74.3%, followed by the Energy sector at 20.6%, Waste at 3.4% and finally the IPPU sector accounting for 1.7% of emissions

When using the GTP<sub>100AR5</sub> metric, Uruguay's CH<sub>4</sub> emissions drop significantly with a decline of 81% (8,874.8 Gg CO<sub>2</sub>-eq), and the country's net emissions fall 64%

1 Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

2 This includes net total emissions of all direct greenhouse gases: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs and SF<sub>6</sub>.

3 UN Environment Emissions Gap Report, 2018.

compared to the emissions estimated using the GWP<sub>100 AR2</sub> metric. In Uruguay, the metrics used have a substantial impact on the relative weight of the AFO-LU sector in the country's total emissions

GWP<sub>100 AR2</sub> indicates that CH<sub>4</sub> is the main gas emitted, while the GTP<sub>100 AR5</sub> metric indicates that CO<sub>2</sub> is the main greenhouse gas in Uruguay.

Table 2. National greenhouse gas inventory summary report (IPCC 2006 version)

Categories	Emissions (Gg)			Emissions CO <sub>2</sub> -eq (Gg) (GWP <sub>100 AR2</sub> )					Emissions (Gg)				
	Net CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>	Other halogenated gases with CO <sub>2</sub> -eq conversion factors	Other halogenated gases without CO <sub>2</sub> -eq conversion factors (GWP <sub>100 AR2</sub> )		NO <sub>x</sub>	CO	CO <sub>2</sub> DM	SO <sub>2</sub>
								HFC-245 fa	HFC-365 mfc				
<b>Total National Emissions and Removals</b>	<b>-804,0</b>	<b>790.0</b>	<b>27.7</b>	<b>118.5</b>	<b>NO</b>	<b>1.4</b>	<b>NO</b>	<b>2.0E-5</b>	<b>3.7E-3</b>	<b>57.0</b>	<b>772.1</b>	<b>130.1</b>	<b>25.9</b>
<b>1 – Energy</b>	6306.5	5.3	0.7							54.1	750.1	100.4	19.2
1.A - Fuel Combustion Activities	6306.5	5.2	0.7							53.9	749.9	99.1	17.3
1.B - Fugitive emissions from fuels	4.4E-03	0.1								0.1	0.2	1.3	1.9
1.C - Carbon dioxide Transport and Storage	NO												
<b>2 - Industrial Processes and Product Use</b>	444.9	NO	3.6E-03	118.5	NO	1.4	NO	2.5E-5	3.7E-3	2.6	14.2	29.7	6.7
2.A - Mineral Industry	433.5									NO	NO	6.8E-02	0.2
2.B - Chemical Industry	0.3	NO	NO							NO	NO	NO	1.3
2.C - Metal Industry	0.4	NO			NO	NO				NO	NO	NO	NO
2.D - Non-Energy Products from Fuels and Solvent Use	10.7									NO	NO	22.4	NO
2.E - Electronics Industry				NO	NO	NO							
2.F - Product Uses as Substitutes for Ozone Depleting Substances				118.5	NO			2.5E-5	3.7E-3				
2.G - Other Product Manufacture and Use			3.6E-03		NO	1.4				NO	NO	NO	NO
2.H - Other	NO	NO								2.6	14.2	7.3	5.2
<b>3 - Agriculture, Forestry, and Other Land Use</b>	-7586.1	738.2	26.8							0.3	7.8		
3.A - Livestock		722.3	3.3E-02										
3.B - Land	-7667.0	IE	IE							IE	IE		
3.C - Aggregate sources and non-CO <sub>2</sub> emissions sources on land	80.9	15.9	26.7							0.3	7.8		
3.D - Other		NO	NO							NO	NO	NO	NO
<b>4 – Waste</b>	30.8	46.4	0.3										
4.A - Solid Waste Disposal		37.9											
4.B - Biological Treatment of Solid Waste		0.3	1.9E-02										
4.C - Incineration and Open Burning of Waste	30.8	1.1E-03	1.9E-03										
4.D - Wastewater Treatment and Discharge		8.2	0.2										
4.E - Other	NO	NO	NO										
<b>5 - Other</b>	NO	NO	NE							NO	NO	NO	NO
5.A - Indirect N <sub>2</sub> O emissions from the atmospheric deposition of N in NO <sub>x</sub> and NH <sub>3</sub>			NE										
5.B – Other	NO	NO	NO							NO	NO	NO	NO
<b>Memo items</b>													
<b>International bunkers</b>	758.7	4.5E-02	2.1E-02							13.9	0.9	1.3	1.1
1.A.3.a.i - International Aviation	297.8	2.1E-03	8.3E-03							1.2	0.6	7.7E-2	8.0E-2
1.A.3.d.i - International waterborne navigation	460.8	4.2E-02	1.2E-02							12.7	0.3	1.2	1.0
<b>1.A.5.c - Multilateral Operations</b>													

NOTE: EMISSIONS EXPRESSED AS CO<sub>2</sub>-eq WERE CALCULATED USING THE GWP<sub>100 AR2</sub> METRIC. THE "LAND" CATEGORY ONLY INCLUDED CHANGES IN CARBON STOCKS IN LIVING BIOMASS FOR THE CATEGORY "FOREST LAND REMAINING FOREST LAND" AND "GRASSLAND CONVERTED TO FOREST LAND".

In Uruguay, carbon dioxide (CO<sub>2</sub>) emissions were mainly produced by the Energy sector through fossil fuel combustion, primarily in transport activities (57 % of the sector). In 2016, this sector contributed 6306.5 Gg, and accounted for 93.0% of total gas emissions.

In turn, the IPPU sector contributed 444.9 Gg, which accounted for 6.6% of total emissions of this gas, while the Waste sector contributed with 30.8 Gg of CO<sub>2</sub> emissions (less than 0.5% of emissions). At the same time, the AFOLU sector was responsible for a 7,586.1 Gg CO<sub>2</sub> net capture<sup>4</sup>. Therefore, a national CO<sub>2</sub> net capture of 804.0 Gg was reached.

For the Land category and based on information available at the national level, only emissions and removals due to changes in living aerial biomass in the categories "Forest land remaining Forest Land" and "Grassland converted to Forest Land" were estimated (it was assumed that the new areas of forests come from grasslands).

Changes in soil organic carbon (SOC) and dead organic matter were not estimated due to a lack of country-specific validated parameters and efforts are being made to report SOC in the next inventory. As of December 2017, there is a map with reference levels for the different eco-regions of the country.

Also, work is being done to gain information to estimate emissions and removals in land use categories other than forests and their corresponding conversions, and to report dead wood, especially in lands whose uses are relevant to the country and those in which the most significant conversions occur (grasslands, croplands, wetlands).

Methane emissions amounted to 790.0 Gg in 2016. These were generated mainly by the AFOLU sector, accounting for 93.4% of the total emissions, followed by the Waste sector with 5.9%, and finally, the Energy sector with just 0.7% of the total methane emissions. The most significant CH<sub>4</sub> emissions came from enteric fermentation, which accounted for 89.5% of the country's total in 2016 for this gas. Of these, the most sub-

stantial amount came from the enteric fermentation process of beef cattle.

In 2016, nitrous oxide (N<sub>2</sub>O) emissions were 27.7 Gg. Of these, 96.7% came from the AFOLU sector, 2.4% from the Energy sector, 0.9% from the Waste sector, and less than 0.1% from the IPPU sector. Within AFOLU, the highest contributing category was Managed Soils, with 96.4% of the country's total emissions. The most significant emissions came from the feces and urine of the cattle on grazing areas.

