



**ORIENTAL REPUBLIC OF URUGUAY**  
**Second Nationally Determined Contribution**  
**to the Paris Agreement**

**December 2022**

## Table of contents

1. Guiding principles for climate action. ....	1
2. National context and main actions. ....	1
3. Second Nationally Determined Contribution formulation process. ....	5
4. Contribution to adaptation .....	7
4.1. Adaptation objectives.....	7
4.2. National adaptation measures .....	7
5. Contribution to mitigation .....	14
5.1. Mitigation objectives .....	14
5.1.1. Unconditional objectives.....	14
5.1.2. Conditional objectives to additional specific means of implementation.....	15
5.2. On mitigation objectives and progressive ambition.....	17
5.3. Mitigation measures.....	21
5.3.1. Unconditional measures.....	21
5.3.2. Measures that are conditional to additional specific means of implementation .....	23
6. Cross-cutting and capacity-building measures.....	25
7. Second Adaptation Communication .....	27
7.1. Introduction.....	27
7.1.1. Link between the content of this adaptation communication and the annex to Decision 9/CMA.1 .	27
7.1.2. Preparation of the Second Adaptation Communication. ....	28
7.1.3. Main activities undertaken.....	28
7.2. Adaptation Context in Uruguay.....	29
7.2.1. National legal frameworks and institutional arrangements .....	30
7.2.2. Impacts, Adaptation, and Risk in Uruguay .....	31
7.3. Ex ante adaptation cycle.....	34
7.3.1. Adaptation objectives.....	34
7.3.2. Cross-cutting adaptation approaches .....	34
7.3.3. National adaptation measures .....	35
7.4. Ex-post adaptation cycle, progress, and results achieved.....	41
7.4.1. Uruguay’s First Nationally Determined Contribution and First Adaptation Communication.....	41
7.4.2. National Adaptation Plans.....	43
7.5. Adaptation efforts to be recognized .....	50
7.6. Barriers and challenges to implementing adaptation .....	51

7.7. Best practices and lessons learned.....	54
7.8. Cooperation to enhance adaptation at the national, regional and international levels.....	55
7.9. Monitoring and evaluation .....	56
7.10. Means of implementation .....	57
8. Information needed to facilitate the clarity, transparency and understanding of the Second Nationally Determined Contribution .....	58
8.1. Scope and coverage .....	58
8.2. Main assumptions.....	58
8.3. Methodological approach for estimating emissions and removals .....	58
8.4. Implementation and reporting period.....	58
8.5. Types of unconditional and conditional to additional specific means of implementation objectives and measures .....	58
8.6. Definition of the target year and data sources to facilitate monitoring, reporting and verification of the NDC mitigation objectives under Article 13 of the Paris Agreement and Decisions 1/CP.21 and 4/CMA.1.....	59
8.7. Base years, base year values or latest available data for NDC2 mitigation objectives .....	61
8.8. International transfer of mitigation outcomes under Article 6 of the Paris Agreement .....	63
List of Acronyms .....	64
References .....	66
Annex.....	68

## 1. Guiding principles for climate action.

The primary purpose of the National Climate Change Policy (PNCC)—which has informed climate policy since 2017—is to “contribute to sustainable development, through a global perspective of intra- and intergenerational equity and a human rights approach, pursuing 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 accountable in the face of this challenge, promoting a low-carbon economy, based on environmentally, socially and economically sustainable production processes and services that incorporate knowledge and innovation.”

The Nationally Determined Contributions (NDCs) submitted by Uruguay, pursuant to the provisions of the Paris Agreement, follow the PNCC general objective and approach. They serve as an instrument for its implementation and help define its targets every five years, taking the pathways presented in the Long-term Climate Strategy for Low Greenhouse Gas Emission and Climate Resilient Development (LTS) as a reference.

That is why the implementation of the PNCC and the Second Nationally Determined Contribution (NDC2), in particular, are guided by the respect for and the safeguarding of human rights and the preservation of ecosystems, adopting an inclusion, intra- and intergenerational equity, and gender with an intersectional approach perspectives and promoting a just transition.

These guiding principles for climate action will inform the implementation of all actions and measures included in this document.

## 2. National context and main actions.

Uruguay, located in South America, is a relatively small country compared to others in the region. Its population lives primarily in coastal areas, and the economy is based on agro-industrial production and services, such as tourism, which means that the country is especially vulnerable to the effects of climate change, making adaptation a national priority. Early actions aimed at increasing the adaptive capacity and resilience of society, production systems, and ecosystems have been prioritized; this becomes even more relevant in the face of increasingly frequent adverse climate events that will result in significant losses and damages.

Floods are the most frequent and severe events. These are caused by rivers and streams overflowing after persistent rainfall (drainage flooding) or meteorological tides (*sudestadas* or southeast storms). Urban floods cause the evacuation of population groups, impacting their health (physical and emotional), livelihood, and housing. Meteorological tides (*sudestadas* or southeast storms) affect the coastal ecosystem and cause material damage to infrastructure. Droughts, in turn, have a direct negative impact on agriculture, affecting agricultural yields, livestock production, calving and animal mortality rates, as well as on hydropower generation and drinking water supply.

As a result of its climate vulnerability, Uruguay has focused its national adaptation planning strategy on specific priority areas. In 2019, the country presented the National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector (NAP-Ag). It aims to contribute to improving the livelihoods of rural populations through sustainable and less vulnerable to the impacts of climate change and variability animal and plant production systems, mainstreaming a gender perspective.

In 2021, the country presented the National Adaptation Plan to Climate Change and Climate Variability for Coastal Areas (NAP-Coasts), which focuses on strengthening capacities to identify the impacts and

vulnerabilities of the coastal sector and define concrete adaptation actions in coastal areas, and the National Adaptation Plan to Climate Change and Climate Variability for Cities and Infrastructure (NAP-Cities), to reduce vulnerability to the effects of climate change by building adaptation and resilience capacities in cities, infrastructure, and urban environments. Both national plans mainstream gender and generation perspectives following the Gender and Climate Change Strategy of the National Climate Change and Climate Variability Response System (SNRCC) and the ecosystem-based adaptation approach (EbA).

The country is also currently working on the National Adaptation Plan for the Energy Sector (NAP-E) and the National Health Adaptation Plan (NAP-Health).

Along with implementing these actions, and despite the country's share of global Greenhouse Gas (GHG) emissions being only 0.03%<sup>1</sup>, important mitigation measures have been developed in different sectors.

In the energy sector, one of the most outstanding accomplishments has been the consolidation of the decarbonization of the electricity matrix through the incorporation of wind energy to around one-third of the total installed capacity. In addition to wind, the biomass and solar photovoltaic installed capacity and the more traditional hydropower accounted for 94% of the total power generation in 2020. Renewables accounted for 58% of the primary energy matrix in 2020. Thus, while reducing GHG emissions in power generation, Uruguay adapted the sector—which is highly dependent on rainfall—to climate change by adopting non-traditional renewable sources, thus creating an extremely beneficial synergy for the country and the global environment. Within the framework of the National Energy Policy in place since 2008 and with a 2030 horizon, these actions, together with the energy efficiency measures adopted, promote the energy sector's mitigation and adaptation to climate change.

The agricultural sector has undergone significant transformations, which, supported by best environmental practices, have made it possible to increase the sector's productivity and reduce the intensity of GHG emissions per unit of product.

The project "Climate-smart livestock production and soil restoration in Uruguayan natural grasslands" has been underway since 2019 with the objective of increasing the yield of natural grassland livestock systems and, at the same time, reduce GHG emissions per kilogram of meat, promote carbon sequestration in grassland soil and restore ecosystem services. In addition, the country has implemented actions in the forestry sector aimed at maintaining the native forest area, on the one hand, and promoting forest plantations, on the other. The "Agroecological and Resilient Systems in Uruguay (SARU)" project was rolled out in 2022 to strengthen public agricultural systems and support rural farmers to increase climate change mitigation and adaptation actions and promote agroecological production. The project will implement actions in line with national climate action policies, including the climate change adaptation priorities outlined in the NAP-Ag that contribute, at the same time, to farm sustainability processes through the promotion of biodiversity in the farm system, maintenance or restoration of natural areas and the protection and efficient use of natural resources, preserving or enhancing ecosystem services. It is expected to enhance synergies with GHG emission reductions and/or improve carbon balances by moving towards neutral or sequestering balances.

With regard to the waste sector, strategies are being developed for better management and recovery. The Comprehensive Waste Management Law was passed in 2019; it is a regulatory instrument that outlines and regulates waste management at the national and departmental levels focusing on environmental, economic, and social sustainability and promoting a circular economy. Following the provisions of Article 14 of this law,

---

<sup>1</sup> According to the 2019 NGHGI, Uruguay's share of global GHG emissions is 0.03 % (based on global emissions reported for 2019 in the [Emissions Gap Report 2020, UN Environment](#)).

the National Waste Management Plan (PNGR) was developed in 2021. It is a tool for strategic planning at the national level to implement and develop the national waste management policy.

The latest National Greenhouse Gas Inventory (NGHGI), analyzed by gas, shows that in 2019 there was a net carbon dioxide (CO<sub>2</sub>) capture of 4,850 Gg. Emissions of this gas come mainly from the Energy sector through fossil fuel combustion, particularly in transportation. In 2019, this sector contributed 6,170 Gg, of which 60% came from the "1.A.3 Transport" Category. The Industrial Processes and Product Use (IPPU) sector contributed 445 Gg, while the Waste sector generated 1.2 Gg of CO<sub>2</sub> emissions. In contrast, the Agriculture, Forestry, and Other Land Use (AFOLU) sector captured a net 11,466 Gg of CO<sub>2</sub> (29,581 Gg of gross emissions and 41,047 Gg of gross CO<sub>2</sub> removals).

In turn, methane (CH<sub>4</sub>) emissions amounted to 760 Gg in 2019 and were generated primarily in the AFOLU sector. This sector accounted for 92% of the total, followed by the Waste sector, which contributed 7%, and the Energy sector, with only 1% of total CH<sub>4</sub> emissions. Nitrous oxide (N<sub>2</sub>O) emissions were 26 Gg. Of these, 96% came from the AFOLU sector, 3% from the Energy sector, 1% from the Waste sector, and less than 1% from the IPPU sector.

Regarding the consumption of halocarbons and sulfur hexafluoride (SF<sub>6</sub>), it is worth noting that there is no hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs) production in Uruguay, so demand is only met through imports. Emissions of these gases were produced due to their use in refrigeration, air conditioning, fire extinguishers, insulation foams, and electrical transformation, among others. It was estimated that 254 and 1 Gg CO<sub>2</sub>-eq (GWP<sub>100</sub> AR2) of HFCs and SF<sub>6</sub> were emitted in 2019.

Considering the relative contribution to global warming of these gases, net emissions for 2019 were 19,463 Gg CO<sub>2</sub>-eq (GWP<sub>100</sub> AR2). If the contribution of the "3.B Land" category is not considered, emissions amounted to 31,020 Gg CO<sub>2</sub>-eq (GWP<sub>100</sub> AR2). When analyzed by gas, CH<sub>4</sub> emissions account for 51% of total national emissions and N<sub>2</sub>O emissions account for 26%, mainly associated with food production. CO<sub>2</sub> emissions accounted for 22%, and HFCs and SF<sub>6</sub> emissions, despite their high global warming potential, only accounted for 1% of total national emissions.

Uruguay is implementing a comprehensive and consistent strategy to respond to climate change, focusing on the development of adaptation and mitigation actions and addressing cross-cutting dimensions such as governance and capacity building. The National Response System to Climate Change and variability (SNRCC for its Spanish acronym) was created in 2009 to coordinate the country's climate change policies and actions. The PNCC was developed in 2016 through a participatory and multisectoral process. NDC1 was formulated in 2017 as an instrument for implementing this Policy and submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

As part of the efforts to achieve further institutional strengthening and to bring attention to the subject, it is also worth noting the creation of the Ministry of Environment (MA for its Spanish acronym) and the National Climate Change Directorate (DINACC for its Spanish acronym) in 2020.

The LTS<sup>2</sup> for a Low Emission and Climate Resilient Development was formulated in 2021 to define and develop the country's vision on GHG emissions and removals, adaptation, resilience, and risk reduction towards 2050.

In the same year, the National Gender and Climate Change Plan was approved within the framework of the SNRCC with a 2024 horizon, in line with the principle of social equity outlined under the PNCC. This Plan builds on the National Gender and Climate Change Strategy developed in 2019, which defines how to mainstream this

---

<sup>2</sup> [Uruguay's Long-term Climate Strategy](#).

perspective in the PNCC and NDC based on the categorization, recommendations, and commitments for gender equality across all measures included in the NDC.

In addition, in line with the PNCC, the NDC1, the LTS, and the provisions of the UNFCCC and the Paris Agreement, the National Action for Climate Empowerment Strategy (ENACE Uruguay) was developed throughout 2021.

As in most countries, Uruguay was strongly impacted by the health crisis caused by the spread of COVID-19 in 2020 and 2021. Due to the health crisis, after 17 consecutive years of economic growth, economic activity in Uruguay contracted by 6.1% in 2020 compared to the previous year. The year 2021 showed signs of recovery, with economic growth of 4.4%.

The significant GDP drop in 2020 increased poverty rates nationwide. Inequality also increased, although the Gini index (0.387)<sup>3</sup> still places Uruguay as the most equitable country in Latin America. Given these circumstances, different economic measures were taken to mitigate the impact of the crisis, particularly on the most disadvantaged socioeconomic sectors.

Between 1990 and 2019, net GHG emissions increased by 8.6% (expressed in CO<sub>2</sub>-eq using the GWP<sub>100</sub> AR2 metric), while the size of the economy more than doubled over the same period. This means that Uruguay managed to halve its emissions per unit of GDP, making progress toward decarbonizing the economy without affecting food production.

---

<sup>3</sup> [Technical bulletin. Estimation of poverty based on the 2020 income method. INE.](#)

### **3. Second Nationally Determined Contribution formulation process.**

As with NDC1 and the LTS, Uruguay's NDC2 was developed within the framework of the SNRCC. Several working groups worked simultaneously during 2022 to formulate this new contribution. Among them, one focused on adaptation (which developed the Second Adaptation Communication) and another on defining and exploring mitigation measures and the corresponding objectives.

These groups consistently worked together, and with other groups on Gender, Education, Communication and Awareness, programming, Monitoring, Reporting and Verification (pMRV), and NGHGI to produce a comprehensive final document.

#### **Technical work**

Within the framework of these working groups, the technical processes necessary for formulating the different components of the NDC2 were undertaken.

First, the most up-to-date information on emissions and removals for the different NGHGI sectors and categories was analyzed to define the mitigation measures and objectives. In addition, the GHG emissions and removals pathways projected under the LTS prepared in 2021 were reviewed and adjusted to the medium term. This information and the study of NDC1 objectives and measures and their progress laid the foundations for the work going forward.

For each NGHGI sector, the efforts focused on defining the measures that will contribute to achieving the objectives of NDC2, which, according to the rules of the Paris Agreement, must be progressively ambitious over time in successive NDCs. New projections of the expected development of the different sectors were made based on these 2025-2030 measures to estimate the impact on GHG mitigation and to set the corresponding objectives.

With regard to the NDC2 adaptation component, the Second Adaptation Communication (AdCom2), the first step was to analyze the progress made with Uruguay's First Adaptation Communication, included in NDC1, which set forth several measures and actions that the country took on and is carrying out to advance the goal of increasing resilience and improving adaptive capacity in a wide range of areas. The country's contribution to the Global Goal on Adaptation (GGA) was also addressed.

As part of defining the measures included in the NDC2, workshops were held with relevant stakeholders across the different areas and sectors. These served as input that contributed to the technical analysis and assessment of potential measures to be included in the NDC2.

Additional key elements of the NDC2 that were addressed collaboratively were the cross-cutting aspects, the incorporation of the social and economic dimensions, and within these, in particular, the factors related to gender, generations, capacity building, private sector engagement, and investment and financing needs, among others. These are critical to consider when defining feasible actions to be implemented to achieve the objectives of the new NDC.

Regarding the private sector, lines of work were strengthened to ensure that the different actors, both in the business and financial sectors, mainstream climate change into their lines of business and promote the mobilization of private financing for climate action.

Likewise, the gender perspective continued to be explored from an intersectional approach, analyzing the potential impact of responding to inequalities in each of the mitigation and/or adaptation measures the country undertakes.



Regarding capacity building and knowledge generation, the strategic guidelines and actions proposed in the ENACE strategy, prepared in 2021, were considered. Therefore, this NDC is expected to promote the implementation of this Strategy and, in turn, inform the country's future contributions to climate empowerment actions.

A dynamic general equilibrium macroeconomic model was used to carry out a macroeconomic assessment of the mitigation measures proposed under NDC2. This model provided information on the impact of these measures on key macroeconomic variables. In addition to contributing to integrating the economic and environmental dimensions, this tool allows for evaluating alternative mitigation strategies.

Incorporating these cross-cutting dimensions sought to leverage NDC2 and streamline its implementation, reflecting a higher and more progressive ambition when compared to NDC1.

### **Participatory processes**

A digital participation platform<sup>4</sup>, open to the public, was made available from the beginning. The platform was conceived as a tool for the population to express their points of view, make contributions and suggestions, and provide comments on actions they are carrying out or know about for climate action. The purpose of this platform was also to raise further awareness about ongoing initiatives, address the population's concerns regarding climate change issues, and different adaptation and mitigation actions taking place at different levels. This initiative is underpinned by the country's work with the International Open Government Partnership and, in particular, the desire to design and implement a participatory process to contribute to formulating the NDC2.

The timeline of the formulation process and the different milestones in the development of the NDC2 were also presented through this platform so that the population could access the most relevant information. Information on the consultations held to gather input to establish measures and objectives for the different sectors and areas was made available on the platform. The rollout of the public consultation stage of the draft document was also announced through this channel. The contributions submitted were analyzed when preparing the final document, which was again published on the platform for public dissemination.

In addition, a capacity-building and feedback process was undertaken with 40 young people between 14 and 22 from different parts of the country and diverse backgrounds. The objective of the process was for young people to learn about different aspects of climate change, its causes, impacts, actions that can be taken individually to fight it, policies and actions that are being carried out at the national level, and the international context and commitments, among other topics, to then present their views and contributions to the NDC2 formulation process in Uruguay. A series of workshops were held to address the issues mentioned above and to train the group of young people, who, at the end of the process, presented a series of measures and lines of work that, in their view, should be implemented and/or deepened to strengthen climate action in the country. They also presented the actions and measures they commit to undertake to contribute to a better and more efficient implementation of local and global initiatives.