Uruguay does not produce hydrofluorocarbons (HFCs) nor perfluorocarbons (PFCs). Therefore, the demand is met exclusively by importing these gases for different uses. Thus, in 2016, the use of HFCs in the country as substitutes for chlorofluorocarbons (CFCs) controlled by the Montreal Protocol, mainly in the Refrigeration sector, resulted in HFCs emissions of 118.5 Gg CO<sub>2</sub>-eq (GWP<sub>100 AR2</sub>). Regarding the SF<sub>6</sub> used in electrical installations, we estimated emissions of 1.4 Gg CO<sub>2</sub>-eq (GWP<sub>100 AR2</sub>). It is estimated that there were no PFC emissions in 2016, as there were no imports of this type of gases, nor any application known at the national level in which these were used.

In terms of indirect gases, the Energy sector accounted for 94.9% of NOx emissions (of the country total, 57.0 Gg), followed by the IPPU sector (4.5%) and the AFOLU sector (0.6%). For carbon monoxide (772.1 Gg), the Energy sector emissions were estimated at 97.1% of the country's total, followed by the AFOLU sector (1.1%) and the IPPU sector (1.8%). Regarding NMVOCs emissions (130.1 Gg), the Energy sector produced 77.2% of the country's emissions, and the IPPU sector 22.8% of the country's total in 2016. There were SO<sub>2</sub> emissions (25.9 Gg) in the Energy sector (74.3%) and in the Industrial processes sector (25.7%).

The evolution of GHG emissions/removals is presented in the next page as country's total and by sector for the years 1990, 1994, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014 and 2016, under GWP<sub>100 AR2</sub> and GTP<sub>100 AR5</sub> metrics.

<sup>4</sup> Land category estimations only included changes in carbon stocks in living biomass for the category "Forest Land remaining Forest Land" and "Grassland converted to Forest Land".

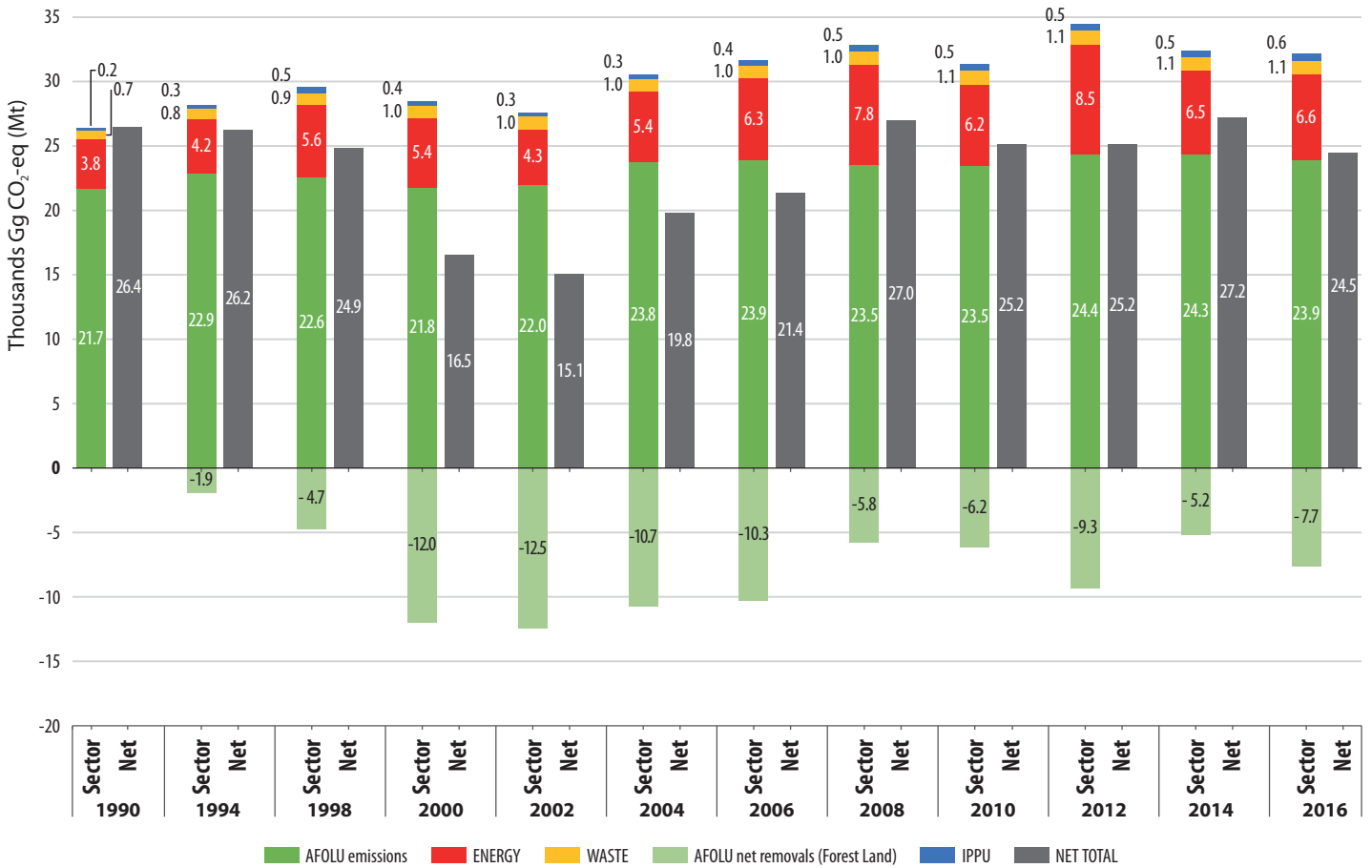


Figure 2. Emissions evolution ,1990-2016, by sector, under GWP<sub>100 AR2</sub> metric.

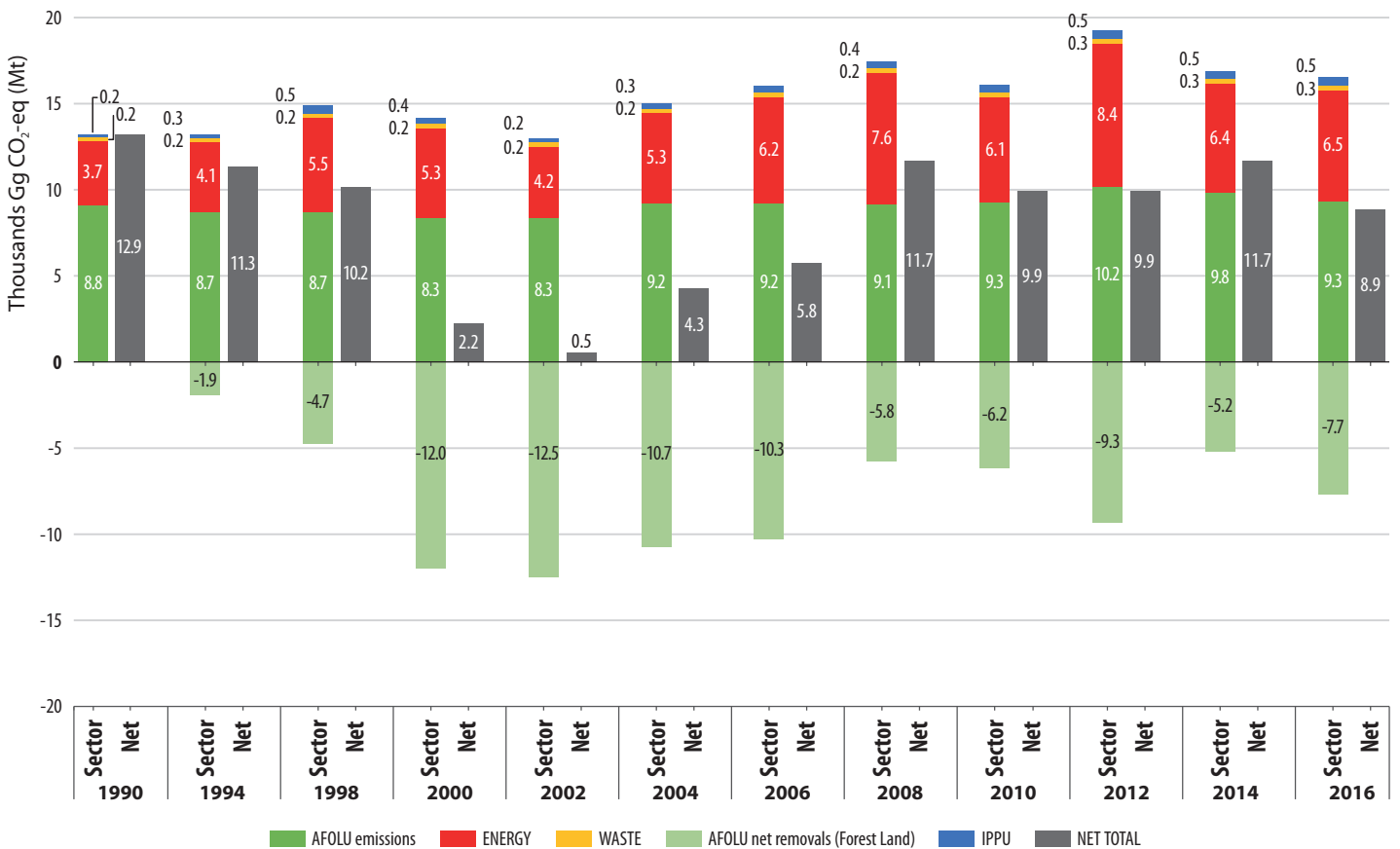


Figure 3. Emissions evolution ,1990-2016, by sector, under GTP<sub>100 AR5</sub> metric.

The primary source of emissions throughout the series was the AFOLU sector, due to methane emissions from enteric fermentation, or nitrous oxide in Managed Soils. Its relative weight to the country's total depends on the metric used to determine the contribution to global temperature change.

The AFOLU sector's net CO<sub>2</sub> removals increased substantially between 1990 and 2000, and then dropped. The increase in removals until the year 2000 was mainly explained by the increase in the area of forest plantations with commercial purposes used for the sawmill and pulp industries. From 2002 onwards, an ever-increasing part of the plantations carried out since the beginning of the 1990s went to harvest, which produced a sustained fall in net removals until 2008. The increase in removals observed throughout the last period was mainly due to a decrease in CO<sub>2</sub> emissions from commercial forest harvesting, which was reflected in the emissions/removals balances resulting from forest cycles and commercial forestry activity.

The main gas in the Energy sector is CO<sub>2</sub> (more than 95%). Total Emissions from the sector increased from 3825 Gg in 1990 to 5369 Gg in 2000, after which they began to decrease to a value of 4289 Gg in 2002 (GWP<sub>100 AR2</sub> metric). This fall in emissions coincided with a fall in energy demand caused by the 2002 economic recession. From 2004 onwards, emissions once again showed a net upward trend until 2012, when they reached the highest levels for the period (8493 Gg) and then decreased again towards 2014 and 2016.

In terms of the Energy Industries category, emissions from electricity generation plants showed considerable variation, as they are usually associated with the country's water availability conditions. In dry years, when the share of hydro-electric power is low, the consumption of oil products in electricity generation plants is high, thus contributing to total CO<sub>2</sub> emissions.

In recent years there have been significant changes in the primary energy mix. These have been mainly associated with the diversification of energy and a greater share of renewable energy sources, with a contribution of 59% renewables in the primary matrix and 98% in electricity generation.

Furthermore, 2014 and 2015 showed the lowest CO<sub>2</sub> emissions recorded by electricity generation plants in the past ten years. In 2016, total CO<sub>2</sub> emissions grew slightly compared to 2014 (1.7%), as they were associated with higher emissions in consumption sectors; electricity generation activities generated lower emissions than in 2014. The Transport category accounted for an average of 57% of CO<sub>2</sub> emissions in the sector in 2016.

Variations in the emissions of the IPPU sector are closely linked to the level of activity of the national manufacturing industry. As in other sectors, a historic low was recorded in 2002 due to the economic crisis. In any case, the main gas associated with the sector was CO<sub>2</sub>, generated in Cement Production. On the other hand, in the last period there was an increase in the emissions of the sector, as a result of slight growth in the level of activity and an increase in imports and ensuing use of HFCs for refrigeration and air conditioning.

Emissions from the Waste sector remained virtually unchanged in the last period (decrease of 0.8%) with an overall increase in the 1990-2016 series of 54.2% (metric GWP<sub>100 AR2</sub>). Methane is the primary GHG in this sector (90%).

Uruguay's 2016 total emissions showed a decrease of 10% compared to 2014 and 7% compared to the base year (GWP<sub>100 AR2</sub>). According to GTP<sub>100 AR5</sub> metric Uruguay's total emissions showed a decrease of 24% compared to 2014 and 13% compared to 1990.

## CHAPTER 3

# General description of steps taken or envisaged to implement the Convention

## 3.1. PUBLIC POLICIES AND CLIMATE CHANGE

### INSTITUTIONAL DEVELOPMENT AND POLICY INSTRUMENTS

The country has made significant efforts towards strengthening institutional capacity and defining public policies and policy instruments that include the climate change mitigation and adaptation approach. Thus, this is being increasingly considered in the national budget, investment promotion initiatives, and international cooperation.

The protection of the environment as a priority for Uruguay was reflected in the Constitution of the Republic of 1967, in the 1990 Law creating the Ministry of Housing, Land-Use Management, and Environment (MVOTMA)<sup>1</sup> and in the 2000 Environmental Protection Law<sup>2</sup>. In 2016, the issues of environment, water and climate change became a priority in the public agenda with the creation of the National Environment, Water and Climate Change Secretariat (SNAACC)<sup>3</sup>; the National Environmental System (SNA); and the National Environmental Cabinet (GNA); and in 2019 the National Environmental Plan for Sustainable Development<sup>4</sup> and the “National Development Strategy Uruguay 2050”<sup>5</sup>.

The fact that climate change and climate variability are

a priority is made clear by the continuous advances in institutional development, joint work and planning initiatives. The United Nations Framework Convention on Climate Change (UNFCCC) was ratified in 1994<sup>6</sup> and the Ministry of Housing, Land-Use Management and Environment (MVOTMA) was designated as the competent national authority for the implementation and application of the Convention. Subsequently, the Climate Change Unit<sup>7</sup>—currently the Climate Change Division—was created under the MVOTMA as the operational and executive body on the matter and appointed to compile the National Communication reports. During the second stage, the National Climate Change Response System (SNRCC)<sup>8</sup> was created in 2009. This enabled horizontal coordination efforts among the institutions devoted to climate change, under the coordination of the MVOTMA.