---

<sup>4</sup> [Digital Citizen Participation Platform](#).

## 4. Contribution to adaptation

### 4.1. Adaptation objectives

Article 7 of the Paris Agreement establishes the global goal on adaptation which is to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change to contribute to sustainable development and achieve an adequate adaptation response in the context of the temperature goal mentioned in Article 2<sup>5</sup> [1]. In order to align national adaptation efforts with the elements set out in the GGA, AdCom2 has defined general and specific objectives for each adaptation area and besides, the qualitative contribution of each proposed adaptation action has also been outlined to establish a strategic framework for implementing AdCom2.

The general objectives are:

#### **In relation to enhance adaptive capacity:**

- a) Strengthen information systems for decision-making, generating, incorporating, and enhancing information related to the consequences of climate change and the implementation of adaptation actions through technical and scientific validation.

#### **In relation to vulnerability reduction:**

- b) Reduce the impacts of climate change on socio-ecological systems; reduce losses and damages in productive areas and sectors through implementing climate change adaptation actions.

#### **In relation to strengthening resilience:**

- c) Strengthen partnerships for climate governance, regulatory, planning, and technical instruments with a cross-cutting approach to climate change, primarily focusing on adaptation.

### 4.2. National adaptation measures

The following are the specific climate change adaptation objectives and the associated measures, including their scope in terms of management and/or results, that Uruguay expects to achieve to advance the global adaptation goal. The measures set out the main priorities by area and/or sector, information, implementation and support needs, adaptation plans and actions to mitigate the adverse effects of climate change.

To implement these measures, Uruguay may use the means of implementation provided under the framework of the Convention in terms of financing, technology transfer, and capacity building and strengthening.

---

<sup>5</sup> Article 2, paragraph a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.

## Cross-cutting adaptation measures

### Climate Information and Services

(relative to paragraph 7 of the PNCC)

**Strengthen information systems for decision-making, enhancing the available information and knowledge on the risks caused and amplified by climate change, addressing the frequency, severity, and impacts on people, property of outstanding universal value, and the environment.**

- 1) By 2030, a geographic information system will be in place that integrates the components of the leading social and natural risks susceptible to being enhanced by climate change.
- 2) By 2030, there will be an updated information and reporting system on social and natural emergencies and impacts, achieving greater efficiency in the information and sources, homogenization of variables, analysis of magnitude, intensity, frequency, impact, causality, and their relationship with climate change.
- 3) By 2030, a Climate Services Information System will be developed and available in open data format.
- 4) By 2030, official climate change projections for 2050 and 2100—prepared based on the best available scientific information and climate change scenarios—have been agreed upon, updated, and laid out within the framework of the SNRCC.
- 5) By 2030, there will be a *mesoscale* atmospheric model and a *nowcasting* system for developing very short-term forecasts, and human resources will be trained in their generation and update.
- 6) By 2030, an inter-institutional group for climate services governance has been set up and is operational under the scope of the National Meteorological Council and the SNRCC.

### Disaster Risk Reduction

(relative to paragraph 10 of the PNCC)

**Strengthen comprehensive emergency and disaster risk management by incorporating a climate change perspective.**

- 7) By 2030, an information system has been designed, updated, and set up, based on the comprehensive risk and impact monitor (MIRA), to carry out multi-hazard analysis, estimate the probability of occurrence, impact, response capacity, and recovery from social and natural events that could be exacerbated by the effects of climate change.
- 8) By 2030, the periodic updating and development of tools for prospective, corrective, and/or compensatory management of emergency and disaster risks at the departmental level will have been promoted.
- 9) By 2030, at least three guides for private sector companies to assess climate risks and identify adaptation measures will have been developed and made available.

**Strengthen governance related to knowledge generation and interoperability of information regarding the risks and the associated emergency and disaster events in Uruguay. It involves coordinating, planning, and promoting relevant knowledge and information generation.**

- 10) By 2030, new work areas have been generated, and existing working groups between the SNRCC and SINAE have been strengthened, promoting comprehensive risk management with a climate change perspective.
- 11) By 2030, seven flood-prone cities have incorporated a flood early warning system, integrated into the action and communication protocol, which improves inter-institutional interaction and the dissemination and communication of warnings and alerts to the population and stakeholders involved in emergency response and care.

## Losses and Damages

*(relative to paragraph 10 of the PNCC)*

**Strengthen the processes of recording, measuring, and evaluating the impacts of adverse climate-related events and their chains to estimate losses and damages at the national, local, and sectoral levels.**

- 12) By 2030, a work plan has been implemented for loss and damage assessment, including mechanisms and procedures to improve the recording, storage, estimation, and visualization of losses and damages caused by socio-natural events and their respective impact chains at the national, local and sectoral levels.
- 13) By 2030, an information system associated with the impacts on energy infrastructure has been developed and implemented to quantify climate-related losses and damages to the system.
- 14) By 2030, the processes for recording and evaluating the impacts of climate-related adverse events will have been improved to quantify and estimate losses and damages in the tourism sector, improving databases and information sources.

## Migration and Displacement

*(relative to paragraph 8 of the PNCC)*

**To understand Uruguay's context concerning climate change-related migration movements, human displacement, and associated impact chains.**

- 15) By 2030, a database has been developed to report on the situation in Uruguay regarding the influence and impact of climate change on migration and human displacement to, from, and within Uruguay, considering an intersectional approach.

### Measures for the main adaptation areas

## Health

*(relative to paragraph 9 of the PNCC)*

**Monitor and assess progress in implementing adaptation actions and targets developed for the Health area.**

- 16) By 2030, the 2026-2030 Action Plan of the National Health Adaptation Plan (NAP-Health) has been implemented.
- 17) By 2030, the consequences of climate change on occupational health have been assessed to develop policies for preventing impacts and promoting occupational health.
- 18) By 2030, epidemiological and entomological surveillance will have been strengthened as well as the development and implementation of an early warning and response systems for outbreaks of vectors and diseases derived from or exacerbated by climate change's effects.

**Strengthen governance in the area of health to address issues related to climate change and its effects, within the Ministry of Public Health and related institutions, under the framework of the SNRCC.**

- 19) By 2030, a technical working group on climate change has been created, institutionalized, and implemented within the Ministry of Public Health, which develops the cross-cutting programmatic line of climate variability and change in health policies, plans, and programs.

## **Cities, Infrastructure and Land-use planning**

*(relative to paragraph 11 of the PNCC)*

**Monitor and evaluate progress in implementing adaptation actions and targets identified as a priority for cities and land-use planning.**

20) By 2030, the 2026-2030 Action Plan of the National Cities and Infrastructures Adaptation Plan (NAP-Cities) has been implemented.

**Deepen the incorporation of adaptation to climate change and variability in land-use planning instruments, urban planning and management, the urban landscape, building regulations under a climate risk framework and adopting an ecosystem-based adaptation approach.**

21) By 2030, all departments will have incorporated climate change adaptation measures and climate risk reduction strategies in new and revised Land-Use Planning Instruments.

22) By 2030, 100% of cities with very high, high or medium flood risk levels will have flood risk maps for riverbank flooding, drainage, and/or sea level rise and storm surges.

23) By 2030, support materials will have been updated and disseminated to incorporate climate change and variability in the planning efforts of Uruguayan cities.

24) By 2030, the implementation of the National Urban Stormwater Drainage Plan will have begun.

25) By 2030, all departments will have incorporated ecosystem-based adaptation in at least one urban area as a strategy to improve habitat conditions in urban environments and optimize their climate performance.

26) By 2030, departmental regulatory bodies will have adopted climate change and variability adaptation parameters to inform the design, construction, and maintenance of housing, infrastructure, and equipment, considering each territory's particular characteristics.

**Promote the development of financing instruments for implementing adaptation actions that improve the resilience of cities to climate change and its effects.**

27) By 2030, a public-private financing instrument will have been implemented to improve climate resilience in new and/or existing buildings and urban infrastructure, including an ecosystem-based adaptation approach.

**Promote the development of sustainable and resilient infrastructures in the face of climate variability and change that contribute to reducing greenhouse gas emissions.**

28) By 2030, all final disposal sites for household waste and similarly operated sites managed by the municipalities will have conditions in place that reduce the risk and impacts probability of climate change-related adverse events.

## **Biodiversity and Ecosystems,**

*(relative to paragraph 12 of the PNCC)*

**Promote the integration of climate change, its effects, and adaptation strategies in planning and regulatory instruments focused on conserving, protecting, and restoring natural ecosystems to ensure the provision of ecosystem goods, services and functions.**

29) By 2030, the National Biodiversity Strategy, the National Protected Areas System Strategic Plan, the Marine Spatial Planning, and the Land Degradation Neutrality Strategy will have mainstreamed climate change and variability.

30) By 2030, a legal instrument for protecting and restoring wetlands will be implemented based on their ecosystem services and contribution to climate change adaptation.

- 31) By 2030, risk analysis and specific goals and actions on adaptation to climate change and variability will have been incorporated in 100% of the Protected Areas with approved and updated Management Plans as of 2025.

**Incorporate and deepen risk assessment with a climate change perspective and consider its effects on biodiversity and ecosystems, further focusing on the role of ecosystems in adaptation to design instruments and measures for risk reduction and ecosystem-based adaptation.**

- 32) By 2030, a risk analysis of biodiversity and critical ecosystems considering the effects of climate change has been prepared, and data will be available through an information system.
- 33) By 2030, guidelines will have been developed on how to manage climate change and variability risks to biodiversity and ecosystems, and key stakeholders will have been trained to implement them.
- 34) By 2030, knowledge and understanding of the ecosystem functions and services associated with reducing vulnerabilities to climate change of key ecosystems and their co-benefits in mitigation will have increased.

### **Coastal areas**

*(relative to paragraph 13 of the PNCC)*

**Strengthen policy and adaptation planning instruments for coastal areas in the face of climate change and variability.**

- 35) By 2030, Law No. 19.772 on the National Guidelines for Land-use Planning and Sustainable Development of the Atlantic Ocean and Río de la Plata Coastal Area has been regulated.
- 36) By 2030, the 2026-2030 Action Plan of the National Adaptation Plan to Climate Change and Climate Variability for Coastal Areas (NAP-Coasts) will have been implemented.
- 37) By 2030, a guide will have been developed to incorporate climate change vulnerability into environmental impact assessment (EIA) and strategic environmental assessment (EAE) processes in the coastal areas using the best available scientific information, and key stakeholders will have been trained to implement it.

**Promote conservation and reduce the vulnerability of coastal areas threatened by climate change and variability through ecosystem-based adaptation measures.**

- 38) By 2030, 100% of the vulnerable components of the coastal areas will be included in climate variability and climate change adaptation plans or programs, which will define their level of protection and/or apply ecosystem-based adaptation measures for both conservation and restoration.

**Promote financing instruments for the implementation of adaptation actions in coastal areas.**

- 39) By 2030, a public-private financing instrument will have been designed and implemented to adopt adaptation measures in coastal areas.

**Implement a system for monitoring coastal dynamics of the Río de la Plata and the Atlantic Ocean.**

- 40) By 2030, a system for monitoring *meteo-oceanic*, sedimentological, and *topo-bathymetric* variables of the Río de la Plata and Atlantic Ocean will have been implemented, reinforcing areas highly vulnerable to extreme events (mouths, sandy beaches, and ravines).

## **Water Resources**

*(relative to paragraph 14 of the PNCC)*

**Promote the integration of climate change and variability and their effects in comprehensive water resource management efforts to improve the protection and security of water availability and water quality, promote good practices, enhance governance, and promote research and comprehensive monitoring.**

- 41) By 2030, six comprehensive watershed management plans have been formulated, approved and are being implemented.
- 42) By 2030, water security plans have been implemented in 15 drinking water systems; and at least two sanitation security plans have been implemented in two towns in the interior of the country, considering climate change-related conditions.
- 43) By 2030, appropriate technologies and procedures will be in place to prevent, detect and reduce the effects of algal bloom events in priority areas.

## **Agriculture**

*(relative to paragraph 15 of the PNCC)*

**Monitor and assess progress in the implementation of adaptation actions and targets that have been identified as a priority for agriculture.**

- 44) By 2030, progress in implementing the National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector (NAP-Ag) will be monitored and reported.
- 45) By 2030, new financial and risk transfer instruments will have been developed and implemented, increasing insurance coverage in new areas compared to 2025.

**Promote the implementation of best practices in the different agricultural activities and processes as a strategy for climate change adaptation, upholding production, increasing resilience, and reducing risks in agriculture and the environment.**

- 46) By 2030, the number of permits for the collection of water resources for irrigation and other agricultural and livestock uses will be promoted and increased as an adaptation strategy to the variability in rainfall patterns and the risk of drought, based on 2025 levels; these are subject to water quality and quantity availability and regulated by the National Water Plan, Law No. 16.858 and Decree No. 368/018.
- 47) By 2030, comprehensive information systems will be in place for adaptive management in agriculture for the public and private sectors, and there's active promotion of research programs on dryland agriculture, vegetable and fruit crops, forage crops, and pastures that better adapt to climate variability.
- 48) By 2030, at least one adaptation measure to reduce animal heat stress has been implemented in at least 50% of dairy and confinement farms.

**Promote the development and implementation of adaptation measures that can also produce synergies, parallelisms and co-benefits toward climate change mitigation.**

- 49) By 2030, 100% of the 2012 native forest area will be maintained, with the option of potentially increasing this area by 5%, especially in water resource environmental protection areas, to revert degradation processes (892,460 ha).
- 50) By 2030, intermittent irrigation technology with variable depth has been introduced in between 5% and 10% of the rice growing area.
- 51) By 2030, 100% of the 2018 shade and shelter forest plantation area is maintained, including silvopastoral systems, with the option of increasing this area by 10%, providing shelter and greater comfort for animals, particularly in unfavorable weather situations.

- 52) By 2030, good management practices for natural grassland and breeding herds have been adopted in livestock production farms in between 1,500,000 and 4,000,000 ha, reducing vulnerability to climate variability in livestock production systems based on natural grassland.
- 53) By 2030, 95% of the agricultural area under Land Use and Management Plans, which tackle erosion reduction and organic matter conservation in croplands, has enhanced its productivity and water storage capacity and reduced the risk of erosion during extreme rainfall events.
- 54) By 2030, best wastewater management practices have been implemented in dairy farms, including wastewater recovery as soil improvers, reaching 50% of the national herd.

## **Energy**

*(relative to paragraphs 18 and 20 of the PNCC)*

**Strengthen energy planning instruments incorporating adaptation to climate change and variability, to improve resilience and adaptive capacity of the system and infrastructure.**

- 55) By 2030, the 2026-2030 Action Plan of the National Adaptation Plan for the Energy sector (NAP-Energy) has been implemented.

**Identify and assess energy system risks in terms of power generation, transmission and distribution, as well as improve the resilience of current and future energy infrastructure to climate change.**

- 56) By 2030, an energy sector risk reduction guide for power demand sectors has been developed and implemented.
- 57) By 2030, a work plan has been developed and implemented to conduct vulnerability studies and identify adaptation and risk reduction measures for critical infrastructure in the face of extreme events.

## **Tourism**

*(relative to paragraph 19 of the PNCC)*

**Promote research and risk assessment on the effects of climate change on tourism to improve the design of adaptation actions to be implemented in the medium and long term.**

- 58) By 2030, vulnerability and hazard analyses will have been carried out in the sector, per tourism products, and considering the trends determined by existing climate projections agreed upon within the framework of the SNRCC.
- 59) By 2030, the 2030 National Tourism Plan will have been reviewed and updated, based on the risk assessments carried out, in line with the existing National Adaptation Plans.

**Promote the generation of and access to relevant, comprehensive, and valuable information, the use of weather information, early warnings, and other climate risk management tools for decision-making by institutions and the population.**

- 60) By 2030, at least four touristic cities will have integrated weather and emergency warnings into their tourism information systems, and they will have trained their tourism operators and officials in the use of this information.



## 5. Contribution to mitigation<sup>6</sup>

The following are Uruguay's climate change mitigation objectives by 2030. These objectives are considered to be fair and ambitious, taking into account that Uruguay is a developing country whose share of global emissions in 2019 was 0.03%, resulting mainly from food production, and that implemented a number of early measures that made it possible to have in 2020 58% of the global primary energy matrix and 94% of power generation based on renewables.

The mitigation objectives are set assuming there will be no structural changes in the country's productive matrix.

### 5.1. Mitigation objectives

#### 5.1.1. Unconditional objectives

##### 5.1.1.1. Global objectives to mitigate climate change

Global objectives to mitigate climate change account for 99.2% of gross GHG emissions (GWP<sub>100</sub> AR5) of the 2019 NGHGI.

GHG	2030 Mitigation Objectives	NGHGI sectors (not including category 3.B. Land)
	Not to exceed the following emissions level (Gg of gas)	
CO <sub>2</sub>	9.267*	Energy, IPPU, AFOLU and Waste 19.1% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5
CH <sub>4</sub>	818	Energy, AFOLU and Waste 60.5% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5
N <sub>2</sub> O	32	Energy, IPPU, AFOLU (except subcategory 3.C.4. Source F <sub>50M</sub> ), Waste 18.9% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5

\*The CO<sub>2</sub> target may be adjusted according to 2030 hydraulicity conditions, as explained in Chapter 8 of this NDC, since the availability of hydropower has a significant relative weight in the country's electricity matrix and is directly impacted by climate change and variability.

GHG	2030 Mitigation Objectives	NGHGI sectors (not including category 3.B. Land)
	Reduction in consumption relative to baseline	
HFC	10% reduction in consumption with respect to the baseline established from the average 2020-2022 consumption	IPPU 0.8% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5

<sup>6</sup> Emissions information in this section is presented in GWP<sub>100</sub> AR5 as Decision 18/CMA.1, paragraph 37 of the Annex, of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement sets forth the following: "Each Party shall use the 100-year time-horizon global warming potential (GWP) values from the IPCC Fifth Assessment Report, or 100-year time-horizon GWP values from a subsequent IPCC assessment report as agreed upon by the CMA, to report aggregate emissions and removals of GHGs, expressed in CO<sub>2</sub> eq."

### 5.1.1.2. Specific objectives for GHG emission intensity in beef production.

The specific GHG emissions intensity objectives for beef production account for 62.1% of gross GHG emissions (GWP<sub>100</sub> AR5) of the 2019 NGHGI.

GHG	2030 Mitigation Objectives	Beef Production
	Intensity reduction (GHG emissions per product unit) from base year 1990	
CH <sub>4</sub>	35% reduction in CH <sub>4</sub> emissions intensity per unit of product (Gg of beef in live weight)	48.6% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5
N <sub>2</sub> O	36% reduction in N <sub>2</sub> O emissions intensity per unit of product (Gg of beef in live weight)	13.5% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5

### 5.1.1.3. Specific objectives for conservation and carbon stock enhancement in Land Use and Forestry.

Specific objectives for conservation and carbon stock enhancement in Land Use and Forestry: category 3.B Land presented net removals in the 1990 - 2019 NGHGIs.

GHG	Carbon pool / Land Use Category	2030 Mitigation objectives
		Carbon stock conservation and enhancement*
CO <sub>2</sub>	Living Biomass in Forest Lands	Maintain 100% of the native forest area of year 2012 (849,960 ha).
		Maintain 100% of the forest plantation effective area under management of year 2020 (1,053,693 ha).
		Maintain 100% of the shade and shelter forest plantations area of year 2018, including silvopastoral systems (88,348 ha).
	Soil Organic Carbon (SOC) in Grasslands, Peatlands and Croplands	Incorporation of good practices for natural grassland and breeding herds management in 1,500,000 ha of natural grassland
		Preserve 50% of the peatland area of year 2020 (4,756 ha)
		Maintain SOC levels in 30% of the cropland area under Soil Use and Management Plans in 2030 that have more than 30% of the rotation length with pasture
	Increase SOC levels on 15% of the cropland area under Soil Use and Management Plans in 2030 that have more than 60% of the rotation length with pasture	

\*The objective value for 2030, expressed in hectares, is shown in brackets.

### 5.1.2. Conditional objectives to additional specific means of implementation

The following objectives, conditional to the availability of additional specific means of implementation, should be considered separate from the unconditional objectives outlined in item 5.1.1 and imply a greater ambition. Conditional objectives require additional and specific means of implementation, including funding, technology transfer, and capacity building, to be provided by developed countries.

### 5.1.2.1. Global objectives to mitigate climate change

Global objectives to mitigate climate change: cover 99.2% of gross GHG emissions (GWP<sub>100</sub> AR5) of the 2019 NGHGI.

GHG	2030 Mitigation Objectives	NGHGI sectors (not including category 3.B. Land)
	GHG emission reduction (Gg of gas)	
CO <sub>2</sub>	960	Energy, IPPU, AFOLU and Waste 19.1 % of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5
CH <sub>4</sub>	61	Energy, AFOLU and Waste 60.5% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5
N <sub>2</sub> O	2	Energy, IPPU, AFOLU (except subcategory 3.C.4. Source F <sub>SOM</sub> ), Waste 18.9% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5

GHG	2030 Mitigation Objectives	NGHGI sectors (not including category 3.B. Land)
	Reduction in consumption relative to baseline	
HFC	5% reduction in consumption with respect to the baseline established from the average 2020-2022 consumption	IPPU 0.8% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5

The objectives outlined in this section are independent of the objectives in section 5.1.1.1. Their values were estimated to be incremental to unconditional values.

### 5.1.2.2. Specific objectives for GHG emission intensity in beef production.

The specific GHG emission intensity objectives for beef production account for 62.1% of the gross GHG emissions (GWP<sub>100</sub> AR5) of the 2019 NGHGI.

GHG	2030 Mitigation Objectives	Beef Production
	Intensity reduction (GHG emissions per product unit) from base year 1990	
CH <sub>4</sub>	2% reduction in CH <sub>4</sub> emission intensity per unit of product (Gg of beef in live weight)	48.6 % of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5
N <sub>2</sub> O	2% reduction in N <sub>2</sub> O emissions intensity per unit of product (Gg of beef in live weight)	13.5% of GHG emissions, 2019 NGHGI in GWP <sub>100</sub> AR5

The objectives outlined in this section are independent of the objectives in section 5.1.1.2. Their values were estimated to be incremental to unconditional values.

### 5.1.2.3. Specific objectives for conservation and carbon stock enhancement in Land Use and Forestry.

Category 3.B Land presented net removals in the 1990-2019 NGHGIs.

GHG	Carbon pool / Land Use Category	2030 Mitigation Objectives
		Carbon stock conservation and enhancement*
CO <sub>2</sub>	Living Biomass in Forest Lands	5% increase in the native forest area of year 2012 (42.498 ha)
		10% increase in the shade and shelter forest plantations area of year 2018, including silvopastoral systems (8.835 ha)
	Soil Organic Carbon (SOC) in Grasslands	Incorporation of good practices for natural grassland and breeding herds management in 2,500,000 ha of natural grassland

\*The objective value for 2030, expressed in hectares, is shown in brackets.

The objectives outlined in this section are independent from the objectives in section 5.1.1.3. Their values were estimated to be incremental to unconditional values.

## 5.2. On mitigation objectives and progressive ambition

Regarding GHG emissions contributions, as in NDC1, Uruguay outlines global objectives to mitigate climate change by 2030 for CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O, and adds a new objective for hydrofluorocarbons (HFCs), which had not been considered under NDC1 objectives. As in NDC1, specific objectives are also outlined for beef production in terms of emissions intensity per unit of product (Gg of beef in live weight). These mitigation objectives represent a progressive ambition with respect to NDC1, as they show the country's effort towards emissions stability and sustainable development. The country continues to develop while reducing emissions intensity. This NDC also lays out a broader scope in terms of the GHGs considered. It is worth noting that NDC2 global objectives were defined in absolute terms, in line with Uruguay's LTS scenarios, as opposed to NDC1, where objectives were presented as a relative proportion to GDP. The CO<sub>2</sub> objective implies a considerable slowdown in the growth of CO<sub>2</sub> emissions. Since 1990 and until the beginning of the first energy transformation between 2010 and 2014, CO<sub>2</sub> emissions grew at an average annual rate of 2.9 %, while the 2030 objective is to bring it down to 1.3% a year. Regarding CH<sub>4</sub> and N<sub>2</sub>O, which result mainly from food production, the 2030 objective follows the pathway towards emissions stability that Uruguay outlined in its LTS, with annual growth rates between 1990 and 2030 below 1%.

Regarding the contribution to GHG removals, Uruguay presents specific objectives for the conservation and enhancement of carbon stocks for the different pools and land use categories by 2030, which, as a whole, raise the ambitions of NDC1, as detailed below.

Emission mitigation objectives cover 99.2% of GHG emissions of the 2019 NGHGI (without considering removals) according to the GWP<sub>100</sub> AR5 metric, latest NGHGI available and submitted to the Convention. They include all NGHGI emitting sectors: Energy, including Transport; IPPU; AFOLU; and Waste, and including CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O and HFC emissions. Excludes SF<sub>6</sub> emissions and N<sub>2</sub>O emissions from subcategory 3.C.4 Source F<sub>SOM</sub>.

In relation to the global objectives, it is important to highlight that Uruguay has implemented a very ambitious set of early measures, particularly in some key sectors such as Energy. Within the framework of the Energy Policy (2008-2030), significant efforts have been made to achieve a clean energy matrix, where renewables accounted for 58% of the global energy supply in 2020, reaching 94% for electric power generation. At the same time, the energy efficiency promotion strategy developed helped reduce energy intensity nationwide.

The emissions intensity of the primary matrix (CO<sub>2</sub> emissions over energy supplied in Gg/ktoe) shows the significant decoupling of emissions and energy sources: from 1.7 (2007-2011) to 1.4 (2012-2016) and to 1.2 (2017-2021).

Early measures to decarbonize the power generation matrix have made it possible for Uruguay to have already reached the share of renewables the International Energy Agency (IEA)<sup>7</sup> expects by 2050 in its Roadmap on the pathway to net zero emissions by 2050 (almost 90%). The proportion of renewables in the electricity matrix makes it possible for the electrification of the different uses, such as the transportation sector, to become a clear decarbonization option, unlike in less renewable electricity systems. However, this also implies that the remaining efforts to decarbonize the economy associated with energy emissions are increasingly challenging in terms of technology, costs, and technical requirements and often have a marginal impact on reducing GHG emissions.

---

<sup>7</sup> [Net Zero by 2050 report. A roadmap for the global energy sector.](#)

In the past 30 years, CH<sub>4</sub> and N<sub>2</sub>O emissions in Uruguay, mainly associated with food production and, in particular, beef production, have remained relatively stable while production increases have been significant. This is primarily explained by the increase in productivity and efficiency of the systems, stimulated by national and international factors and by public policies that promote the adoption of technologies by the private sector. This has made it possible for the country to significantly reduce the intensity of emissions in agricultural production, and in beef production in particular.

Emissions from the IPPU sector are directly linked to the industry's level of activity; therefore, variations in GHG emissions are entirely explained by variations in the industry. While the IPPU sector accounted for only 2.1% of the country's total GHG emissions in 2019, over time, cement production accounted for 70% of the sector's CO<sub>2</sub> emissions, so this is where the main opportunities for decarbonization lie.

It is also important to highlight the commitments undertaken by the country under the Montreal Protocol and those in the Kigali Amendment—ratified by Uruguay on July 27, 2018 through Law No. 19.644—as they closely relate to the objectives of the Paris Agreement. The aim of the Amendment is to phase down HFC (hydrofluorocarbons) production and consumption. These are potent GHGs with significant global warming potential. Since the entry into force of the Kigali Amendment on January 1, 2019, Uruguay has fulfilled the commitments undertaken, which involve, on the one hand, the implementation of a "Licensing System" to monitor HFC consumption (import/export and transit) and, on the other hand, the submission of annual reports on the consumption of these substances to the different agencies of the Montreal Protocol.

Regarding the waste sector, in 2019, Uruguay passed the Comprehensive Waste Management Law, which strongly promotes a reduction in waste generation and looks at waste as a resource, focusing on developing national capacities so that the final disposal of waste is not the sole purpose of waste management. The National Waste Management Plan (PNGR for its Spanish acronym) was prepared and approved in 2021 as a strategic planning tool that combines goals, targets, and lines of action, many of which provide significant opportunities for climate change mitigation in this sector.

Given the national context, for the energy sector the current Uruguayan NDC focuses on reinforcing demand-oriented actions, such as the energy efficiency measures that are already being implemented in the different consumption sectors, and on continuing the incorporation of electric buses, cabs, private hire car, cargo and private vehicles, within the general framework of sustainable mobility. To do so, the charging infrastructure will be enhanced, which already has relatively comprehensive coverage throughout the country, and advance the incorporation of fast and ultra-fast charging stations. Process enhancement actions will also be implemented at the country's refinery to increase efficiency and reduce emissions per unit of product. In the cement industry, energy consumption per ton produced will be reduced through the use of filler in all cement produced by the two cement plants of the National Fuel, Alcohol and Cement Administration (ANCAP by its Spanish acronym), a state-owned company. This measure will also reduce emissions from cement production and, therefore, from the IPPU Sector, since the filler will partly replace clinker, and the production of clinker leads to CO<sub>2</sub> emissions as a result of the chemical processes.

In addition to these actions, the country is currently working on developing several enabling frameworks and policies that will leverage mitigation actions. These include the approval and implementation of the Sustainable Urban Mobility Policy, which includes mobility planning nationwide, modal shift, emissions reduction, accessibility and affordability of public transportation, among others. This Policy provides for a space for institutional coordination of all relevant national and subnational actors through the Interinstitutional Commission for Sustainable Mobility that will be created for its implementation. The implementation of this policy will build on some of the existing guides (Guide for Sustainable Urban Mobility Planning, Guide on

Electric Urban Mobility) and pilot projects already developed and in progress. In addition, the approval and implementation of the National Circular Economy Strategy will provide the enabling framework and generate new opportunities for climate change mitigation in the future.

In the agricultural sector, the country will continue to consolidate the adoption of best management practices for natural grasslands and breeding herd in livestock production farms, which will contribute to further increase the productivity and efficiency of livestock systems and reduce the intensity of GHG emissions per unit of product, prevent loss and enhance soil organic carbon sequestration. The use of technologies and infrastructure to manage wastewater and manure generated by the national dairy herd to achieve a circular economy and minimize CH<sub>4</sub> emissions will continue to be promoted, as well as the adoption of technologies that improve efficiency in the use of nitrogen fertilizers and reduce nitrogen losses due to volatilization. Certain lines of work that are being explored at the national research level to reduce CH<sub>4</sub> emissions from cattle and sheep and their co-benefits with climate change adaptation will be further developed; one that is particularly worth highlighting is the development of a genetic improvement platform that promotes the incorporation of genomics in current programs and includes the estimation of the potential impacts of genetic improvement on the mitigation of GHG emissions. In addition, efforts will continue to be made for the generation of national information to quantify the mitigation potential of other alternatives identified for the country's livestock systems. These lines of work will produce new opportunities for climate change mitigation.

Given the importance of AFOLU emissions in the country— 75.2% of gross emissions according to the 2019 NGHGI and GWP<sub>100</sub> AR5 metric—just as in NDC1, this one includes specific emission intensity reduction objectives per unit of product (measured in Gg of beef in live weight). These objectives are more ambitious than those included in NDC1.

With regards to HFCs, pursuant to the commitments taken on under the Montreal Protocol and the Kigali Amendment, an unconditional global objective is included to reduce HFC consumption by 10% by 2030 in relation to a baseline that the country must establish prior to 2024 based on the average HFC consumption from 2020 to 2022. This implies a greater scope in the number of gases included in the mitigation objectives set out in this NDC and, therefore, a progression in ambition compared to NDC1.

For the Waste sector, within the framework of the PNGR, the country will continue to consolidate measures that will make it possible for a greater proportion of urban solid waste disposed of in final disposal sites to be reached by projects that have CH<sub>4</sub> capture and burning systems, promoting selective collection systems and strategies for the recovery of organic waste. The implementation of a National Strategy for the Prevention and Reduction of Food Loss and Waste and an Action Plan for specific priority sectors is also anticipated, which will provide the enabling framework and generate new opportunities for climate change mitigation in the future.

Regarding GHG removals contribution, Uruguay includes a series of objectives related to land use and forestry (corresponding to category 3.B - Lands of the AFOLU Sector of the NGHGI). It is important to note that Uruguay achieved net removals for category 3.B. Land in the 1990-2019 NGHGI. Therefore, the country has set out to maintain and/or enhance the carbon stocks associated with different pools and the country's main land use categories (Forest Land, Grassland, Peatland and Cropland).

In relation to the Forest Land category, Uruguay's native forests cover 4.8% of the country and cutting is prohibited by the Forestry Law (except for some exceptions specified therein) [2]. This together with the tax exemption incentives for areas with native forests registered before the General Forestry Directorate of the Ministry of Livestock, Agriculture and Fisheries (MGAP) has made it possible to preserve the area of this ecosystem and its carbon stocks. Furthermore, the forest plantations area increased significantly in Uruguay as a result of the approval and implementation of the Forestry Law, which had a direct impact on the 1990-2019

NGHGs with a significant contribution to CO<sub>2</sub> removals from the AFOLU sector. Shade and shelter forest plantations are critical for the country's livestock production, since they provide animal welfare conditions, so maintaining their area is key for the country. Uruguay acknowledges the critical role that forests play in climate action, therefore, for this category the objective is to maintain the native forest area to conserve the carbon stock of its living biomass, preserve biodiversity and ecosystem services, as proposed in NDC1. Regarding forestry plantations, the objective is to maintain an effective area under management that is larger than the area included as an objective in NDC1, where there will be GHG emissions/removals associated to the forestry production cycle itself. Regarding shade and shelter forest plantations, including silvopastoral systems, the objective is to maintain a larger area than that included as an objective in the NDC1 in which carbon stocks of living biomass are conserved and conditions are generated to reduce the impacts of climate change on livestock production.

With regards to the Grassland category, the country has been promoting a paradigm shift in natural grasslands management which consists of adjusting the forage supply, regenerative management and nitrogen input and output management. This change will continue to deepen in the coming years through the incorporation of good management practices for natural grasslands in livestock production farms, which will contribute to prevent the loss and enhance soil organic carbon sequestration. Therefore, for this category, the country expects to increase the natural grassland area where good management practices for natural grasslands are adopted, building on those included as an objective in NDC1, to conserve and/or enhance soil organic carbon in that area.

In the case of peatlands, Uruguay intends to preserve the area surveyed in 2020, greater than the area included as an objective in NDC1, to maintain the organic carbon content of the peat. These peatlands are mainly located within the Ramsar Eastern Wetlands site, and their conservation is essential given the framework of implementing the Ramsar Convention.

Finally, with regards to the Cropland category, the objective is to maintain the soil organic carbon (SOC) in cropland areas that are under Soil Use and Management Plans (PUMS) in 2030 which have more than 30% of the length of the rotation with pastures, and to increase SOC in cropland areas under PUMS in 2030 that have more than 60% of the length of the rotation with pastures. This objective is critical for Uruguay considering that practically the entire agricultural area of the country is under PUMS, which are mandatory by law since 2013. These require crop rotation to prevent the degradation of soils that are suitable for agriculture, prevent erosion and promote production systems based on crop and/or crop-pastures rotations that manage to maintain higher levels of organic matter in the soil compared to traditional single-crop practices, improve productivity and water storage capacity and reduce the risk of erosion in the face of extreme rainfall events.

Uruguay's mitigation objectives must be analyzed keeping in mind that it is a developing country that is particularly vulnerable to the effects of climate change; the country must continue to advance along the path of sustainable development, create more and greater opportunities for the population, combat poverty and indigence, achieve a greater equity in society and produce food in a sustainable manner for a growing world population, with the least possible impact on the climate system.

As a whole, these mitigation objectives show greater ambition in Uruguay's contribution to the ultimate goal of the Convention and the Paris Agreement, based on equity and the principle of common but differentiated responsibilities and respective capabilities, and reflect the country's effort to step up its ambition in relation to the previous NDC.