It is within this framework that the National Climate Change Response Plan was drafted in 2010, as well as the National Climate Change Policy in 2017<sup>9</sup>, the First Nationally Determined Contribution (NDC) and the domestic programming, monitoring, reporting and verification system (pMRV).

Also the country has committed to moving forward with the preparation and submission of a Long-term Strategy for low GHG emission development, as outlined in Article 4, paragraph 9 of the Paris Agreement. Thus, seeking to increase the country's capacity to adapt to the adverse effects of climate change and promote cli-

1 Law number 16.112 of 1990. That the Ministry of Housing, Land-Use Planning and Environment (MVOTMA) be set up. <http://www.mvotma.gub.uy/institucional/ley-de-creacion>

2 Law number 17.283 of 2000. Environmental Protection Law. <https://www.impo.com.uy/bases/leyes/17283-2000>

3 Article 33 of the Law No. 19.355/015 of December 2015 on the National Budget for salaries, expenditures and investments.

4 Executive Decree number 222 of August 2019. National Environmental Plan for Sustainable Development.

5 [https://www.opp.gub.uy/sites/default/files/inline-files/Presentaci%C3%B3n\\_Estrategia.pdf](https://www.opp.gub.uy/sites/default/files/inline-files/Presentaci%C3%B3n_Estrategia.pdf)

6 Through Law number 16.517 of 1994

7 The Climate Change Unit was set up in 1994 and later renamed as the Climate Change Division within the framework of the 2013 institutional reform of MVOTMA. Executive Decree number 255 of August 2013.

8 National Climate Change Response System (SNRCC). Executive Decree number 238 of 2009

9 Approved by Executive Decree number 310 of November 2017

mate resilience and low GHG emission development in a way that does not threaten food production and that is based on the principle of common but differentiated responsibilities and respective capabilities, including an aspirational target of CO<sub>2</sub> neutrality by 2050<sup>10</sup>.

This institutional framework is also tied to meaningful sectoral progress achieved thanks to strategic actions towards an Agri-intelligent Uruguay such as: the 2005-2030 Energy Policy<sup>11</sup>, the National Water Policy<sup>12</sup>, the country's land-use planning guidelines<sup>13</sup> and the urban-housing policies that seek to reduce socio-urban fragmentation<sup>14</sup>, among other sectoral policies.

At the same time, significant progress was made in mainstreaming the human rights and gender perspectives, access to information and citizen participation in climate action design and monitoring processes, contributing to the comprehensive design of public policies. The National Strategy on Climate Change and Gender was prepared in 2019 and submitted at the COP25 in Madrid. Significant progress was also made both in the institutional consolidation of the National Emergency System (SINAE)<sup>15</sup> and the Uruguayan Institute of Meteorology (INUMET) and in the planning and management initiatives of subnational governments.

### National Climate Change Policy (PNCC)

The National Climate Change Policy (PNCC) was drafted on a participatory basis in 2016 and adopted by Executive Decree number 310 in November 2017. It was conceived as *a long-term strategic framework towards 2050 to guide the transformations that Uruguay has been undertaking to face climate change and climate variability associated challenges. It also addresses the international obligations assumed under the Paris Agreement.*

Its primary purpose is *to contribute to the sustainable development of the country through a global perspective*

*of inter and intragenerational equity and a human rights perspective. It seeks to secure a more resilient society that is less vulnerable and has a higher capacity to adapt to climate change and climate variability, and is more aware and responsible in the face of this challenge. Also, to promote a low-carbon economy based on environmentally, socially, and economically sustainable production processes and services that incorporate knowledge and innovation.*

Over 300 representatives from the public and private sectors, as well as civil society stakeholders and scientific and technical experts, participated in the development of the policy. As a result of this process, it was possible to compile an instrument that sets forth 20 strategic priorities, 72 lines of action and 5 dimensions: governance, knowledge, social, environment, and production.

The *governance dimension* seeks to secure the participation of the different institutions, whether public, private, or academic and civil society stakeholders, through forums for inter-institutional and intersectoral dialogue. The *knowledge dimension* aims to enhance understanding of climate change-related issues to raise greater awareness among the population and to stimulate and promote research, development and innovation (R&D&I) to reduce uncertainties regarding the current impacts and future risks associated with climate change and climate variability. The *social dimension* seeks to promote the population's adaptation capacity and resilience to climate change, climate variability and extreme events, by addressing four thematic areas: social and climate vulnerability; the integrated health system; risk management and response to climate change and climate variability related risks; and the development of cities and populations that are sustainable and resilient to climate change and climate variability. The *environment dimension* addresses three pillars: ecosystems adaptive management and good practices; the preservation of natural, coastal, river and sea areas and processes; and the comprehensive management of water resources. The *production dimension* aims to improve the productivity and competitiveness of value chains; reduce the intensity of GHG emissions; increase carbon sequestration in agricultural production systems; reduce GHGs from transport systems; continue the diversification of the ener-

<sup>10</sup> Letter submitted by Uruguay to the UNFCCC Executive Secretary in the framework of the Climate Action Summit, September 2019.

<sup>11</sup> 2005-2030 Energy Policy <https://www.miem.gub.uy>

<sup>12</sup> Law number 18.610 of 2009. National Water Policy. Regulates Article 47 of the Constitution of the Republic <https://www.impo.com.uy/bases/leyes/18610-2009/26>

<sup>13</sup> Law number 18.308 of 2008. Law on Land-use planning and sustainable development. <https://legislativo.parlamento.gub.uy/temporales/leytemp3292293.htm#art>

<sup>14</sup> National Relocation Plan (PNR). <http://www.mvotma.gub.uy/programas-de-integracion-socio-habitacional/plan-nacional-de-relocalizaciones>

<sup>15</sup> Law number 18.621 of 2009. Development of the National Emergency System. <https://www.impo.com.uy/bases/leyes/18621-2009/7>



gy matrix into low-intensity sources of GHG emissions; encourage the mainstreaming of the climate change and climate variability perspective into a sustainable, resilient and low GHG emissions tourism model; promote industrial, mining, commerce and service production systems with greater adaptation capacity and low-carbon development; and promote a comprehensive management of solid waste and wastewaters to reduce GHG emissions.

**The First Nationally Determined Contribution (NDC)** Uruguay drafted its First Nationally Determined Contribution (NDC) within the framework of the Paris Agreement and the National Climate Change Policy, and it was submitted to the Secretariat of the Parties Agreement in 2017. The document is organized into five sections, outlining more than 100 adaptation, mitigation, and cross-cutting measures. In the first section it is introduced the quantified objectives for climate change mitigation; in the second section, the background information and the measures that contribute to the mitigation objectives; in the third section, the context and the main adaptation measures; the fourth section addresses the main measures for capacity strengthening and climate change knowledge generation. Finally, the last section includes information to ensure transparency and to improve understanding of the mitigation objectives and, in turn, to facilitate the monitoring of progress. It should be noted that the adaptation section is considered to be the country's first Adaptation Communication pursuant to Article 7.10 and 7.11 of the Paris Agreement. From this document, the country took on the task of monitoring and reporting progress on the actions defined in the NDC through a domestic programing, monitoring, reporting, and verification system (pMRV).