We also distinguish between unconditional objectives and objectives that are conditional to additional specific means of implementation. The latter refer to financing, technology development and transfer, and capacity building. A number of conditional measures have been identified, which can be carried out—should the country be provided with additional specific means of implementation—to achieve the conditional objectives included in item 5.1.2. of this NDC.

### **5.3. Mitigation measures**

#### **5.3.1. Unconditional measures**

##### **Energy Sector (including Transport)**

*(relative to paragraphs 17 and 18 of the PNCC)*

- 1) By 2030, energy efficiency measures have been strengthened in the different consumption sectors, covering different uses, sources, equipment and building envelope systems.
- 2) By 2030, energy consumption per ton of cement has been reduced through the use of filler in all cement produced by ANCAP's two cement plants.
- 3) By 2030, the incorporation of electric vehicles and the corresponding charging infrastructure has been strengthened by accelerating the availability of fast and ultra-fast charging stations. In the case of collective passenger transportation, the fare subsidy is modified to promote zero-emission mobility.
- 4) By 2030, process improvement actions have been implemented at the refinery, which increase efficiency and reduce emissions per unit of product.

##### **Industrial Processes and Product Use Sector- Mineral Industry**

*(relative to paragraph 20 of the PNCC)*

- 5) By 2030, the use of clinker per ton of cement has been reduced as a result of the incorporation of 13% of filler use in the cement produced by ANCAP's two cement plants.

##### **Industrial Processes and Product Use Sector - Use of Ozone Depleting Substances**

*(relative to paragraphs 4 and 20 of the PNCC)*

- 6) By 2024, HFC consumption has been restricted to the consumption values established as a baseline within the framework of the commitments taken on by the country under the Montreal Protocol and the Kigali Amendment.
- 7) By 2029, HFC consumption has been reduced by 10% compared to the baseline, within the framework of the commitments taken on by the country under the Montreal Protocol and the Kigali Amendment.

##### **Agriculture Sector - Beef production**

*(relative to paragraph 16 of the PNCC)*

- 8) By 2030, good management practices for natural grasslands and breeding herds have been adopted in livestock production farms in 1,500,000 ha, to prevent loss and enhance soil organic carbon sequestration.
- 9) By 2030, a genetic improvement platform has been developed to reduce methane emissions for cattle and sheep, without losing sight of livestock productivity, to strengthen the incorporation of genomics into current programs, and include the estimation of the potential impacts of genetic improvement on a national scale in the mitigation of GHG emissions and its co-benefits for climate change adaptation.



- 10) By 2030, national information has been generated on the use of methanogenesis inhibitors in livestock systems, their potential to mitigate GHG emissions and their co-benefits for climate change adaptation.
- 11) By 2030, the potential national impact of animal health issues on methane emissions reduction for cattle and sheep and their co-benefits in climate change adaptation has been estimated.

### **Agriculture Sector - other activities**

*(relative to paragraph 16 of the PNCC)*

- 12) By 2030, technologies that minimize methane emissions due to wastewater and manure management are used in 55% of the national dairy herd.
- 13) By 2030, technologies that improve the efficiency of nitrogen fertilizer use have been implemented in at least 25% of the area of winter agricultural crops and corn and sorghum, reducing nitrogen losses due to volatilization.

### **Land Use and Forestry Sector**

*(relative to paragraphs 12 and 16 of the PNCC)*

- 14) By 2030, 100% of the native forest area of year 2012 has been maintained (849,960 ha), pursuant to the provisions of the Forestry Law and seeking to reverse degradation processes.
- 15) By 2030, 100% of the forest plantation effective area under management of year 2020 has been maintained (1,053,693 ha), following the Forestry Policy and, where applicable, the Forestry Environmental Management Guidelines.
- 16) By 2030, 100% of the shade and shelter forest plantations area of year 2018 has been maintained, including silvopastoral systems (88,348 ha).
- 17) By 2030, at least 50% of the peatland area of year 2020 has been preserved (4,829 ha).
- 18) By 2030, crop production systems that include rotations with implanted pastures occupying more than 30% of the rotation length have been implemented in at least 30% of the cropland area under Land Use and Management Plans in 2030.
- 19) By 2030, crop production systems that include rotations with implanted pastures occupying more than 60% of the rotation length have been implemented in at least 15% of the cropland area under Land Use and Management Plans in 2030.

### **Waste Sector - Solid Waste**

*(relative to paragraph 21 of the PNCC)*

- 20) By 2030, 80% of the tons of urban solid waste disposed of in final disposal sites will be disposed of in projects with methane capture and burning systems in place, with or without electric power generation.
- 21) By 2030, a National Strategy for the Prevention and Reduction of Food Loss and Waste and an Action Plan in prioritized sectors are being implemented, mainstreaming climate change.
- 22) By 2030, selective collection systems have been promoted to reduce the tons of recyclable waste sent to final disposal, and the impact on GHG emission reduction has been determined.
- 23) By 2030, the incorporation of organic waste recovery strategies in departmental waste management plans has been promoted.

### **Waste Sector - Industrial wastewater**

*(relative to paragraph 21 of the PNCC)*

- 24) By 2030, the 2021 methane capture level has been maintained with technologies that reduce CH<sub>4</sub> emissions, reaching those industries that produce at least 12% of the total emissions generated in the Industrial wastewater category.

### **5.3.2. Measures that are conditional to additional specific means of implementation**

The following measures are conditional to the availability of additional means of implementation and shall be considered separate from the unconditional measures included in section 5.3.1; these reflect a step up in ambition with respect to the latter measures. In cases where the measures coincide in both sections, their target values were estimated as incremental to the unconditional target values. Conditional targets require additional and special means of implementation including funding, technology transfer and capacity-building, to be provided by developed countries.

#### **Energy Sector (including Transport)**

*(relative to paragraphs 17 and 18 of the PNCC)*

- 1) By 2030, the surplus of renewable electric power will be used to partly replace fossil fuels in industry, trade and services. In particular, it is estimated that it will replace 20% of fuel oil consumption in steam generation in the industrial sector (not including the pulp and paper sector).
- 2) By 2030, 6% of petroleum coke consumption has been replaced by rice husks or other low- or zero-emission fuels in the cement industry.
- 3) By 2030, electric vehicles will account for 30% of sales of 0 km light passenger vehicles.
- 4) By 2030, renewable alternatives have been incorporated into diesel production through co-processing of fats and oils in refinery and/or biofuel blends up to 7%.
- 5) By 2030, the percentage of bioethanol blending in gasoline has been increased to 11%.
- 6) By 2030, 600 hydrogen fuel cell-powered freight vehicles have been added to the fleet.
- 7) By 2026, the Electric Mobility Plan has been developed; it integrates the different lines of action in terms of equipment and infrastructure and aligns efforts with the Long Term Strategy.
- 8) By 2028, a plan for the decarbonization of energy consumption sectors (industrial, commercial, services, residential), including the life cycle of buildings, has been developed.
- 9) By 2028, a plan for the reconversion of the refinery has been formulated.
- 10) By 2030, regulation, capacities and incentives have been developed within the framework of the implementation of the Green Hydrogen Roadmap.

#### **Industrial Processes and Product Use Sector - Mineral Industry**

*(relative to paragraph 20 of the PNCC)*

- 11) By 2030, the use of clinker per ton of cement has been reduced as a result of the incorporation of 7% of filler use in the cement produced by ANCAP's two cement plants.

#### **Industrial Processes and Product Use Sector - Use of Ozone Depleting Substances**

*(relative to paragraphs 4 and 20 of the PNCC)*

- 12) By 2030, new refrigeration and air conditioning technologies have been promoted to encourage the switch to refrigerants that do not damage the ozone layer and have the lowest possible global warming potential.
- 13) By 2030, the technical and economic availability of new technological alternatives has been ensured in order to promote this replacement.
- 14) By 2030, technology reconversion has been promoted in those companies that use HFCs in the commercial and industrial sector.

15) By 2030, technology reconversion in the cold chain has been promoted.

### **Agriculture Sector - Beef production**

*(relative to paragraph 16 of the PNCC)*

16) By 2030, good management practices for natural grasslands and breeding herds have been adopted in livestock production farms in 2,500,000 ha, to prevent loss and enhance soil organic carbon sequestration.

### **Agriculture Sector - other activities**

*(relative to paragraph 16 of the PNCC)*

17) By 2030, methane capture systems from wastewater and/or organic waste management have been implemented in at least 10 farms to reduce methane emissions.

18) By 2030, technologies that improve the efficiency of nitrogen fertilizer use have been implemented in at least 10% of the area of winter agricultural crops and corn and sorghum, reducing nitrogen losses due to volatilization.

### **Land Use and Forestry Sector**

*(relative to paragraphs 12 and 16 of the PNCC)*

19) By 2030, the area of native forest has increased by 5% compared to 2012 (42,500 additional hectares).

20) By 2030, the area of shade and shelter forest plantations has increased by 10% compared to 2018, including silvopastoral systems ( 8,835 additional ha).

21) The average annual rate of natural grassland loss for the 2026-2030 period is 50% (0.685% average annual rate for the 2026-2030 period) compared to that of the 2000-2015 period nationwide (1.37%).

### **Waste Sector - Solid Waste**

*(relative to paragraph 21 of the PNCC)*

22) By 2030, the Food Loss and Waste information system has been consolidated through the implementation of measurement strategies and the development of specific indicators, taking into account the information needed for estimating GHG emissions.

23) By 2030, strategies for the recovery of organic waste, prunings and treatment sludge have been promoted to reduce the tons of waste sent to final disposal and the impact on the reduction of GHG emissions has been determined.

24) By 2030, the circularity of materials has been promoted to reduce GHG emissions resulting from production through the use of virgin raw materials and the impact on the reduction of GHG emissions has been determined.

### **Waste Sector - Industrial wastewater**

*(relative to paragraph 21 of the PNCC)*

25) By 2030, the industrial wastewater treatment systems have been enhanced using technologies that reduce CH<sub>4</sub> emissions. This includes the implementation of new CH<sub>4</sub> capture and burning systems in anaerobic treatments, reaching the treatment systems that account for 28% of emissions.

## 6. Cross-cutting and capacity-building measures.

This section includes the main cross-cutting measures contributing to climate-resilient development, capacity building, and knowledge generation [3]. To implement these actions, Uruguay may use the means of implementation provided for under the framework of the Convention in terms of financing, technology transfer, and capacity building and strengthening.

- 1) By 2030, the National Public Education Administration (ANEP) will have promoted and incorporated environmental education for climate change across all educational levels (early childhood, primary, secondary, technical-technological, and education training); it is recommended these topics be integrated into the different study plans through diverse didactic methodologies adopting a social and territorial point of view.
- 2) By 2030, at least one annual training session will be held on national and international climate agenda issues aimed at decision-makers at both national and subnational government levels.
- 3) By 2030, job reconversion/training initiatives will be organized to strengthen capacities associated with green and blue jobs, particularly considering the inclusion of women and socially vulnerable populations.
- 4) By 2030, climate change will be incorporated into the public sector's training offer.
- 5) By 2030, the link between the SNRCC and the Uruguayan Antarctic Institute will be strengthened to seek further cooperation and potential lines of joint work.
- 6) By 2030, annual initiatives (contests and/or trainings) on "Open Climate Data" will be implemented to promote the use and generation of open data by citizens, organizations and institutions and contribute to implementing the open government policy.
- 7) By 2030, an accessible and inclusive national platform with content and educational resources related to climate change will be developed.
- 8) By 2030, annual calls and competitions will be held to recognize innovative initiatives and best practices developed by young people in the area of climate change.
- 9) By 2030, a network of climate change communicators will be consolidated at the country level.
- 10) By 2030, a space for youth representation will be created within the framework of the SNRCC, including technical support to strengthen their participation and influence in climate public policy processes.
- 11) By 2030, the technical capacities on gender and climate change of at least 80 % of the gender mechanisms of the three levels of government will be strengthened.
- 12) By 2030, the gender policy for the agricultural sector will include climate change adaptation and mitigation considerations.
- 13) By 2030, 2 social perception studies on the impact and responses to climate change have been conducted, including adolescents and youth.
- 14) By 2030, all instruments related to data generation will incorporate age group, or simple age, disaggregation, or at least include one category for children and youth.
- 15) By 2030, Uruguay will have incorporated climate risk into financial sector risk assessments, where public sector stakeholders agreed on a proposed methodology and procedures.
- 16) By 2030, the climate change dimension has been incorporated, especially greenhouse gas emissions, into environmental authorizations, operating permits, and other licenses for which GHG emissions are relevant. To this end, it is necessary to define the sectors, magnitudes, and characteristics of the undertakings from which the pertinent information will be requested.

- 17) By 2030, guidelines will have been designed to estimate and reduce GHG emissions by companies and organizations, taking into account the national context.
- 18) By 2030, a voluntary registry of corporate GHG emissions, reductions, and offsets will have been implemented based on the principle of environmental integrity.
- 19) By 2030, an instrument has been designed and implemented to support and fund Climate Change R&D&I to effectively bridge the knowledge gaps to comply with the NDC and advance the LTS.
- 20) By 2025, a framework document for incorporating climate change adaptation and mitigation objectives into economic policy has been approved and is in the process of being implemented, particularly in the integration of these objectives into the general tasks and those of the different areas under the Ministry of Economy and Finance.
- 21) By 2030, the regional water resources councils and the basin and aquifer commissions have reinforced their agenda on climate change and variability, sustaining participation and improving the water resources planning, management, and monitoring processes for the short, medium, and long term.

## 7. Second Adaptation Communication

### 7.1. Introduction

#### 7.1.1. Link between the content of this adaptation communication and the annex to Decision 9/CMA.1

Elements of the Annex to Decision 9/CMA.1 [4]	Table of Contents of this Adaptation Communication.
a) National circumstances, institutional arrangements and legal frameworks	7.2.1) National legal frameworks and institutional arrangements.
b) Impacts, risks and vulnerabilities, as appropriate.	7.2.2) Impacts, Adaptation and Risk in Uruguay.
c) National adaptation priorities, strategies, policies, plans, goals and actions	7.3) Ex-ante adaptation cycle
d) Implementation and support needs of, and provision of support to, developing country Parties;	7.10) Means of Implementation
e) Implementation of adaptation actions and plans, including:	7.4) Ex-post adaptation cycle, progress and results achieved.
i) Progress and results achieved;	7.4.1) First Nationally Determined Contribution and First Adaptation Communication. 7.4.2) National Adaptation Plans.
ii) Adaptation efforts of developing countries for recognition;	7.5) Adaptation efforts to be recognized.
iii) Cooperation on enhancing adaptation at the national, regional and international level, as appropriate;	7.8) Cooperation to enhance adaptation
iv) Barriers, challenges and gaps related to the implementation of adaptation;	7.6) Barriers to implementing adaptation.
v) Good practices, lessons learned and information-sharing;	7.7) Best practices and lessons learned.
vi) Monitoring and evaluation;	7.9) Monitoring and evaluation
f) Adaptation actions and/or economic diversification plans, including those that result in mitigation co-benefits;	The potential mitigation co-benefits are explained in each adaptation measure included in the Annex.
g) How adaptation actions contribute to other international frameworks and/or conventions;	The contribution to other international frameworks and/or conventions, such as SDGs, Sendai, Loss and Damage, the New Urban Agenda, are explained in each of the adaptation measures included in the Annex.
h) Gender-responsive adaptation action and traditional knowledge, knowledge of indigenous peoples and local knowledge systems related to adaptation, where appropriate;	The gender perspective is mainstreamed throughout AdCom2. It should be noted that each of the adaptation measures included in the Annex has been categorized based on their potential impact so as to address gender inequalities.
i) Any other information related to adaptation.	The contribution to the components of the global adaptation goal, especially that of reducing vulnerability and increasing adaptation capacities, is explained in each of the measures included in the Annex.

Compiled by the authors based on the elements of the adaptation communication of the annex to decision 9/CMA.1. [4]

### 7.1.2. Preparation of the Second Adaptation Communication.

Figure 1 outlines the process followed for formulating AdCom2 in Uruguay. The outline shows the different stages from the launching of the first activities carried out by the climate change adaptation working group (CCA-WG) under the SNRCC in March 2022, to the submission of AdCom2 to the UNFCCC in December 2022. The different phases or stages of the process included the application of methodological guidelines in accordance with each of the stages and their objectives, encouraging interdisciplinary participation, taking into account the cross-cutting nature of adaptation processes and the transparency given by the technical approach, based on a schedule with strict milestones.

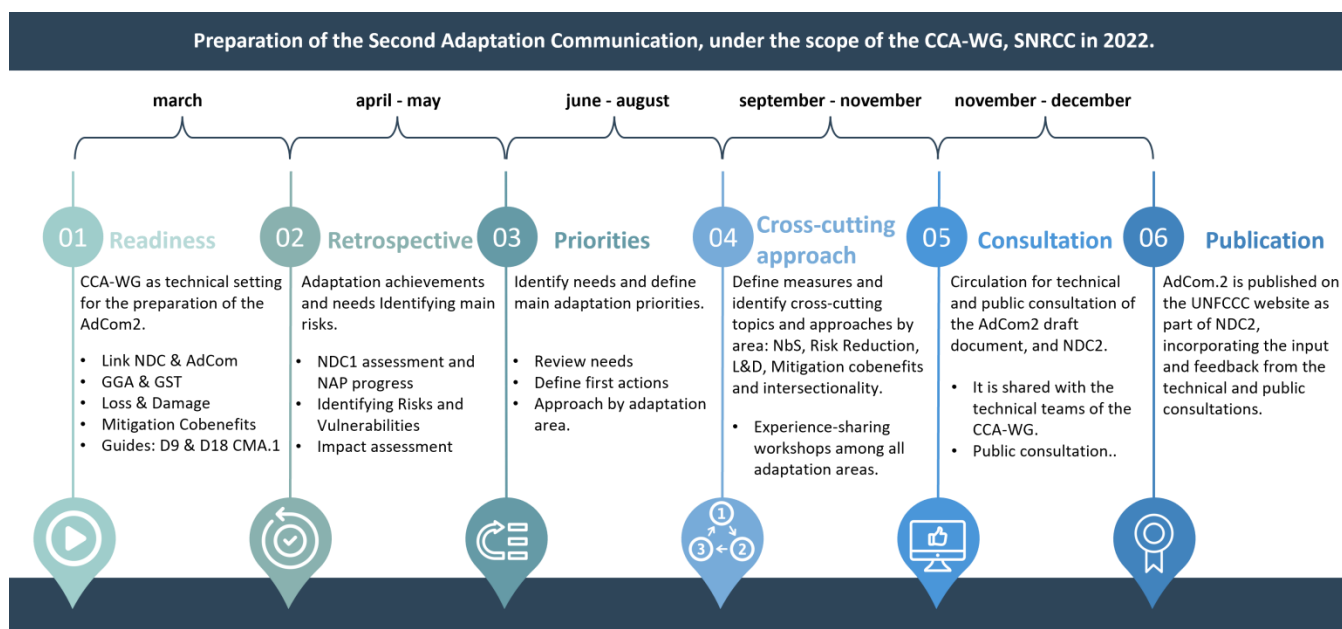


Figure 1: Formulation of AdCom2

### 7.1.3. Main activities undertaken

The **preparatory** phase was key to deciding on the structure and components to be included in AdCom2. The first adaptation communication (AdCom1) that used the first NDC (NDC1) as a vehicle for submission to the UNFCCC served as a guide. The guidelines of Decision 9/CMA.1 and Paragraph IV of Decision 18/CMA.1. were also used for further reference. These made it possible to define the sections of this communication and plan the formulation, content, and format of the new generation of climate change adaptation measures, in addition to reiterating Uruguay's decision to use the second NDC as a vehicle for presenting AdCom2.