**The NDC's domestic programing, monitoring, reporting, and verification system (pMRV).**

Since 2017, the SNRCC Inter-Agency Working Group has worked on a domestic system for programming, monitoring, reporting, and verification of the actions and objectives included in the NDC and the PNCC. The aim is to move towards the development of a domestic System for Programming, Monitoring, Reporting, and Verification of the emission intensity reduction objectives and the implementation of the actions included in the NDC. In 2018 a pilot initiative was carried out on

55 of the 106 actions included in the NDC showing indicators of progress towards the achievement of the targets and roadmaps to program the actions that are not yet being implemented. As of 2019, this information is available in a viewer on the MVOTMA website<sup>16</sup>. It shows for each action, the percentage of progress towards the achievement of the target and a classification in terms of gender sensitivity, their contribution to the Sustainable Development Goals (SDGs) and the PNCC. Together with the SNRCC Gender working group, a strategy was defined to integrate this dimension into the NDC implementation process and move towards a gender-sensitive pMRV system.

## 3.2. ADAPTATION

### ADAPTATION MEASURES, PROGRAMS, AND PROJECTS EXECUTED OR IN PROGRESS

In terms of *adaptation to climate change*, Uruguay continues to promote actions from different sectors, working together with several actors.

In its NDC, Uruguay defined specific adaptation contributions, gearing its efforts towards the Global Goal on Adaptation under the Paris Agreement of "*increasing adaptation capacity, strengthening resilience and reducing vulnerability*". The contributions in this section were grouped in priority sectors under the climate change policy such as: health and social aspects, disaster risk reduction, cities and infrastructure, biodiversity and ecosystems, coastal areas, water resources, agriculture and livestock, energy, tourism, and climate services.

#### National Adaptation Plans (NAPs)

Among the adaptation priorities, the country considered the development of sectoral national adaptation plans (NAPs), and this is reflected in the actions presented in the NDC. To date, a plan for the agriculture and livestock sector has already been approved, and there has been progress in the coastal areas, cities, and infrastructure sectors. Recently, the country began work on the compilation and implementation of plans for the energy and health sectors.

<sup>16</sup> <http://apps.mvotma.gub.uy/mcdn>

### 1. *National Adaptation Plan for Coastal Areas.* *NAP-Coasts*<sup>17</sup>.

The objective of this plan is to contribute to sustainable development through an equity perspective, seeking to secure a more resilient, adapted, and aware society in the coastal areas. The plan has promoted the generation of knowledge to better understand coastal vulnerability and the definition of adaptation actions that minimize losses and damages to infrastructure and natural ecosystems while reducing their vulnerability. It has helped strengthen institutional capacities at the national and local levels; it has worked on the integration of this dimension into coastal regulatory frameworks and on the generation of relevant information for decision making, among other lines of work.

### 2. *National Adaptation Plan for Cities and Infrastructures.* *NAP-Cities*<sup>18</sup>.

The objectives of this plan are: to reduce vulnerability to the effects of climate change by creating adaptation and resilience capacities in cities, infrastructures and urban environments; to help streamline the integration of climate change adaptation actions into policies, programs and activities, and into specific development planning processes and strategies aimed at cities and land-use planning initiatives. Since 2018, some of the achievements have been, for example, the analysis of threats and the systematization of adaptation activities and good practices in urban planning with a climate change perspective, among others<sup>19</sup>.

### 3. *National Adaptation Plan to Climate Change and Climate Variability for the Agricultural and Livestock Sector.* *NAP- Ag*<sup>20</sup>.

<sup>17</sup> The project that assists the preparation of the National Adaptation Plan for the coastal areas is led by MVOTMA with support from the Spanish Agency for International Development Cooperation (AECID) through the ARAUCLIMA Program and the Climate Technology Centre and Network (CTCN) of the United Nations Framework Convention on Climate Change.

<sup>18</sup> The project that assists the preparation of the National Adaptation Plan to Climate Change in Cities and Infrastructures is led by MVOTMA and implemented by the UNDP with financial support from the Green Climate Fund (GCF) with the participation of the Uruguayan Agency for International Cooperation (AUCI).

<sup>19</sup> Available at <http://www.mvotma.gub.uy/nap-ciudades>:

<sup>20</sup> The NAP-Agri was developed with the support of the Program for the Integration of Agriculture in National Adaptation Plans (NAP-Ag) implemented by the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP) with the financial support of the Climate Initiative (IKI) of the Federal Ministry for the En-

The agricultural and livestock sector undertook a process that resulted in the preparation of a National Adaptation Plan to Climate Change and Climate Variability for the Agricultural and Livestock Sector (NAP-Ag). This tool helps design and assess policies aimed at increasing adaptive capacity and reducing vulnerability to climate variability and change.

As a result, a 2050 strategy was defined to help develop and adopt animal and plant production systems that are less vulnerable to the impacts of climate change and climate variability. Also, to help preserve agro-ecosystems and their services, improve the livelihoods of rural populations, and strengthen institutional capacities to manage these sustainable and adapted production systems. Based on this, a logical framework for the 2050 strategy was defined around four dimensions: production systems, ecosystems and natural resources, livelihoods, and institutional capacities. At the same time, 66 adaptation actions were identified, and a 2025 action plan for their implementation was defined. The status, beneficiaries, and stakeholders, as well as financing and barriers to their implementation, were determined for each action. This National Adaptation Plan to Climate Change and Climate Variability for the Agricultural and Livestock Sector (NAP-Ag) was submitted at the COP25 in Madrid.

### 4. *National Adaptation Plan for the Energy Sector.* *NAP-Energy*.

The energy sector defined the development of a National Adaptation Plan for the Energy sector in line with the national energy and climate change policies, and this was indicated in the NDC. The objectives of the plan focus on generating and strengthening the resilience, prevention, and response capacity of Uruguay's energy sector and on enhancing institutional and stakeholder capabilities. At the same time, it seeks to better understand the vulnerability of the energy sector concerning different climate change scenarios and to establish strategic guidelines for sector adaptation that contribute to reducing the vulnerability of the population and productive sectors to the harmful effects of climate change. And finally, it aims to determine capacity development needs to implement ad-

vironment, Nature Conservation, Construction and Nuclear Safety of the German Government (BMUB)

adaptation actions, identify measures for the development of strategic guidelines, and to identify and prioritize efforts that show the synergy between adaptation and mitigation.

### 5. National Adaptation Plan for the Health Sector.

#### NAP-Health

As a contribution to the preparation of a National Adaptation Plan for the Health sector, the NDC defined goals for this sector that focus on capacity building, the development of specific knowledge and the improvement of management capacities. The short-term goal is to produce a training program on climate change and health for workers in the sector and to develop an early warning system for extreme temperature events (heat and cold waves). In the medium term, the goals are to define a prevention plan for different threats associated with diseases transmitted by climate-sensitive vectors and the study of predictive models for vector diseases and zoonoses; to define environmental health indicators linked to climate change; to assess the response capacity and infrastructure capacity of health services and health care centers in the face of extreme climate-related events.

*The territorial approach to adaptation.* Work has been done on incorporating the climate change dimension at the departmental and municipal levels. Highlights include the Metropolitan Region Climate Plan (PCRM)<sup>21</sup> designed in 2012 and revised in 2017, the Resilient Montevideo strategy and departmental climate change adaptation plans<sup>22</sup>. At the same time, a binational initiative for the Uruguay River was designed, which resulted in the approval of the Regional Program for Adaptation to climate change in vulnerable coastal cities and ecosystems of the Uruguay River<sup>23</sup> to reinforce the adaptation actions undertaken in the departments of Artigas, Salto, Paysandú, and Río Negro, on the left bank of the Uruguay River.