The **retrospective** review of the adaptation processes initially focused on NDC1 and the National Adaptation Plans, allowed for a critical evaluation of achievements, barriers, challenges, best practices, and lessons learned throughout. This experience, together with other tools that enable and contribute to adaptation, made it possible to define the form and substance behind the adaptation objectives and, therefore, the design and programming of the measures.

The **priorities** emerged as part of the methodological process implemented to define measures and analyze the progress, challenges, and past experiences. We identified the gaps that need to be addressed and the related needs to tackle complex processes; we looked at continuity, improvement, and expansion of the programmatic lines already in place, as well as the new ones derived from already ongoing or developed processes.

The adoption of the **cross-cutting approaches** has been key in formulating Uruguay's AdCom. The participatory process for AdCom2 began with the representative and equal participation of the SNRCC institutions. Although there were separate thematic discussion rounds, the interrelation between areas was never ignored, and the groups then returned to the joint sessions to share each of the advances. The cross-cutting approach of AdCom2 integrates a gender perspective from an intersectional view and other critical aspects that are key to adaptation, such as risk reduction, mitigation co-benefits, EbA, and loss and damage reduction. The cross-cutting nature is achieved through the participatory work of the SNRCC institutions, together with other actors who contribute with additional and supplementary experiences and perspectives that might have been otherwise missed due to institutional biases.

**Transparency** has been key throughout the process, from disseminating the schedule and work plan to virtual and face-to-face general and specific meetings. Over 15 online meetings were held with the entire CCA-WG; more than 30 meetings with institutional and technical representatives of the adaptation areas, including cross-cutting subgroups; and two in-person workshops for further exchange. These are some of the elements that promoted constant technical **consultation** and participation throughout the process.

## 7.2. Adaptation Context in Uruguay

Uruguay sees adaptation to climate change as a national priority. The efforts made in the last decades to strengthen public policies, programs, and specific measures on adaptation are now reinforced by the most recent actions in terms of planning and implementation, driven by NDC1, the National Adaptation Plans and the LTS. The latter summarizes the main reasons for prioritizing adaptation [5]:

- a) It is imperative to increase adaptation capacities and resilience to reduce risks and mitigate the impacts from and compounded by climate change.
- b) It is critical to map and point out the adaptation efforts made and to plan the necessary future actions based on national capabilities to strengthen climate action regarding adaptation and risk reduction.
- c) It is desirable to help advance a type of global governance that allows for political and financial resource mobilization parity between adaptation and mitigation. To do so, it is considered strategic to direct the national efforts towards advancing the GGA and the Global Stocktake provided for in the Paris Agreement.

In addition, other critical reasons why Uruguay has set adaptation as a national priority are: i) high exposure: both because of the vulnerability of its economic activities—such as agro-industrial production and a thriving tourism sector—to weather conditions, climate change and variability, and because the population, assets, and central infrastructure are located in hazard-prone areas, considering, for example that 70 % of the Uruguayan population is found in coastal departments; ii) high vulnerability: primarily because the regions that concentrate both the main economic activities (such as the countryside, cities, and coastal areas) and the most vulnerable social sectors and ecosystems, are highly sensitive to potential changes projected in the medium and long term; and iii) the still incipient response and adaptation capacities in the face of these increasingly evident changes.



### 7.2.1. National legal frameworks and institutional arrangements

Figure 2 shows the national adaptation frameworks, supplementary to those outlined earlier in this document. The National Climate Change Policy (PNCC) and the First Adaptation Communication (AdCom1) are identified as the primary legal and technical frameworks that, among other tools, fueled the development of the National Adaptation Plans. The SNRCC is a horizontal coordination arrangement that, by law, is represented by public institutions, academia, and non-governmental organizations that research and work on climate change issues.

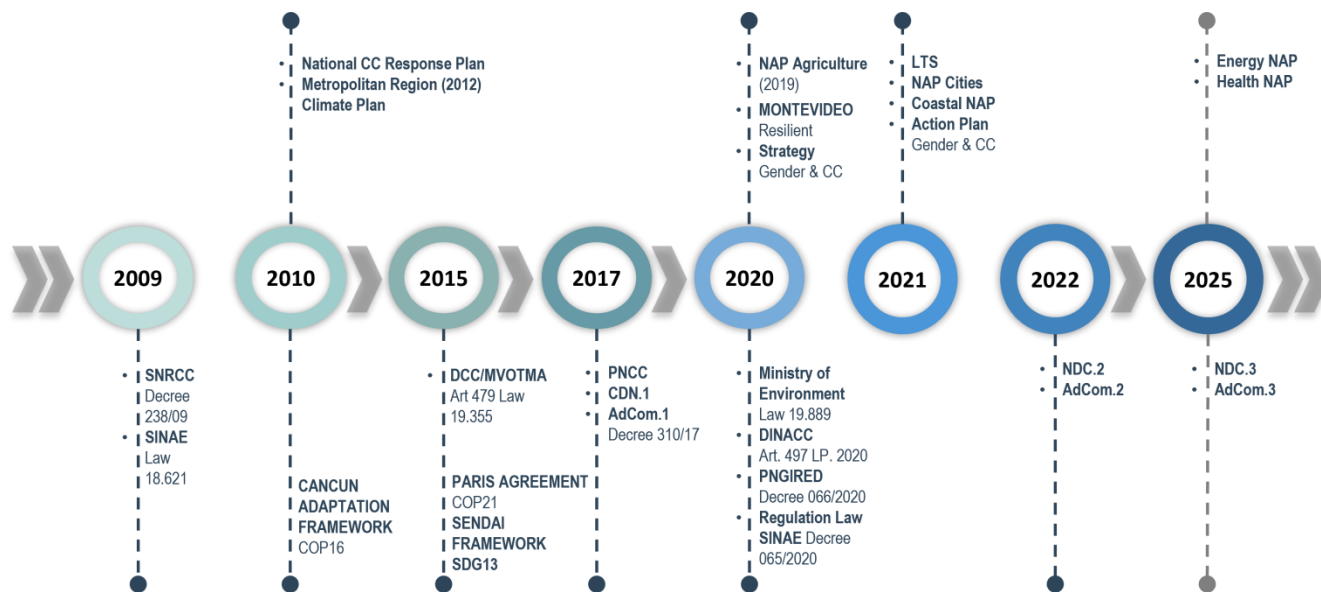


Figure 2: Main Adaptation and Risk Reduction Milestones in Uruguay.

When AdCom1 was submitted to the UNFCCC in 2017, Decision 9/CMA.1, which guides the development of adaptation communications, had not been adopted yet. However, the elements matched, to a large extent, the principles later outlined in the Annex of the Decision. This set a robust background for the negotiation process and for the preparation of AdCom2.

In line with the Cancun Adaptation Framework and the Paris Agreement (art. 7.7), but considering adaptation per sector or management area, Uruguay has developed three national adaptation plans.

The objective of the 2019 National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector (**NAP-Ag**) is to guide the design, coordination, and prioritization of policies, programs, and projects that seek to address the climate vulnerabilities of the different agricultural production systems and aims to achieve a paradigm shift towards a development path that is resilient and adapted to climate change and variability in the agricultural sector. [6]

A National Adaptation Plan to Climate Change and Climate Variability for Cities and Infrastructure (**NAP-Cities**) was also developed (2021) to reduce vulnerability to the effects of climate change by promoting adaptation capacities and resilience in cities, infrastructures, and urban environments; and to help streamline the integration of climate change adaptation actions into policies, programs, and related activities, both new or existing ones, into specific development planning processes and strategies aimed at cities and land-use planning initiatives.

Similarly, the objectives of the 2021 National Adaptation Plan to Climate Change and Climate Variability for Coastal Areas (**NAP-Coasts**) were to incorporate an adaptation perspective in the development and implementation of the coastal areas policy framework; and to strengthen the climate risk management and

adaptation capacities of coastal ecosystems at the national, departmental and municipal levels by training human resources and financing concrete actions, as appropriate, based on the different budgetary competencies at the various levels of government, promoting the preservation of coastal natural spaces and processes threatened by climate change and variability. It also aims to contribute to sustainable development with an equity perspective, striving for a more resilient, adapted, and aware society in coastal areas.

The **NAP-E** and **NAP-Health** are currently under preparation.

In 2021, Uruguay also submitted its LTS to the UNFCCC pursuant to Article 4.19 of the Paris Agreement. The LTS aims to define and outline a long-term vision for GHG emissions and removals, as well as adaptation, resilience, and risk reduction by 2050. Thus, the LTS involves planning, implementing, and monitoring adaptation and resilience actions by mid-century, in line with climate science and a steadfast commitment to the net-zero CO<sub>2</sub> emissions aspirational goal.

The plans mentioned above mainstream the gender perspective in line with the principle of social equity outlined in the PNCC, in the National Gender and Climate Change Strategy (2019), and the SNRCC's National Gender and Climate Change Plan (2021).

### **7.2.2. Impacts, Adaptation, and Risk in Uruguay**

Climate change entails risks that result from the interaction of three components: threat or hazard, exposure, and vulnerability. Risks are defined as the potential for adverse outcomes over a set of factors that are part of a socio-technical system in an uncertain environment. [7] [8] These adverse outcomes, i.e. the materialization of those risks, are manifested as impacts, which, in turn, can affect development and governance pathways or threats directly or indirectly through climate change. [9]. The use of a risk framework to provide some background to climate change adaptation helps avoid or moderate damages, or seize beneficial opportunities, by planning, designing, and implementing actions, activities, plans, programs, and policies that generate the necessary conditions to adjust to current or projected weather conditions and its effects. [10]

Strategies for adaptation to climate change, within a risk framework and in line with the GGA established in the Paris Agreement, require efforts to increase the adaptive capacities and resilience of socio-ecological systems, and reduce the intrinsic vulnerabilities of the systems and those derived from other socio-economic processes that fuel and enhance both the probability of occurrence and the magnitude of impact.

#### **7.2.2.1. The Impact of Climate Change in Uruguay**

Uruguay is geographically located in a region of significant weather variability across all time scales. The average annual temperature is 17.5°C, ranging from around 20°C in the northeast to about 16°C on the Atlantic coast. This average has increased by about 0.8°C over the last 65 years, with higher temperatures to the east across all seasons. [11]. During the summer, temperatures in the northern regions are similar to those in tropical regions. At the same time, in winter, there are frequent cyclones and transitory anticyclones (5-7 days in duration) with warm and cold fronts that move latitudinally, causing damage to infrastructure and property along the coastal zone. [12].

Uruguay's climate is similar to the southeastern region of South America, and our region's weather conditions depend on factors beyond these geographical borders. Natural annual weather variability causes significant changes in rainfall patterns. Observations show a 10-20% increase across most of the country during the spring, summer and fall seasons (1961-2017). In addition to annual variability, the weather shows interdecadal variability, leading to anomalies similar to those of El Niño but with more extended time scales. El Niño events tend to be more frequent and intense during the warm phase of these oscillations than in the cold phase. [13]

Along with natural variability, there are signs of climate change. These are not restricted to changes in average rainfall or temperature patterns in a region, but generally come with changes in the frequency and intensity of extreme meteorological (e.g., cold and heat waves) and hydroclimatic (e.g., droughts) events. According to several studies, sea level rise in Montevideo is estimated at 11 cm, of which 2-3 cm correspond to the last three decades. [14] The variation is even more significant in the other tide stations along the Uruguayan coast (La Paloma, Punta del Este, Colonia). [15]

Floods are the most frequent and impactful event in Uruguay [16]. Every year, floods force the evacuation of populations<sup>8,9</sup> (between 2015 and 2019 85,000 people were evacuated and self-evacuated due to flooding alone), affect their livelihood (food, housing, health), and cause economic downturns resulting from losses and damage to private and state-owned goods and services. The most frequent types of flooding are riverbank and gully flooding, coastal flooding, storm drainage caused by urbanization, and flooding related to water infrastructure failures. Currently, 11 towns face a very high risk of flooding, 15 with high risk, and 42 with a medium risk, for a total of 68 towns [17]. It should be noted that, although the greatest number of recorded impacts result from hydrometeorological<sup>10</sup> events, anthropic and/or technological conditions are not ruled out as causes and they can heighten the impacts.

Agricultural production is particularly sensitive to environmental conditions. Regular climate vulnerability is exacerbated by climate change resulting in production losses and crop and pasture production variation. The most significant weather events, due to the risks they imply for agricultural production, are: droughts, excessive rainfall, heat waves, frost, storms, strong winds, hail and lack of chilling hours. At the same time, the impacts vary in each production system [18]. In the case of droughts, different studies indicate that the worst droughts in the last 20 years were recorded in 1999/2000 (very severe), 2003/2004 (severe), 2008/2009 (very severe), 2011/2012 (severe) and 2017/2018 (severe) [19] with economic losses, linked to lower yields for most agribusiness sectors. The pilot report on the assessment of losses and damages due to weather-related events, identified for 2018, 32 types of events that generated losses and damages amounting to almost USD 564 million. [20]

Furthermore, the energy sector is still highly dependent on hydropower, which is affected by the significant variability in rainfall. Both floods and droughts affect its availability and the system has little storage capacity.

It is worth noting that Uruguay is working to collect more comprehensive information, to record the impacts and the evaluation of losses and damages they caused; an assessment of the actions needed to reduce vulnerability; and an economic evaluation of the implementation of climate change adaptation measures.

---

<sup>8</sup> See summary in [Uruguay's Voluntary National Report](#) for fulfilling the Sustainable Development Goals. Years 2019 and 2021; SDG 13: Climate Action.

<sup>9</sup> [See event history viewer of the Comprehensive Risk and Impact Monitor \(MIRA\).](#)

<sup>10</sup> See [SINAE report](#) on the most significant events between 2015 and 2019.

### 7.2.2.2. Climate projections and scenarios for Uruguay

Uruguay's climate projections for the 21st century (Figure 3) were based on ten models [21] that accurately represented Uruguay's climate; each model was run for the SSP245, SSP370 and SSP585 scenarios for two time horizons; short-term (2020-2044) and long-term (2075-2099).

When contrasting the observed and simulated evolution of the mean annual temperature in Uruguay for the 1961-2014 period with the projections for the end of the 21st century, an almost linear increase in the mean annual temperature is observed, as well as regional differences. Uruguay's annual accumulated rainfall shows a high interannual variability, ranging from -5 to 10% in the short-term horizon and between -7 and 35% in the long-term horizon. [12]







Variable	Season	Horizon	Scenarios		Region
			SSP245	SSP585	
		2050	0.5-1.5°C	0.5-1.5°C	East - west gradient
		2100	2°C	2-4°C	East - west gradient
		2050	0.3-0.5°C	0.6-0.9°C	Uniform warming
		2100	1.5°C	2.8- 3.5°C	Uniform warming
		2050			NO defined trend
		2100	↑ 30%	↑ 60%	Highs in the north coast
		2050	↑ 20%	↑ 30%	Nationwide, highs in the north
		2100	↑ 50%	↑ 90%	Nationwide, highest values in the northeast.

Figure 3: Model projections for temperature (CMIP5) and rainfall (CMIP6) on a seasonal basis

Compiled by the authors with data obtained from the Climate Projections Report on Uruguay, prepared within the framework of the NAP-Coasts and NAP-Cities development, MVOTMA - School of Sciences Agreement. [21]

Future projections show a gradual positive trend with an increased occurrence of extreme events. The interannual phenomenon with the greatest impact on rainfall in Uruguay is ENSO. The CMIP5 model shows that extreme events associated with ENSO tend to increase in frequency as global temperature increases. In addition, La Niña-related extreme events could become more frequent, especially three-month drought events over a short-term horizon. Heat waves in our country will increase in frequency and duration by the end of the century, mainly in the northern region. [12]

In turn, the projected average sea level rise for the RCP8.5 scenario is 80 cm by the end of the century. The two circumstances that typically cause an extreme rise in the Río de la Plata's level are coastal cyclogenesis and the arrival of southern fronts. Along the Río de la Plata coasts and the Atlantic Ocean, flash floods are caused by a combination of meteorological and hydrological effects. High tides with large atmospherically induced storm waves raise the average sea level by three meters above its normal level, causing beaches and dunes to be wiped out, damage to coastal infrastructure and maritime risks. [15]

## 7.3. Ex ante adaptation cycle

### 7.3.1. Adaptation objectives

Article 7 of the Paris Agreement sets out the global goal on adaptation: to enhance adaptive capacity, strengthen resilience and reduce vulnerability to climate change to contribute to sustainable development and achieve an adequate adaptation response in the context of the temperature goal mentioned in Article 2<sup>11</sup> [1]. To align national adaptation efforts with the elements set out in the GGA, this adaptation communication has defined general and specific objectives for each adaptation area, and an effort has also been made to establish the qualitative contribution of each of the proposed adaptation actions, to establish a strategic framework for the implementation of AdCom2.

The general objectives are:

#### **In relation enhance adaptive capacity:**

- a) Strengthen information systems for decision-making, generating, incorporating and enhancing information related to the consequences of climate change and the implementation of adaptation actions, through technical and scientific validation.

#### **In relation to vulnerability reduction:**

- b) Reduce the impacts of climate change on socio-ecological systems; reduce losses and damages in productive areas and sectors, through implementing climate change adaptation actions.

#### **In relation to strengthening resilience:**

- c) Strengthen partnerships for climate governance, regulatory, planning and technical instruments, with a cross-cutting approach to climate change, primarily focusing on adaptation.

### 7.3.2. Cross-cutting adaptation approaches

Climate change is cross-cutting, and consequently, it is necessary to incorporate interdisciplinary approaches and engage national, departmental and local government actors, academia, civil society, and the private sector. Adaptation must be part of the national and departmental agendas, plans, programs, and projects, as well as scientific, social, economic and environmental studies and research to achieve effective and efficient adaptation.

It is critical to achieve cross-cutting cooperation among the different areas responsible for the adverse effects on biodiversity and ecosystems, water resources, human health, cities and territory, coastal areas, and productive sectors, within a climate risk framework that not only mitigates impacts but also reduces physical and social vulnerability and increases adaptive capacities.

This cross-cutting approach must consider human rights, and a gender perspective from an intersectional approach that recognizes vulnerabilities and respects differentiated capacities, generates the necessary conditions for the development and implementation of climate actions, increases knowledge, promotes awareness and community-based adaptation, reduces losses and damages, includes ecosystem-based adaptation, strengthens climate services and promotes co-benefits with mitigation actions.

---

<sup>11</sup> Article 2, paragraph a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change.

Among the cross-cutting approaches, the 2019 National Gender and Climate Change Strategy stands out. The strategy aims to promote the integration of this perspective in the implementation of Uruguay's PNCC and all climate policy instruments, including the Nationally Determined Contributions, the National Adaptation Plans, the Monitoring, Reporting, and Verification system, the NGHGI and the Green Climate Fund Country Program. In addition, in 2021, the Gender and Climate Change Action Plan was developed. It defines and prioritizes activities aimed at achieving gender equality.

In light of the Strategy and Action Plan, the measures considered were sorted into different categories based on their potential impact to address gender inequalities:

- a) Neutral: Does not involve gender mainstreaming
- b) Gender Sensitive: It integrates the gender perspective by generating basic information disaggregated by sex but does not necessarily imply corrective actions.
- c) Responsive: Measures that integrate corrective actions to tackle gender inequalities and recognize or reduce gaps in gender-structured sectors, which may include transformative measures promoting cultural and structural changes.
- d) Blind/Potentially Sensitive or Responsive: Originally gender-blind measures that do not have sex-disaggregated information or contain corrective actions but have a potential direct impact on gender gaps and/or the possibility of generating basic data to identify gaps.

As part of mainstreaming efforts and in line with decision 9/CMA.1, this communication includes for each measure: gender categorization, mitigation co-benefits, loss and damage, the link with the sustainable development goals, and contributions to the global adaptation goal (see Annex 1).

### **7.3.3. National adaptation measures**

The following are the specific climate change adaptation objectives and the associated measures, including their scope in terms of management and/or results, that Uruguay expects to achieve to advance the global adaptation goal. The actions outline the main priorities, by area and/or sector, information, implementation and support needs, adaptation plans and actions to mitigate the adverse effects of climate change.

To implement these measures, Uruguay may use the means of implementation provided under the framework of the Convention in terms of financing, technology transfer, and capacity building and strengthening.

## **Cross-cutting adaptation measures**

### **Climate Information and Services**

*(relative to paragraph 7 of the PNCC)*

**Strengthen information systems for decision-making, enhancing the available information and knowledge on the risks caused and amplified by climate change, addressing the frequency, severity, and impacts on people, property of outstanding universal value, and the environment.**

- 1) By 2030, a geographic information system will be in place that integrates the components of the leading social and natural risks susceptible to being enhanced by climate change.
- 2) By 2030, there will be an updated information and reporting system on social and natural emergencies and impacts, achieving greater efficiency in the information and sources, homogenization of variables, analysis of magnitude, intensity, frequency, impact, causality, and their relationship with climate change.
- 3) By 2030, a Climate Services Information System will be developed and available in open data format.

- 4) By 2030, official climate change projections for 2050 and 2100—based on the best available scientific information and climate change scenarios—have been agreed upon, updated and laid out within the framework of the SNRCC.
- 5) By 2030, there will be a *mesoscale* atmospheric model and a *nowcasting* system for developing very short-term forecasts, as well as human resources trained in their generation and update.
- 6) By 2030, an inter-institutional group for climate services governance was set up and operational under the scope of the National Meteorological Council and the SNRCC.

### **Disaster Risk Reduction**

*(relative to paragraph 10 of the PNCC)*

#### **Strengthen comprehensive emergency and disaster risk management by incorporating a climate change perspective.**

- 7) By 2030, an information system has been designed, updated and set up, based on the comprehensive risk and impact monitor (MIRA), to carry out multi-hazard analysis, estimate the probability of occurrence, impact, response capacity, and recovery from social and natural events that could be exacerbated by the effects of climate change.
- 8) By 2030, the periodic updating and development of tools for prospective, corrective and/or compensatory management of emergency and disaster risks at the departmental level has been promoted.
- 9) By 2030, at least three guides for private sector companies to assess climate risks and identify adaptation measures will have been developed and made available.

#### **Strengthen governance related to knowledge generation and interoperability of information regarding the risks and the associated emergency and disaster events in Uruguay. It involves coordinating, planning and promoting relevant knowledge and information generation.**

- 10) By 2030, new work areas have been generated, and existing working groups between the SNRCC and SINAIE have been strengthened, promoting comprehensive risk management with a climate change perspective.
- 11) By 2030, seven flood-prone cities have incorporated a flood early warning system, integrated into the action and communication protocol, which improves inter-institutional interaction and the dissemination and communication of warnings and alerts to the population and stakeholders involved in emergency response and care.

### **Losses and Damages**

*(relative to paragraph 10 of the PNCC)*

#### **Strengthen the processes of identifying, measuring, and evaluating the impacts of adverse climate-related events and their chains to estimate losses and damages at the national, local, and sectoral levels.**

- 12) By 2030, a work plan has been implemented for loss and damage assessment, including mechanisms and procedures to improve the recording, storage, estimation, and visualization of losses and damages caused by socio-natural events and their respective impact chains at the national, local and sectoral levels.
- 13) By 2030, an information system associated with the impacts on energy infrastructure has been developed and implemented to quantify climate-related losses and damage to the system.
- 14) By 2030, the processes for recording and evaluating the impacts of climate-related adverse events will have been improved to quantify and estimate losses and damages in the tourism sector, improving databases and information sources.

## **Migration and Displacement**

*(relative to paragraph 8 of the PNCC)*

**To understand Uruguay's context concerning climate change-related migration movements, human displacement, and associated impact chains.**

- 15) By 2030, a database has been developed to report on the situation in Uruguay regarding the influence and impact of climate change on migration and human displacement to, from, and within Uruguay, considering an intersectional approach.

### **Measures for the main adaptation areas**

## **Health**

*(relative to paragraph 9 of the PNCC)*

**Monitor and assess progress in implementing adaptation actions and targets developed for the Health area.**

- 16) By 2030, the 2026-2030 Action Plan of the National Health Adaptation Plan (NAP-Health) has been implemented.
- 17) By 2030, the consequences of climate change on occupational health have been assessed to develop policies for preventing impacts and promoting occupational health.
- 18) By 2030, epidemiological and entomological surveillance has been strengthened, as well as the development and implementation of an early warning and response system for outbreaks of vectors and diseases derived from or exacerbated by climate change's effects.

**Strengthen governance in the area of health to address issues related to climate change and its effects, within the Ministry of Public Health and related institutions, under the framework of the SNRCC.**

- 19) By 2030, a technical working group on climate change has been created, institutionalized, and put into operation within the Ministry of Public Health, which develops the cross-cutting programmatic line of climate variability and change in health policies, plans, and programs.

## **Cities, Infrastructure and Land-use planning**

*(relative to paragraph 11 of the PNCC)*

**Monitor and evaluate progress in implementing adaptation actions and targets identified as a priority for cities and land-use planning.**

- 20) By 2030, the 2026-2030 Action Plan of the National Cities and Infrastructures Adaptation Plan (NAP-Cities) has been implemented.

**Deepen the incorporation of adaptation to climate change and variability in land-use planning instruments, urban planning and management, the urban landscape, building regulations under a climate risk framework and adopting an ecosystem-based adaptation approach.**

- 21) By 2030, all departments will have incorporated climate change adaptation measures and climate risk reduction strategies in new and revised Land-Use Planning Instruments.
- 22) By 2030, 100% of cities with very high, high or medium flood risk levels will have flood risk maps for riverbank flooding, drainage, and/or sea level rise and storm surges.
- 23) By 2030, support materials will have been updated and disseminated to incorporate climate change and variability in the planning efforts of Uruguayan cities.
- 24) By 2030, implementation of the National Urban Stormwater Drainage Plan has begun.



- 25) By 2030, all departments will have incorporated ecosystem-based adaptation in at least one urban area as a strategy to improve habitat conditions in urban environments and optimize their climate performance.
- 26) By 2030, departmental regulatory bodies will have adopted parameters on adaptation to climate change and variability to inform the design, construction, and maintenance of housing, infrastructure, and equipment, considering each territory's particular characteristics.

**Promote the development of financing instruments for the implementation of adaptation actions that improve the resilience of cities to climate change and its effects.**

- 27) By 2030, a public-private financing instrument will have been implemented to improve climate resilience in new and/or existing buildings and urban infrastructure, including an ecosystem-based adaptation approach.

**Promote the development of sustainable and resilient infrastructures in the face of climate variability and change that contribute to reducing greenhouse gas emissions.**

- 28) By 2030, all final disposal sites for household waste and similarly operated sites managed by the municipalities will have conditions in place that reduce the risk and impact probability of climate change-related adverse events.

**Biodiversity and Ecosystems,**

*(relative to paragraph 12 of the PNCC)*

**Promote the integration of climate change, its effects, and adaptation strategies in planning and regulatory instruments focused on conserving, protecting and restoring natural ecosystems to ensure the delivery of ecosystem goods, services, and functions.**

- 29) By 2030, the National Biodiversity Strategy, the National Protected Areas System Strategic Plan, the Marine Spatial Planning, and the Land Degradation Neutrality Strategy have mainstreamed climate change and variability.
- 30) By 2030, a legal instrument for protecting and restoring wetlands is being implemented based on their ecosystem services and contribution to climate change adaptation.
- 31) By 2030, risk analysis and specific goals and actions on adaptation to climate change and variability will have been incorporated in 100% of the Protected Areas with approved and updated Management Plans as of 2025.

**Incorporate and deepen risk assessment with a climate change perspective and considering its effects on biodiversity and ecosystems, further focusing on the role of ecosystems in adaptation to design of instruments and measures for risk reduction and ecosystem-based adaptation.**

- 32) By 2030, a risk analysis of biodiversity and key ecosystems considering the effects of climate change has been prepared, and data will be available through an information system.
- 33) By 2030, guidelines will have been developed on how to manage climate change and variability risks to biodiversity and ecosystems, and key stakeholders will have been trained to implement them.
- 34) By 2030, knowledge and understanding of the ecosystem functions and services associated with reducing vulnerabilities to climate change of key ecosystems and their co-benefits in mitigation will have increased.

## Coastal areas

(relative to paragraph 13 of the PNCC)

### **Strengthen policy and adaptation planning instruments for coastal areas in the face of climate change and variability.**

- 35) By 2030, Law No. 19.772 on the National Guidelines for Land-use Planning and Sustainable Development of the Atlantic Ocean and Río de la Plata Coastal Area has been regulated.
- 36) By 2030, the 2026-2030 Action Plan of the National Adaptation Plan to Climate Change and Climate Variability for Coastal Areas (NAP-Coasts) will have been implemented.
- 37) By 2030, a guide will have been developed to incorporate climate change vulnerability into environmental impact assessment (EIA) and strategic environmental assessment (EAE) processes in the coastal areas using the best available scientific information, and key stakeholders will have been trained to implement it.

### **Promote conservation and reduce the vulnerability of coastal areas threatened by climate change and variability through ecosystem-based adaptation measures.**

- 38) By 2030, 100% of the vulnerable components of the coastal areas will be included in climate variability and climate change adaptation plans or programs, which will define their level of protection and/or apply ecosystem-based adaptation measures for both conservation and restoration.

### **Promote financing instruments for the implementation of adaptation actions in coastal areas.**

- 39) By 2030, a public-private financing instrument will have been designed and implemented for the adoption of adaptation measures in coastal areas.

### **Implement a system for monitoring coastal dynamics of the Río de la Plata and Atlantic Ocean.**

- 40) By 2030, a system for monitoring *meteo-oceanic*, sedimentological and *topo-bathymetric* variables of the Río de la Plata and Atlantic Ocean will have been implemented, reinforcing areas highly vulnerable to extreme events (river mouths, sandy beaches and ravines).

## Water Resources

(relative to paragraph 14 of the PNCC)

### **Promote the integration of climate change and variability and their effects in comprehensive water resource management efforts, to improve the protection and security of water availability and water quality, promote good practices, enhance governance, and promote research and comprehensive monitoring.**

- 41) By 2030, six comprehensive watershed management plans have been formulated, approved and are being implemented.
- 42) By 2030, water security plans have been implemented in 15 drinking water systems; at least two sanitation security plans have been implemented in two towns in the interior of the country, considering climate change-related conditions.
- 43) By 2030, appropriate technologies and procedures will be in place to prevent, detect and reduce the effects of algal bloom events in priority areas.

## **Agriculture**

*(relative to paragraph 15 of the PNCC)*

### **Monitor and assess progress in the implementation of adaptation actions and targets that have been identified as a priority for agriculture.**

- 44) By 2030, progress in implementing the National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector (NAP-Ag) is monitored and reported.
- 45) By 2030, new financial and risk transfer instruments have been developed and implemented, increasing insurance coverage in new areas compared to 2025.

### **Promote the implementation of best practices in the different agricultural activities and processes as a strategy for climate change adaptation, upholding production, increasing resilience and reducing risks in agriculture and the environment.**

- 46) By 2030, the number of permits for the collection of water resources for irrigation and other agricultural and livestock uses will be promoted and increased as an adaptation strategy to the variability in rainfall patterns and the risk of drought, based on 2025 levels; these are subject to water quality and quantity available and regulated by the National Water Plan, Law No. 16.858 and Decree No. 368/018.
- 47) By 2030, comprehensive information systems will be in place for adaptive management in agriculture for the public and private sectors, and there's active promotion of research programs on dryland agriculture, vegetable and fruit crops, forage crops, and pastures that better adapt to climate variability.
- 48) By 2030, at least one adaptation measure to reduce animal heat stress has been implemented in at least 50% of dairy and confinement farms.

### **Promote the development and implementation of adaptation measures that can also produce synergies, parallelisms, and co-benefits toward climate change mitigation.**

- 49) By 2030, 100% of the 2012 native forest area will be maintained, with the option of potentially increasing this area by 5%, especially in water resource environmental protection areas, to revert degradation processes (892,460 ha).
- 50) By 2030, intermittent irrigation technology with variable depth has been introduced in between 5% and 10% of the rice growing area.
- 51) By 2030, 100% of the 2018 shade and shelter forest plantation area is maintained, including silvopastoral systems, with the option of increasing this area by 10%, providing shelter and greater comfort for animals, particularly in unfavorable weather situations.
- 52) By 2030, good management practices for natural grassland and breeding herds have been adopted in livestock production farms between 1,500,000 and 4,000,000 ha, reducing vulnerability to climate variability in livestock production systems based on natural grassland.
- 53) By 2030, 95% of the agricultural area under Land Use and Management Plans, which tackle erosion reduction and organic matter conservation in croplands, has enhanced its productivity and water storage capacity and reduced the risk of erosion during extreme rainfall events.
- 54) By 2030, best wastewater management practices have been implemented in dairy farms, including wastewater recovery as soil improvers, reaching 50% of the national herd.

## **Energy**

*(relative to paragraphs 18 and 20 of the PNCC)*

**Strengthen energy planning instruments incorporating adaptation to climate change and variability to improve the resilience and adaptive capacity of the system and infrastructure.**

55) By 2030, the 2026-2030 Action Plan of the National Energy Adaptation Plan (NAP-Energy) has been implemented.

**Identify and assess energy system risks in terms of power generation, transmission, and distribution, as well as improve the resilience of current and future energy infrastructure to climate change.**

56) By 2030, an energy sector risk reduction guide for power demand sectors has been developed and implemented.

57) By 2030, a work plan has been developed and implemented to conduct vulnerability studies and identify adaptation and risk reduction measures for critical infrastructure in the face of extreme events.

## **Tourism**

*(relative to paragraph 19 of the PNCC)*

**Promote research and risk assessment on the effects of climate change on tourism to improve the design of adaptation actions to be implemented in the medium and long term.**

58) By 2030, vulnerability and hazard analyses will have been carried out in the sector, per tourism products, and considering the trends determined by existing climate projections agreed upon within the framework of the SNRCC.

59) By 2030, the 2030 National Tourism Plan will have been reviewed and updated, based on the risk assessments carried out, in line with the existing National Adaptation Plans.

**Promote the generation of and access to relevant, comprehensive, and valuable information, the use of weather information, early warnings, and other climate risk management tools for decision-making by institutions and the population.**

60) By 2030, at least four touristic cities will have integrated weather and emergency warnings into their tourism information systems, and they will have trained their tourism operators and officials in the use of this information.

## **7.4. Ex-post adaptation cycle, progress, and results achieved.**

Below we outline the most significant developments and outcomes, barriers and challenges, lessons learned, and best practices introduced throughout the implementation of Uruguay's main adaptation instruments.

### **7.4.1. Uruguay's First Nationally Determined Contribution and First Adaptation Communication**

**Main achievements and developments:** The first NDC incorporates a number of instruments for adaptation planning, among which we can find de NAPs. The first generation of NAPs, in addition to planning actions at the national level to tackle the consequences of climate change in five priority areas, develops, promotes, and incorporates scientific knowledge from academia.

One achievement that stands out is the design and implementation of a system for monitoring the adaptation actions included in AdCom1 through implementation progress indicators that have been defined.