21 Metropolitan Region Climate Plan. Available at [http://montevideo.gub.uy/sites/default/files/plan\\_climatico\\_region\\_metropolitana\\_uruguay\\_resumen\\_ejecutivo.pdf](http://montevideo.gub.uy/sites/default/files/plan_climatico_region_metropolitana_uruguay_resumen_ejecutivo.pdf)

22 Climate change adaptation project at the local level within the framework of the National Climate Change Policy (PNCC). Departmental Governments of Rivera and Tacuarembó with the support of SNRCC and AUCI and the Spanish Cooperation Agency. <https://www.mvotma.gub.uy/novedades/noticias/item/10012459-rivera-y-tacuarembó-destacan-en-adaptacion>

23 Regional Project "Adaptation to climate change in vulnerable coastal cities and ecosystems of the Uruguay", led in Uruguay by MVOTMA and departmental governments, with the support of the Adaptation Fund.

The *objectives of the water resources management* initiatives under the National Water Plan<sup>24</sup> compiled between 2015 and 2017, were to establish the access to drinking water and sanitation as a human right and secure the management of the risk of floods and droughts. Under this framework, progress was made in defining climate change adaptation actions to protect the Santa Lucía River basin as it supplies drinking water to a high percentage of the country's population, and in producing 21 flood risk maps for vulnerable cities.

In terms of *land-use planning*, the land-use planning instruments developed during the period, together with the National Strategy for Access to Urban Land (ENASU) and the Strategy for Sustainable Cities (ENCIS), contribute to the implementation of adaptation measures defined in the NDC and SDG 11 for Sustainable Cities. At the same time, the National Resettlement Plan (PNR) within the framework of the 2015-2019 Five-Year Housing Plan was implemented to address the vulnerability of the population settled in flood-prone areas and contribute to improving their quality of life and their socio-territorial integration. Also, progress was made in georeferencing social vulnerability associated with climate events. From the standpoint of *disaster risk management*, progress was made in strengthening decentralized and multi-stakeholder institutional capacity in a National Emergency System (SINAE) and its new policy as a management instrument. In the tourism sector, the Ministry of Tourism (MINTUR) has continued to make efforts to promote the Tourism Green Seal, which is awarded to tourist accommodation establishments that integrate measures for the resilient performance of buildings and implement good practices to address the impacts of climate change. The 2030 National Biodiversity Strategy addresses the agenda for the *conservation of biodiversity and ecosystems* in connection with climate change. The strategy includes adaptation elements and has made progress in incorporating adaptation actions into the management plans of some protected areas.

24 MVOTMA (2017). National Water Plan. Montevideo: MVOTMA. Available at: <http://bit.ly/2JSPK9B>.

### Progress on some adaptation measures of the NDC and the first Adaptation Communication.

Work has been done to define the level of progress in the implementation of some of Uruguay's adaptation measures presented in the Nationally Determined Contribution (NDC). The following are examples of the progress made in the implementation of some of Uruguay's non-conditional actions to contribute to the achievement of the established mitigation objectives.

1. *Action:* To have formulated, adopted and started the implementation of a National Health adaptation plan by 2025.

*Description:* The National Climate Change Policy proposed the strengthening of the Integrated National Health System to generate conditions that ensure comprehensive healthcare for the population in the face of the impacts of climate change and variability and extreme climate and weather events.

*Gender sensitivity:* under design<sup>25</sup>.

*Status:* Programming<sup>26</sup>.

2. *Action:* The management plans of at least six protected areas will include climate change and variability considerations by 2025.

*Description:* The 2015-2020 Strategic Plan of the National System of Protected Areas (SNAP) aims to contribute to minimizing the impact of climate change on the most vulnerable species by protecting a set of sites identified explicitly for that purpose. Efforts are being made to ensure that the management plans of the SNAP areas become part of the climate variability and change dimension.

*Gender sensitivity:* potentially responsive.

*Status:* Implementation.

3. *Action:* To have an adaptive management strategy in 20% of the coastal line of the Uruguay River, the Río de la Plata River and the Atlantic Ocean by 2025, prioritizing the most vulnerable stretches.

*Description:* The aim is to increase adaptive capacity and reduce vulnerability to climate change and cli-

mate variability in the coastal areas of the Río Uruguay river, the Río de la Plata river, and the Atlantic Ocean.

*Gender sensitivity:* responsive.

*Status:* Implementation.

## 3.3. MITIGATION

### MITIGATION ACTIONS, PROGRAMS, AND PROJECTS WHETHER IMPLEMENTED OR IN PROGRESS

In the *energy sector*, the most outstanding accomplishment has been the decarbonization of the electricity matrix achieved in recent years through the incorporation of installed capacity in wind, biomass and solar photovoltaic energy, which together with hydroelectricity accounted for 97 % of the electricity generation in 2018.

These actions, together with energy efficiency measures, address mitigation and adaptation to climate change in the energy sector within the framework of the National Energy Policy with a 2030 perspective. Different actions that seek greater efficiency and less pollution in transport have been promoted and implemented, both through economic instruments and the improvement of technological and regulatory aspects, among others. It is within this framework that UTE installed the First Electric Route in Latin America and is installing charging stations across the country. The country also promotes capacity building initiatives and provides support to departmental governments, through training and technical guidelines, in the planning of mobility elements that take into account sustainability.

The protection of natural ecosystems—among them, the country's native forests—is considered as part of the forestry sector within the framework of the country's contributions under the NDC. The country has indicated to unconditionally maintain 100 % of the native forest area in the 2012-2025 period and, if additional means of implementation are obtained, to increase this area by 5 % by 2025, especially in areas of environmental protection of water resources while to reverse degradation processes. Within the framework of the design of the Measuring, Reporting and Verification system, work is also being done to develop meth-

<sup>25</sup> Gender sensitivity: Refers to the potential impact on gender inequalities of the measure. Four categories were established: Neutral, Sensitive, Potentially responsive and Responsive. In turn, those measures that are in the process of being categorized are identified as "Under design".

<sup>26</sup> For the purposes of this analysis, the status of each measure is categorized into three levels: Programming, when it is in the process of design; Implementation, when it is in the process of development and actual implementation; and Goal attained, when the goal set out in the CRC has been achieved.

ologies for georeferenced mapping that will allow permanent forest monitoring. These developments are essential not only to meet REDD+ reporting requirements but also to monitor the progress of commitments determined at the national level in Uruguay.

Concerning the *waste sector*, different strategies are being developed for improve waste management and recovery, based on circular economic guidelines towards a model that promotes the reduction of waste generation and its valorization. With regard to the final disposal of solid urban waste, several departmental governments have put in place initiatives to develop

and operate environmentally sound landfills. In particular, the *Biovalor Project*<sup>27</sup> promotes the transformation of waste generated by agro-industrial activities and small towns into energy and/or by-products, to develop a sustainable outcome model.

### Progress on some of the mitigation actions presented in the NDC

The following are examples of progress in the implementation of some of Uruguay's non-conditional actions to contribute to the achievement of the mitigation objectives<sup>28</sup>.

Table 3. Progress on some of the mitigation actions in the NDC.

I. Sustainable diversification of the energy matrix
<b>Action 1: Wind power generation.</b>
<b>DESCRIPTION OF THE ACTION:</b> development of wind farms to contribute to the objectives of matrix diversification by using non-traditional renewable sources.
<b>2025 TARGETS:</b> Achieve 1450 MW of wind energy installed power.
<b>STATUS/ACHIEVEMENTS:</b> Public and privately-owned wind farms are operational, contributing 1511 MW of wind energy to date (December 2018).
<b>GENDER SENSITIVITY:</b> Potentially Responsive.
III. Efficient and sustainable transport
<b>Action 8: Installation of the first electric route in Latin America</b>
<b>DESCRIPTION OF THE ACTION:</b> Development of the first electric route in Latin America by setting up charging stations for electric vehicles along the national roads that link the cities of Colonia-Montevideo-Chuy (approximately 550km).
<b>2025 TARGET:</b> This corridor stretches across around 550 km, where it expected to install 13 charging stations.
<b>STATUS/ACHIEVEMENTS:</b> 17 charging stations have been installed, fully covering the entire route planned. And progress has been made in the next phase of expansion to all national roads. (December 2017)
<b>GENDER SENSITIVITY:</b> Neutral.
IV. Increase and sustainability of agricultural productivity
<b>Action 1: Good natural field management practices</b>
<b>DESCRIPTION OF THE ACTION:</b> Incorporation of natural pasture management good practices and breeding herd management good practices in livestock production establishments, including adjustment of forage supply, regenerative management and sound nitrogen management.
<b>2025 TARGET:</b> Achieve 1,000,000 ha of livestock production under good management practices (10% of pasture area)
<b>STATUS/ACHIEVEMENTS:</b> Under implementation, there are approximately 20 establishments (about 7,000 ha) that have adopted good practices. By 2019, the Natural Pasture Livestock Farming Office drew up guidelines for the Strategic Plan for Livestock Farming on Natural Pastures.
<b>GENDER SENSITIVITY:</b> Potentially Responsive.

<sup>27</sup> Biovalor Project. Implemented by MIEM, MGAP and MVOTMA, co-financed by the Climate Change Window of the Global Environment Facility (GEF) and public and private actors, and with the United Nations Industrial Development Agency (UNIDO) as implementing agency.

<sup>28</sup> For this analysis, the status of each mitigation measure is categorized into three levels: "Program under design", when the action is still undergoing the design process; "Currently being implemented", when it is in the process of development and actual implementation; and "Target achieved", when the target established in the NDC has been met.

## CHAPTER 4

## Other information considered relevant to the achievement of the objective of the Convention

### 4.1. INFORMATION

The country has identified the need for more and better information for decision-making processes when dealing with climate change and climate variability. These decisions address aspects such as impact prevention, risk reduction, resource management, and adaptation and mitigation planning.

Significant progress was made both in terms of the quality of the information generated at the sectoral level and in its accessibility and availability to different users. Progress was made in the availability of qualified climate data to inform the development of climate services. Georeferenced information systems were developed to contribute to decision-making in the face of climate change<sup>1</sup>. In addition, progress was made in the drafting of a national Loss and Damage report. A set of indicators for monitoring adaptation to climate change and variability in cities was developed to measure the level of urban adaptation and identify those cities that present the most critical situations, to determine which adaptation measures to implement. A domestic programming, monitoring, reporting and verification system was developed for both mitigation and adaptation actions to monitor progress in the fulfillment of the targets of the PNCC and NDC.

<sup>1</sup> The Environmental Information System, the National Environmental Observatory (OAN); the Territorial Information System (SIT), the National Agricultural Information System (SNIA); the INIA GRAS Information and Support System for Decision-Making in terms of Climate Risk Management in the Agricultural Sector and the Integral Monitor of Risks and Impacts (MIRA) viewer of the National Emergency System (SINAE).

### 4.2. KNOWLEDGE

Significant progress has been made in the development of knowledge that contributes to decision making to face climate change and climate variability. Progress was made in the generation of baseline knowledge, such as the analysis of future climate scenarios in Uruguay, and the assessment of vulnerabilities in coastal areas and agro-ecosystems. Also, a cost-benefit analysis of some adaptation and mitigation actions was carried out, as a tool to evaluate the measures included in the first NDC in advance. The degree of adaptation in Uruguayan cities was also assessed, identifying actions undertaken and knowledge gaps.

### 4.3. EDUCATION, AWARENESS-RAISING AND CAPACITY BUILDING

#### 4.3.1. Education

Environmental and climate change issues were gradually incorporated into formal and non-formal education contexts. This was done pursuant to the provisions of Article 6 of the Convention, Article 12 of the Paris Agreement, the 2009 Education Law, the National Climate Change Policy, the National Climate Change Response Plan (which defines education and communication as a strategic pillar), the National Environmental Education Plan (PlaNEA) and, more recently, the National Plan for Education in Human Rights (PNEDH). Given the NDC commitment to strengthen the National Environmental Education Network (RENEA) in its approach to climate change, several initiatives have been promoted in the *formal education* context, both at the primary and secondary level and in the *non-formal* education context. At the *higher education*

level, it is worth noting the incorporation of new training opportunities in fields such as urban water, habitat and housing, integrated coastal area management, atmospheric sciences, agro-ecosystems, and environmental sciences<sup>2</sup>. The *civil society*, represented by different organizations, has systematically strengthened and empowered stakeholders to address the impacts of climate change, both through the development of knowledge, awareness-raising and training actions and the design and implementation of actions at the local level with multi-stakeholder participation.

#### 4.3.2. Capacity building.

Within the framework of capacity building at the local government level, several training initiatives have been promoted covering aspects such as urban management, the funding of works needed for adaptation to climate change and ecosystem services<sup>3</sup> and achieving a more thorough understanding of coastal activities, their vulnerability and adaptation measures to climate change<sup>4</sup>. The capacity building processes under the NAP-Coasts and NAP-Cities and Infrastructures were particularly meaningful to understand the observed variability and climate projections for the 21st Century in Uruguay. Also important were the technology transfer efforts linked to the models used to assess coastal dynamics and physical vulnerability<sup>5</sup> and the contributions of the NAP-Agri plan. In addition, several awareness-raising activities were undertaken in the cities to mainstream human rights and climate change perspectives. There were forums for discussion and exchanges of experiences on the climate agenda and the role of the private sector, as well as training initiatives for communicators. Moreover, the National Emergency System (SINAE) has provided training to its Departmental Emergency Coordination Centers (CECOEDs) on aspects concerning risk management, for example, understanding the main climate-related threats, prevention and action procedures and tools for risk management planning.

<sup>2</sup> Initiative developed by the Interdisciplinary Centre for Climate Change and Variability Response (CIRCV) of the University of the Republic (UDELAR) within the framework of the EUROCLIMA Plus Programme.

<sup>3</sup> Local capacity building process led by MVOTMA's National Land-Use Planning Directorate (DINOT) and the Lincoln Institute of Land Policy.

<sup>4</sup> Local capacity building process led by the Climate Change Division (DCC) of MVOTMA, UdeLaR and the University of Cantabria.

<sup>5</sup> Activities organized by MVOTMA, SNRCC, with the participation of the Environmental Hydraulics Institute of the University of Cantabria, the School of Engineering and School of Sciences of UDELAR, IDE, AGESIC, and with the support of AECID, CTCN, GEF and UNDP.