The clustering of measures according to their potential impact on gender inequalities in line with the Gender and Climate Change Strategy and the Gender and Climate Change Action Plan, led by the SNRCC Gender Working Group, reflects the progress made and an effort that Uruguay wants to highlight. This process involved multiple stakeholders and helped build capacities regarding the link between adaptation measures and gender inequalities.

**Main barriers and challenges:** The main challenges in AdCom1 focus on the resources available for implementing, monitoring, and evaluating adaptation actions.

Significant knowledge, technologies, and funding mobilization is necessary to design and implement actions that generate positive impacts. In addition, the limited technical capacities of national institutions should be highlighted. Although there is a proper setting, willingness, and special technical capacities for articulation within the SNRCC, these must be strengthened by including more representatives and improving engagement within the different areas of the SNRCC.

Regarding the monitoring and evaluation of adaptation actions, on the one hand, the multidimensional nature of adaptation entails certain difficulties as the system is overwhelmed by a series of multi-causal indicators whose temporal variation depends on the incidence of other environmental, social, and economic factors. On the other hand, there is a lack of international examples for adaptation in terms of i) development of indicators, ii) monitoring of policies, plans, and measures, and iii) evaluation of effectiveness in reducing vulnerability, increasing resilience, and mitigating disaster risk. [22]

Another major challenge is developing and adopting NAPs and how they will contribute significantly to future monitoring of adaptation and vulnerability and their relationship to the next AdComs. The challenge for each NAP is to set out an internal Monitoring, Evaluation, and Learning framework, towards a long-term horizon (2050) through five-year action plans equipped with a matrix of indicators to follow up on each action outlined, as well as their impact on the country's climate vulnerability.

From a gender perspective, the challenge is to make sectoral gender mainstreaming processes compatible with climate change processes, whether these are plans, strategies, or independent projects. In addition, the lack of sex-disaggregated and up-to-date data, especially at the local level, makes gender analysis more difficult—both technical resources and specific budget allocations need to be integrated into the Nationally Determined Contributions.

**Main lessons learned and best practices:** The decision to include a section on adaptation in the first NDC—and for this to serve as the First Adaptation Communication as an integral part of the first NDC—gives adaptation greater visibility, and it strikes a balance with mitigation. It highlights the adaptation efforts made by Uruguay by providing information to the Global Stocktake; and makes achievements, best practices, needs, barriers, and challenges better known and understood.

The multifaceted cross-cutting nature of adaptation must be addressed by pursuing inter-institutional engagement in the design, implementation, monitoring, and evaluation of adaptation actions from a collaborative perspective that calls for the interdisciplinary involvement of different areas and sectors.

There is a firm commitment to continuous improvement in the transparency of NDC monitoring. The multidimensional and qualitative nature of Adaptation creates challenges for accurate monitoring based

on numerical metrics. However, monitoring methodologies have been developed to quantify progress toward the targets of AdCom1 adaptation measures.

The integration of the gender perspective has shown how important it is to promote enabling conditions for an intersectoral implementation based on: the creation of a stable Working Group with members of the Specialized Units and/or Gender Commissions of each Ministry, coordinated by the National Climate Change Directorate (DINACC) of the Ministry of Environment (MA) and the country's governing body for Gender Public Policies, the National Women's Institute of the Ministry of Social Development; the development of an intersectoral strategy, which established the general criteria for integrating the gender perspective in the first NDC, including the National Adaptation Plans; and the definition of goals and the incorporation of gender categorization in the public NDC viewer.

#### **7.4.2. National Adaptation Plans**

The National Climate Change Policy (PNCC) provides a strategic framework for addressing the challenges of climate change and variability through adaptation. The First NDC, as an instrument for the implementation of this Policy, prioritizes under AdCom1 the development, approval, and kick-off of National Adaptation Plans: NAPs for Coastal Areas, Cities and Infrastructure, Agriculture, Energy, and Health, based on detailed information on hazards, exposure, sensitivities and adaptive capacities of socio-ecological systems.

Both the incorporation of local, technical, and scientific knowledge on the consequences of climate change and the decisions on how to respond to its effects were defined based on the particular characteristics of each NAP, and the planning of adaptation actions focused on iterative consultation and revision mechanisms with stakeholders representing each specific area or sector. The SNRCC has been an active player in each of the NAPs preparation processes.

##### **7.4.2.1. National Adaptation Plan for Coastal Areas (NAP-Coasts).**

***Main achievements and developments:*** Knowledge transfer from international researchers (IH-Cantabria) to local researchers (Universidad de la República) and governmental entities was possible by implementing training programs for technical experts, professionals, and decision-makers from Ministries and local governments.

In addition, it is worth noting: the coordination between agencies and integration of competencies beyond the natural fragmentation of each sector; regional cooperation in addressing common problems; a long-term vision with an adaptive management approach; the provision of a general framework to address local specificities and at different scales, from national to local.

Uruguay developed jointly owned platforms (National Environmental Observatory; NDC Monitoring System Viewer) to ensure the long-term sustainability of climate modeling and vulnerability assessment technology and to foster the exchange of information and knowledge among all levels of government and academic and civil society networks.

To date, the NAP-Coasts is a working method that recognizes all priorities related to climate variability and change throughout the decision-making process. In this sense, this mechanism aims to cover all the necessary structures to generate the knowledge that will be applied for strategic planning.

***Main barriers and challenges:*** Coastal adaptation involves many challenges. Without effective adaptation to the impacts of coastal climate change, there will be significant effects on Uruguayan society and the long-term sustainability of coastal areas. Responses to climate change in coastal areas should be multidisciplinary, socially inclusive, long-term, and flexible to change. Governments,

businesses, communities, and all individuals have a role in responding to climate change. However, the role of governments will be critical as practical adaptation actions will be largely underpinned by the planning reform and updated building codes and practices outlined in the PNCC.

Among the technical barriers to addressing the impacts of climate variability and change in the coastal areas were the lack of quality data or access to existing data, methodologies and tools to assess climate change risks and implement adaptation measures or establish metrics and procedures to evaluate adaptation processes. Other barriers included coordination between the national and local levels and the lack of qualified human resources.

Historical databases and high-resolution dynamic projections developed by national researchers were necessary to quantify the impact at the local scale. The enhanced national database and information systems on marine dynamics variables can now be used as a reference for comprehensive coastal area management, operational oceanography, infrastructure construction, coastal area risk management, ecosystem resilience, and tourism management.

Understanding the local impacts of climate change is an inherently dynamic process, and constant assessment and adjustments are necessary to devise effective adaptation measures. For ten years (2012-2022), Uruguay has focused on promoting the reduction of existing gaps in knowledge and diagnosis of coastal vulnerability through public consultation on the need for adaptation measures.

Most of the measures that could involve the participation of the private sector do not produce, at least in the short term, economic benefits or profitability; most of the assets and property affected are public (beaches, waterways, port infrastructures), so the investment and efforts will come mainly from the State. In this context, it is necessary to identify incentives for the private sector (households, companies, financial sector) to engage and design the most appropriate instruments to channel this participation, including, most likely, public-private partnerships, at national and subnational levels.

**Main lessons learned and best practices:** Evidence shows that adaptation planning at the national level stimulates adaptation planning at the departmental level. The maturity of adaptation planning instruments varies among departmental governments. Efforts to access adaptation funding have been strengthened, and the technical assistance supported by national, departmental, and multilateral funds has increased.

The successful adoption of climate modeling technology has allowed Uruguay to develop its NAP-Coasts, improve its capacity, and secure funding for implementing adaptation measures. Therefore, adopting new technology has directly resulted in achieving two of the country's key adaptation goals under the NDC.

Six departmental governments worked together on co-creating knowledge, capacity-building efforts, and implementing adaptation measures. They did so through 103 workshops to evaluate the perception of local stakeholders, incorporating knowledge from the scientific community and designing adaptation responses to climate change. A total of 210 actions were identified, of which 33 % addressed capacity building in departmental governments, 26 % focused on coastal planning, and 25 % tackled knowledge creation and technology solutions.

By promoting the EbA approach throughout adaptation planning, initiatives for the implementation of sand fences were supported that proved to be successful in the medium and long term for dune recovery; these initiatives also involved the participation of the local community and academia in

different cases. This allowed to produce evidence on the benefits of EbA versus other hard measures, a critical path that must continue to be pursued more thoroughly.

The gender approach makes it possible to measure inequalities in access to and control of resources and participation in decision-making in the coastal areas. Technology made it possible to assess physical vulnerabilities, based on which we were able to determine the potentially affected social elements. In addition to the general impact on housing, altering coastal settings is also relevant because it is used for recreational purposes and as a transit area to essential services, including health, education, and access to jobs. A gender approach was critical to analyze the differential uses and determine accurately how the impact will be, which allows establishing social vulnerabilities by assessing the population's needs based on their specific circumstances.

#### **7.4.2.2. National Adaptation Plan for Cities and Infrastructures (NAP-Cities)**

**Main achievements and developments:** It is particularly worth noting the progress in institutional processes such as preparing departmental plans for comprehensive risk management, climate action, rainwater and urban water drainage, and tree-planting plans and ordinances, among others.

In terms of education and training, we were able to promote lines of work for research, teaching, and outreach related to adaptation to climate change and variability (ACCV). These include curricular courses, vocational training activities, continuing education, non-formal education, research programs on weather, public spaces and buildings, sustainable drainage, nature-based solutions (NbS), new technologies and materials, and the design of specific projects.

**Main barriers and challenges:** One of the main challenges of the NAP-Cities is the formulation, coordination, implementation, and monitoring of five-year action plans that follow up, promote and implement the adaptation actions identified and prioritized at the time of the plan's preparation. This can only be achieved if maintaining the principle of flexibility and adaptive management of the plan, focusing on knowledge improvement and continuous monitoring, assessment, and learning from each implementation cycle.

Another significant challenge is the continuity of partnerships and the allocation of resources due to future changes in administrations and political authorities that may occur over the implementation of the NAP-Cities.

In some institutions, changes in administration and authorities have led to changes in priorities and interruption of certain key adaptation activities; in some cases, after a period of slowing down, the technical teams are resuming activities, promoting continuity in climate policies and commitments.

It is essential to point out that there are lines of work that still need to be prioritized. In particular, developing and implementing guidelines to design and carry out ACCV actions in different fields and research on different topics.

**Main lessons learned and best practices:** Articulating adaptation processes is key to ensuring their implementation and continuity. During the NAP-Cities process, many of the enabling conditions for developing the activities of the Uruguay-Argentina Regional Project were prepared: Adaptation to



Climate Change in Vulnerable Cities and Coastal Ecosystems of the Uruguay River<sup>12</sup>, to be implemented between 2021 and 2024. This is an excellent opportunity to apply and evaluate ACCV measures.

The Uruguay-Argentina Regional Project, as an articulating instrument between adaptation planning and implementation, involves actions such as: diagnosing and restoring critical ecosystems for adaptation, strengthening domestic networks to increase resilience in vulnerable communities, and resignification of land located in highly flood-prone areas through the creation of public parks.

One of the best practices to be highlighted is ensuring the continuity of the technical approach to planning, articulated with implementation. To this end, the technical committee in charge of revising and formulating the NAP-cities has now taken on a new role in promoting and implementing the plan; it is now a steering group<sup>13</sup> representing the State agencies involved in the matter.

In addition to incorporating the gender and generations perspective with a human rights approach as guiding principles of the document, the NAP-Cities categorizes all actions based on their potential impact on gender inequalities. In the interactive tool for monitoring the 41 actions of the National Adaptation Plan, you can see their potential impact on gender inequalities, with respect to the threats, and the strategic lines of the document, by department and town.

With respect to the EbA and NbS approaches, the NAP-Cities delivers a guide of key ecosystems for adaptation in Uruguayan cities to tackle floods, coastal erosion, and high temperatures. This guide will be used mainly in territorial planning instruments such as local plans. This is a starting point for strengthening baseline information on ecosystem services for climate change adaptation in cities. Among the expected outcomes of the Uruguay-Argentina Regional Project is the generation of evidence regarding the benefits of NbS for adaptation, both at the micro scale, through the implementation of green and blue infrastructure in a city in Uruguay, and at the macro scale, through the incorporation of adaptation measures in a protected area, on the understanding that the preservation of ecosystems increases resilience at the territorial level.

#### **7.4.2.3. National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector (NAP-Ag)**

***Main achievements and developments:*** Since 2019, the NAP-Ag has become a strategic instrument to guide public policies with a long-term vision around the productive, environmental, social, and institutional dimensions. It seeks to articulate climate change and variability adaptation actions for the agricultural sector and, at the same time, identify gaps in knowledge and capacities to reduce vulnerability to the impacts of climate change and variability by building adaptive capacity and resilience. It also aims to mainstream the issue into agricultural development policies and adaptation plans at the national level.

Based on the co-innovation approach, the Livestock and Climate project<sup>14</sup> is being implemented since 2019 to promote ecological intensification strategies in livestock systems. Production per animal, unit

---

<sup>12</sup> The Regional Project between Uruguay and Argentina: Adaptation to Climate Change in Vulnerable Cities and Coastal Ecosystems of the Uruguay River, is funded by the [Adaptation Fund](#). Its general objective is to build resilience in the cities and vulnerable coastal ecosystems of the Uruguay River, both in Argentina and Uruguay, through the development of instruments, tools and experiences to plan and implement adaptation actions, and manage the impacts and risks of climate change and variability.

<sup>13</sup> Working Group for Climate Change Adaptation in Cities.

<sup>14</sup> The objective of the project is to promote the sustainable increase of productivity in free-range livestock farming and farmers' income, while contributing to mitigating climate change, restoring degraded lands and improving system resilience.

area, and economic returns have improved without a significant input increase. This improvement in resilience came about hand in hand with a reduction in GHG emissions per ha and a decrease in GHG emissions intensity per kg. After two years of project implementation in an adverse weather context, the results show a path to build resilience in natural field-based livestock systems through forage and herd management.

In 2022, the Ministry of Livestock, Agriculture, and Fisheries began implementing the SARU<sup>15</sup> project, which addresses the four dimensions of the NAP-Ag 2050 strategy.

The project will implement several actions in line with the NAP-Ag that contribute to farm sustainability by promoting biodiversity in the farm system, maintaining or restoring natural areas and the protection and efficient use of natural resources, and preserving or enhancing ecosystem services. In addition, making technologies and infrastructure for effluent management available was prioritized. So was the development of a pilot project that seeks to promote access to yield insurance and/or investment for summer crops through financial support to participating farmers.

**Main barriers and challenges:** By monitoring the progress in the implementation of the NAP-Ag, several gaps were identified in the information needed for reporting indicators. Only 53% of the indicators could be fully reported. For the rest of the indicators, there are either gaps in the information or no sources of information for their calculation. Although progress in adaptation in agricultural systems requires a multidimensional analysis, it can state that progress has been observed for the indicators calculated.

The evaluation of the NAP-Ag points out some challenges with regard to the 2025 action plan: (a) implementation was affected by both changes in funding sources and budget availability; (b) some measures were difficult to evaluate since the work plans do not have specific quantifiable goals; (c) the most common barriers identified during the assessment of the NAP-Ag action plan implementation are the lack of institutional capacities, lack of funding sources, difficulties in institutional articulation, barriers to technology adoption and transfer across productive systems adapted to climate variability and change.

**Main lessons learned and best practices:** Regular monitoring is key to evaluating the progress of the NAP-Ag and inform policies that contribute to its goals. The indicator matrix and action plan were monitored in 2022. This showed the need to strengthen statistics and indicators and the capacity to carry more consistent monitoring to check that indicators truly capture the particularities of climate change adaptation in the agricultural sector.

With respect to the Action Plan, a number of initiatives and projects were implemented with a focus on institutional integration to improve the resilience of production systems by promoting agroecological transitions that improve the use and conservation of natural resources, enhance the living conditions of people working in the sector and, at the same time, reduce GHG emissions.

The following are some of the lines of work implemented since the launching of the NAP-Ag:

- *Progress in research lines* in integrated work with the National Institute of Agricultural Research and the University of the Republic that generate inputs to contribute to developing production systems that are less vulnerable to climate.

---

<sup>15</sup> The objective of the SARU project is to: "strengthen public agricultural systems and support rural farmers to increase climate change mitigation and adaptation actions and promote agroecological production."

- *Creation of the National Rural Development and Innovation System (SNIDER)* to direct, articulate and coordinate the design and implementation of the different actions aimed at Sustainable Rural Development.
- *Information and monitoring of the agro-climatic situation to improve decision-making for climate risk management in agricultural establishments:* Monthly monitoring of indicators such as available water in soils, rainfall, and its anomalies, Normalized Difference Vegetation Index (NDVI), Standardized Rainfall Index, Forest Risk Index, Bovine Heat Stress Index, among others. It is done together with the National Agricultural Information System of MGAP (SNIA), the Agroclimate and Information Systems Unit of INIA (GRAS Unit), and the Uruguayan Institute of Meteorology (INUMET).

The NAP-Ag includes the gender perspective as a cross-cutting aspect and mainly addresses the role of rural women. As part of the NAP-Ag process, nine Adaptation Dialogues were held with rural women involved in dairy, livestock, and horticultural production systems. At the same time, a survey was carried out in dairy, livestock, and horticultural establishments of family and medium scale that included gender issues to obtain differentiated information.

The 2025 Action Plan also adopted specific measures such as the incorporation of gender mainstreaming actions in policies to support family farming, the implementation of affirmative action policies focused on women and rural youth, the emphasis on the integration of women as target beneficiaries within the framework of promoting the adoption of Best Agricultural Practices and the comprehensive management of pests, diseases, and weeds. The document incorporates gender-sensitive measures from the 2025 Action Plan and some aimed at young people. Among them, the implementation of affirmative policies focused on women and rural youth. Some of the 2050 Strategy indicators are gender-sensitive, such as access to agro-climatic information, membership in rural organizations, training processes and access to funds, among others.

#### **7.4.2.4. National Adaptation Plan for the Health Sector (NAP-Health).**

***Main achievements and developments:*** Uruguay is currently starting the process for the preparation of its NAP-Health. Key actors from academia, professional associations, and international agencies have been identified during the first stage. At the same time, the technical teams of the Ministry of Public Health have been sensitized on climate change and health.