## 4.4. CITIZEN PARTICIPATION

Different actors from the public and private sectors, civil society and scientific-technical fields were part of the participative process for the development of the National Climate Change Policy (PNCC) in 2016 led by the SNRCC, engaging almost one hundred institutions and more than 300 participants. Similarly, the First Nationally Determined Contribution (NDC) was submitted for consideration in public consultation in 2017. Different forums for participation, accountability and consultation were proposed, to favor the implementation of the Policy and its assessment, for example, the participation in the design and implementation of the Domestic System for Programming, Monitoring, Reporting, and Verification of the PNCC, the NDC, and NGHGI. Different forms of participation strategies have been developed including online platforms and open data.

## 4.5. NETWORKS AND WORKING GROUPS

The different networks and working groups have provided crucial support for following up on the commitments under the Convention, as well as for the enhancement of scientific knowledge, capacity strengthening and the implementation of adaptation and mitigation actions in the country.

At the *public sector* level, the creation of the SNRCC marked a highly significant milestone for inter-institutional cooperation in terms of coordination and planning of the necessary actions to be undertaken for risk prevention, mitigation and adaptation to climate change. In particular, within the framework of the SNRCC Advisory Commission, several inter-institutional working groups (GDT) have been put in place to advance the understanding and analysis of the country's climate change priorities. In 2017, a GDT was put together for the preparation of the NDC, drafting Uruguay's First NDC. Other sectoral Working Groups were formed around the different issues on the SNRCC agenda: International Negotiation; Assessment of Damages and Losses; Education, Communication and Awareness-raising; GHG National Inventories; Coasts; Gender; REDD+; Metropolitan Agenda, Cities; Social Vulnerability and Climate Variability Indicators; Miti-

gation and Nationally Appropriate Mitigation Actions; and Water Resources. In addition, an Inter-institutional Group on Energy Efficiency in Transport was created in 2014<sup>6</sup>. With regard to the *private sector*, both the National Climate Change Policy and the First Nationally Determined Contribution (NDC) entailed processes that ensured the participation of a diverse group of actors, in addition to the public stakeholders.

In the *academic field*, the University of the Republic (UDELAR) promotes interdisciplinary forums that contribute to climate change knowledge generation, for example, the Interdisciplinary Center for Climate Change and Climate Variability Response (CIRCVC), UDELAR's Interdisciplinary Center for the Integrated Coastal Management of the Southern Cone, the Integrated Risk Management Group (GGIR)<sup>7</sup> and the South American Institute for Resilience and Sustainability Studies (SARAS2)<sup>8</sup>. Different lines of research on ecosystems and also on science and policy related to climate change have been undertaken<sup>9</sup>.

The *international networks* have been one of the main instruments to follow-up on the processes and commitments that arise from the Convention, and to enhance scientific knowledge, strengthen capacities and implement the country's adaptation and mitigation actions. Some of these networks are: as the Ibero-American Network of Climate Change Offices (RIOCC), the Latin American Network of National GHG Inventories (NGHGI Network), Action for Climate Empowerment (ACE). Regarding the *research networks* in the climate sector and the agricultural sector, Uruguay is member of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) through MGAP and INIA from 2009.

Finally, Uruguay is part of the Practice Community on the involvement of the Private Sector in Climate Policies Latin America.

<sup>6</sup> Integrated by MEF, MIEM, MTOP and MVOTMA, the state-owned companies UTE (the National Administration of Power Plant and Electric Transmissions), ANCAP (the National Fuel, Alcohol and Cement Administration) and the Departmental Government of Montevideo.

<sup>7</sup> Integrated by the School of Architecture, School of Psychology, School of Medicine, School of Engineering and School of Nutrition.

<sup>8</sup> The South American Institute for Resilience and Sustainability Studies (SARAS2), is an interdisciplinary research institute aimed at contributing substantially to the production of knowledge and capacity building in processes and mechanisms that determine the sustainability of ecosystem services, key to determining human well-being.

<sup>9</sup> Implemented through the project called "Strengthening links between politics and science in Latin America", also known as LatinoAdapta. It is implemented in 6 Latin American countries simultaneously, led by the Regional Center for Climate Change and Decision Making.

## 4.6. COMMUNICATION

In the field of communications there have also been plenty and significant contributions. Communication initiatives have been generated for different audiences. A protocol was developed to guide the public communication of warnings to the population and the subsequent response. There has been progress in the dissemination of reliable and updated information on damages and losses in the face of extreme events. In addition, different graphic and audiovisual materials were developed for a variety of audiences to help improve understanding of the climate change phenomenon, its impacts and actions to adopt to reduce its consequences.

## 4.7. INTERNATIONAL COOPERATION

Uruguay allocated significant resources and made efforts early on to implement climate change adaptation and mitigation actions. Investment in environmentally friendly knowledge, technologies and processes has been encouraged through different initiatives and instruments, tackling the effects and addressing the causes of climate change. In order to carry out transformative processes in the area of adaptation, the country has relied fundamentally on its own capacities and national and departmental resources, which have been supported on several occasions by international cooperation funds. The UNDP, the Green Climate Fund, the European Union, Spanish Cooperation and the CTCN<sup>10</sup>, among others, have supported the assessment of the adaptation measures and the design of national adaptation plans. The agricultural and livestock sector has been supported by the Adaptation Fund, FAO, the World Bank and the GEF, among others. In terms of mitigation, both the public and private sectors have taken part in the different areas of the country's economy, generating synergies between them and making the mitigation actions more effective and efficient.

<sup>10</sup> Climate Technology Center and Network (CTCN)



**Support received to meet the objectives of the Convention.**

The external financial support received to comply with the commitments taken on under the United Nations Framework Convention on Climate Change has been essential to continue the implementation of the initiatives developed. Particularly, to comply with the UNFCCC's commitment to submit National Communications, for the preparation of the Fifth National Communication on Climate Change, Uruguay received the support of the GEF through the Institutional Strengthening Project of the MVOTMA, and UNDP acting as the implementing agency. There's also been support for the development of Uruguay's Third BUR to the UNFCCC.

**CHAPTER 5**

## **Constrains and gaps, and related financial, technical and capacity needs**

To contribute to the country's path of continuous improvement to face the challenges of climate change and meet the targets set out in the first Nationally Determined Contribution (NDC), Uruguay needs to continue improving capacities in research and development, monitoring and registration, provide education and training to operators and public, private and organized civil society actors who design and implement new responses to climate change issues. There are processes in place to assess obstacles, gaps and needs in terms of technologies, capacities and financing, involving different sectors and institutions.

The Technology Needs Assessment (TNA) of Uruguay included an assessment of Barriers and a Technology Action Plan that targets specific sectors, in particular: Energy and Industry; Transport; Agriculture; Waste; Water Resources; Urban Habitat and Health; Land and Coastal Ecosystems. As a result, technologies were prioritized by sectors and sub-sectors and the results were considered both in the development of the National Climate Change Policy and in the first NDC.

The needs for capacity building and strengthening were addressed in the strategic and action lines of the National Climate Change Policy, and made explicit in the NDC. Some of these are: the need for the institutions associated with this subject matter and for the population to have access to relevant information and knowledge for decision-making purposes; to strengthen the social networks working in the field from a human rights perspective, contributing to the creation and dissemination of knowledge on climate change, for decision-making processes at the local level and to achieve a more efficient management of early warnings; to identify and promote research lines on the climate change and climate variability aspects that are considered a priority in the different sectors.



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