***Main barriers and challenges:*** In developing this Plan, it has been observed that climate change is not only an environmental health problem but also a threat to general public health [23]. For this reason, the creation of a technical group on health and climate change has been proposed, made up of the different units (Directorates, Divisions, Departments, and Programs) that are part of the organizational structure of the Ministry of Public Health (MSP).

One main challenge in climate change is vector-borne diseases, such as dengue and leishmaniasis. Both diseases—climate-dependent in their transmission cycle—have emerged in an epidemic manner in the last decade in Uruguay [24] [25] . However, the challenge lies in generating models that consider environmental viability and other determining factors, such as population movements, vector and reservoir ecology, and socio-cultural conditions.

Another major challenge will be to mainstream health into the climate agenda. The current focus is on adapting the sector to meet the challenges of climate change. However, considering and estimating the

health benefits of measures in other sectors, such as agriculture, energy, and transportation, would be desirable.

#### 7.4.2.5. National Adaptation Plan for the Energy Sector (NAP-E).

**Main achievements and developments:** The NAP-E is currently in the development phase and is expected to be completed in 2023. The first milestone in the development process dates back to 2020 when a roadmap for preparing the plan was drawn up. During this stage, consultation workshops were held with stakeholders from academia, government, and the public and private sectors. This was the first attempt at identifying the vulnerabilities of the energy system to climate change and the information and knowledge gaps in the country.

The second stage of this preliminary phase was carried out in 2021-2022, focusing on the governance and structure of the NAP-E and the studies to be carried out for the analysis of climate risks and vulnerabilities.

- *Governance:* A Steering Committee was created, made up of the Ministry of Industry, Energy and Mining (MIEM)—the institution that leads the NAP-E—, the MA, the state-owned energy companies UTE and ANCAP, and the Budgeting and Planning Office (OPP).
- *Structure of the NAP-E:* The main lines of action for the definition of measures are: Energy supply and energy demand; Securing/protecting current and future infrastructure; Climate emergency management/disaster risk reduction; Awareness raising, institutional strengthening, and capacity building; Integration of adaptation into energy and climate planning processes.
- *Analysis of Climate Risks and Vulnerabilities:* a study was defined under the robust decision-making methodology (RDM) to examine the power sector, framed within the decision-making methods under deep uncertainty (DMDU). These methods are suitable for developing robust and adaptive policy strategies in contexts of high uncertainty, particularly for the energy sector and climate issues. Work is underway to put together local teams to implement the studies in 2023.

**Main barriers and challenges:** Some information and knowledge gaps have been identified for carrying out projection studies of climate variables relevant to the energy sector, in particular, the availability of long and consistent solar irradiance series, wind average speed and gusts, among others. The database compilation for those data started with the installation of wind farms and photovoltaic solar energy, but this data, at best, reaches 10-year series.

Extreme events, such as thunderstorms, hail storms, and wind and rainfall extremes, which are much more specific and difficult to observe and predict, are more challenging to study due to the lack of adequate instruments and measurement networks.

It is also challenging to record damages and losses and to assess their impact on energy supply, infrastructure, and users. Thus, this will be one of the main action areas of the NAP-E.

Mainstreaming the concept of adaptation in the energy sector is also a challenge the NAP-E will address through actions that seek to improve the understanding of the issue by all actors in the sector.

The energy sector and particularly the power sector, have a long history of adaptive response actions, mainly due to the variability of resources for hydropower generation. Hydropower accounts for approximately 40-50 % of total power generation, and the high inter-annual rainfall variability leads to significant changes in supply. While this may be an advantage, it also results in a certain sluggishness

that is sometimes difficult to break away from, when exploring the availability of other energy resources for the long term due to climate change.

**Main lessons learned and best practices:** The fact that the preparation process is being carried out in a participatory manner, bringing together the main actors of the sector (academia, government, state-owned companies, private companies, etc.) to include the different visions and pull together, promotes understanding and will, undoubtedly, facilitate the preparation, discussion, and implementation of the adaptation actions.

The leadership and commitment shown by the government is critical for the development and implementation of the Plan; and so is coordination with the entire mitigation and adaptation ecosystem in the country, which is carried out through the SNRCC.

## 7.5. Adaptation efforts to be recognized

**Planning:** Uruguay has devoted significant time and resources to strengthen adaptation planning by area and sector. Throughout this process, it has also incorporated cross-cutting issues, like climate risk management, flood risk mapping, and land-use planning, emphasizing gender mainstreaming, diversity, human rights, and generations.

**Training, Awareness, and Participation:** It is crucial to stress the progress that has been made in the widespread adoption of adaptation and the weight of adaptation in public policies and development policies throughout the process of preparation of the PNCC, the NAPs, and the NDC, in line with the Sustainable Development Goals and the 2030 Agenda (SDGs). The SNRCC and the departmental governments have played a key role in this achievement. The work of the technical teams has been outstanding and strengthened over time by improving planning, communication, and reporting systems. It should also be noted that these documents were prepared in a participatory manner; this strengthened their legitimacy and led to greater awareness. Gender issues, as a cross-cutting aspect of the policies, have also been made visible and mainstreamed through these processes.

**Integration of the childhood and adolescence perspective:** Uruguay has made progress in integrating the perspective of adolescents and young people, recognizing their right to participate in the design of the second NDC and contributing to strengthening training and empowerment. The challenge is to increase sensitivity regarding the involvement of children across the board, recognizing that children bear a disproportionate share of the burden imposed by climate change. Vulnerability to climate change impacts the economic, physiological, social, political, and environmental dimensions; thus, it is critical that the climate change commitments defined by different public policies are sensitive to children. Extreme weather events such as floods, droughts, and cold and heat waves pose unique threats to children's health and well-being.

**Relocations as a housing policy:** Uruguay has made progress in mainstreaming climate change adaptation in housing policies. Relocation policies, promoted and monitored by the first NDC, are clear efforts to be recognized, and it is particularly worth highlighting that such actions are carried out with national funding.

**Ecosystem-based adaptation:** In preparing its NAPs, Uruguay has prioritized adaptation actions focused on EbA. The efforts made for its implementation are reflected in coastal management, especially in pilot sites, which make it possible to validate its effectiveness and replicability along the coastal area. In addition, sustainable urban drainage systems (SUDS) have been implemented in several cities thanks to the joint effort

of the national and departmental governments and academia. This has laid the foundations for incorporating this approach into developing the future National Urban Drainage Plan.

***Diversification of the energy matrix:*** Uruguay has stood out, and still does, as one of the countries with the highest proportion of renewables in its electricity matrix, despite being a developing country. This transformation, which started early on as a national effort, has made it possible to achieve rapid decarbonization of the electricity matrix, an increase in energy sovereignty, and a decrease in the uncertainty of the cost of supplying demand (CSD). Furthermore, regarding climate change adaptation, the first energy transition can be considered a major adaptation action. The diversification of the electricity matrix towards non-traditional renewables has made it possible to reduce dependence on one of the primary sources of electricity in our country, hydropower, which is affected by the ACCV. The capacity installed in other energy sources such as wind, solar, and biomass, has made it possible to reduce the system's vulnerability to low rainfall. Thanks to the diversification of the electricity matrix, the country's current power system makes it possible to maintain very high levels of renewables even if rainfall levels are below or far below the historical average. Before the energy transition, this led to significant use of fossil fuels as an alternative and supplementary energy source.

***Flood Risk Maps (FRMs):*** Currently, in Uruguay, there are 11 towns with a very high risk of flooding, 15 with high risk, and 42 with a medium risk, for a total of 68. Of these, 9 have FRMs approved by the departmental board, 7 have an FRM in place, another 7 are in the process of preparing them, and 27 cities have made headway and completed studies. In addition to designing new risk maps, the first updates of some of those already prepared are underway. Risk mapping is a dynamic process, there is increasingly more and better quality information available for risk characterization, and the dynamics in the territory are changing; in this sense, the objective is to produce the best possible risk map using the updates available.

***Gender mainstreaming:*** The integration of the gender perspective involved the participation of technical experts and decision-makers with different levels of expertise on the matter. This resulted in a capacity-building opportunity concerning the link between the actions of the first NDC and inequalities. In this first stage, the categorization of 100% of the actions of the first NDC implied the implementation of strategies for capacity building and awareness-raising on gender and climate change issues, as well as sectoral gender analyses to identify specific gaps and risks. The review and update of the first categorization for the year 2021 showed a significant increase in gender-responsive actions. This shows that there is a set of gender-responsive actions involved, which are integrated into their planning.

## **7.6. Barriers and challenges to implementing adaptation**

One of the main challenges is to ensure that adaptation is included as a fundamental part of the country's development strategy under a framework for climate risk management that includes adaptation actions that are flexible to the socio-territorial context so that it is possible to moderate or avoid irreversible damage and, at the same time, generate co-benefits.

An important aspect for the success of these initiatives is to reduce current climate vulnerability, while strengthening the adaptive capacity of the population and the resilience of systems. Long-term planning and the human and financial resources needed for this purpose are among the areas currently experiencing difficulties. Development objectives are consistent with adaptation goals, especially when they offer co-benefits such as investment that increases income and tolerance to climate stressors (such as high

temperatures, lack of water, and flooding). Advances in development often increase human capital (and other types of capital) and could improve adaptive capacity to climate change. It is noted that, in several areas, the most attractive adaptation measures are those that offer development benefits in the short term and reduce vulnerability in the long term. In this sense, adaptation costs will initially be devoted to preventive measures, and in the long term, reactive measures will become more relevant.

In line with the AdCom2 preparation process, explained in section 7.1.2, a workshop<sup>16</sup> was held with the institutional adaptation technical leaders of the SNRCC. The following barriers to the implementation of adaptation were identified:

**Knowledge and Technology:** lack of knowledge and lack of access to information, and difficulty accessing information are severe constraints to adaptation. Several limitations associated with this category were observed in the country: i) Lack of climate information: there's little to no data, and it isn't easy to obtain high-resolution, high-quality, and continuous climatic, oceanic, and hydrological series. In addition, there is a small number of comprehensive national studies. All of this poses challenges for dealing with changes in climate variability and identifying trends in the impacts of extreme events. This hinders studies of the frequency and variability of extreme events, as well as the assessment of current and future impacts and vulnerability to climate. ii) Lack of studies on climate action and inaction: Studies on the costs-benefits of implementing adaptation actions and the costs avoided, and of the impact of climate change and variability-related events in most areas (agriculture, water resources, biodiversity and ecosystems, coasts, health, cities) to improve loss and damage assessment. iii) Lack of adequate dissemination of information: studies are often left in internal reports that are not widely disseminated and difficult to access. This limits knowledge, hinders its progress, and generates overlapping activities. iv) Lack of comprehensive and interdisciplinary studies: the complex interactions between climate and non-climate drivers make it difficult to assess impacts and projections, limiting the understanding of the complex interactions between natural and socioeconomic systems.

**Governance:** institutional capacity is a critical factor that can constrain adaptation. In several institutions, the lack of mandate or prioritization of the subject matter and the lack of information or professional capacity to select and implement adaptation options are a constraint. The lack of coordination among the different members of governance networks (government, market, and non-governmental organizations) is often a major national constraint. Therefore, the challenge in adaptation planning and implementation is to determine "who" decides which options are suitable or mal-adaptation options and which are successful or unsuccessful. It is key to exchange ideas among sectors with different visions and interests in order to try to reconcile positions and agree on the way forward. The constant and diverse interactions between weather, environmental, economic and social factors highlight the need for integrated actions addressing the different challenges humans and natural systems face.

**Funding for climate action:** Uruguay is particularly vulnerable to the adverse effects of climate variability and change. This is due to its open economy heavily based on agro-industrial production and services and a thriving tourism sector in coastal areas, home to more than 70 % of the country's population. The pilot report on the 2018 loss and damage due to weather-related events identified 32 types of events that generated losses and damages, amounting to almost USD 564 million. The country has made significant progress by completing three NAPs, which helped establish a baseline, diagnose, and plan adaptation, and is now also beginning the preparation of two more. Funding is, therefore, essential to enable the transition from planning to actual implementation of the adaptation measures identified as priorities in NDC2 and NAPs.

---

<sup>16</sup> [Digital Citizen Participation Platform](#) for the preparation of the NDC2 on Climate Change.

Access to funding for adaptation implementation is a political priority for Uruguay. Still, the country has nevertheless been a pioneer in implementing early mitigation actions. Access to and availability of funding sources for adaptation actions, at the national and mainly subnational levels, from both international and public sources, continues to be challenging. Additional international resources are needed to address adaptation through traditional and innovative mechanisms. Addressing adaptation as early as possible helps avoid future costs related to losses and damages. In this sense, it is crucial to understand the strategic relevance of adaptation, and global response needs to strike a balance among the resources allocated to mitigation and adaptation in the shortest possible time.

**Private sector engagement:** Adapting to climate change's impacts is not the government's sole responsibility but requires the cooperation of multiple stakeholders [26]. Within this framework, involving the private sector in identifying climate change risks and in response and adaptation measures is a priority for Uruguay. While the initial focus is on the role of the private financial sector (risk management options, insurance or funding of large projects), the implementation of adaptation actions is broader and covers different types of private companies, whether they are small farmers, small and medium-sized enterprises or even multinational corporations [27]. This diversity of stakeholders requires a greater effort to identify the different motivations and incentives that will guide their actions and the potential for them to participate in the different adaptation strategies and measures. On the one hand, productive activity generates impacts that can reduce the adaptive capacities of a territory (e.g., impacts on coastal ecosystems) or of certain communities. On the other hand, the risk associated with the effects of climate change is greater for certain production chains or lines of business. Several factors condition the vision of companies regarding the need to adapt: their past experiences, thus, companies that have already experienced negative impacts due to current climate variability and extreme events tend to be more committed to climate change adaptation; whether the damage or impact is on public goods or property (e.g., beaches) or private (agricultural production); the uncertainty of future climate impacts and the short-term horizon used in business management. [28] In addition, companies would be more willing to adapt if they receive incentives or subsidies to help them cope. Finally, given the research requirements involved in these processes, providing knowledge, technology and information guidance to this sector becomes a key challenge in facilitating the incorporation of adaptation into companies' business models.

**Ecosystem-based adaptation:** although Uruguay prioritizes the EbA approach in planning, more work is needed to link ecosystem functions and services at the territorial level with the reduction of specific vulnerabilities, to build cases and best practices that include cost-benefit or cost-effectiveness analysis, and to make EbA explicit when it is used. It is necessary to use this approach to strengthen the technical capacities at the national and subnational levels and those of the private sector, such as infrastructure and construction services companies. Although access to adaptation funding is challenging, it is even more challenging when it comes to EbA, as it requires a greater effort in the initial design of the solutions and the cost-effectiveness analysis. Therefore, it is critical to produce knowledge on EbA and promote it as an effective alternative, focusing on environmental integrity.

**Political will:** in some cases, it poses challenges or barriers that slow down adaptation planning and implementation and reduce the range of options and opportunities available for action. Sometimes administrative changes produce changes in priorities and agendas, resulting in the interruption of plans, programs and projects. This generates tensions between long-term needs and short-term action. Capacity building is needed at all levels of public administration to align objectives and development paths and draw attention to the synergies and co-benefits between adaptation actions and improvements in environments, infrastructure and people's quality of life.



## 7.7. Best practices and lessons learned

***Interinstitutional, multilevel and transdisciplinary governance.*** One of the best practices to highlight, and one that Uruguay intends to maintain and strengthen, is creating a framework for interinstitutional governance and a multilevel and transdisciplinary approach to climate change adaptation. The adaptation measures of NDC1 and AdCom1 are implemented within the scope of the SNRCC. The NAPs created their own technical committees under the SNRCC, which were maintained as a technical decision-making and advisory body throughout the development of adaptation planning in each sector or territory. These committees brought together technical experts from the different units of the SNRCC agencies with competencies in the productive sector or territory in question, experts from the University of the Republic, and representatives of the departmental governments.

Creating and maintaining a national inter-institutional setting where shared objectives for adaptation to climate change are established, adaptation actions are designed, implemented, monitored and evaluated, progress is transparently shared, and transdisciplinary participation is ensured, makes it possible to enhance results, institutionalize processes, and establish capacities at the national, subnational and academic levels.

Evidence also shows that adaptation planning at the national level promotes adaptation planning at the departmental level. Multilevel governance allows for dialogue between the national and departmental levels, and the encouragement and progress of some departments in adaptation planning and implementation. The maturity of adaptation planning instruments varies among departmental governments. These are key components to ensure the sustainability of adaptation in Uruguay and for planning to turn into implementation based on the local contexts.

***Ecosystem-based adaptation.*** Considering that adaptive capacities depend on environmental integrity, biodiversity conservation, and ecosystem health, and recognizing the role that these can play in the design of solutions, the EbA approach has been key in the design of AdCom2 measures. The number of measures in the area of biodiversity and ecosystems have increased in number and level of ambition compared to AdCom1, and the approach has also been mainstreamed in other areas.

***Transparency, monitoring, evaluation and learning.*** The relevance of measuring and reporting climate change adaptation has been demonstrated. The methodologies used to monitor AdCom1 adaptation measures—which managed to quantify progress towards the goals set—have made it possible to translate the meaning of adaptation for the local context into concrete methodological processes, define a baseline and estimate progress with respect to adaptation priorities, and what remains to be done. Due to the multidimensional and qualitative nature of adaptation, it is necessary to update and improve these methodological processes for more accurate monitoring, from the moment the measures are designed. At the same time, it is important to establish a mechanism for monitoring, evaluating and learning from the measures based on the progress achieved in their implementation; since adaptive management is a critical part of climate change adaptation processes. At the same time, by defining metrics and indicators for monitoring adaptation measures, we identified crossovers, co-benefits and, in some cases, trade-offs with climate change mitigation measures. This makes it possible to see the synergies between adaptation and mitigation and the potential points of conflict, which is key to ensure the efficiency of the efforts and resources allocated to implementing these measures, and to report on their progress.

***Generation of open-access information and data.*** In order to improve the country's and productive sectors' adaptive capacities, it is a priority to have high-quality and open-access data and records on national and local hydroclimatic events in the country and on the resulting losses and damages. Uruguay has made significant

progress in terms of its open government and open data policy, in the generation of comprehensive information systems and viewers, and in the collection of evidence and data, which it must continue to strengthen.

**Stakeholder engagement.** One lesson learned is that there is willingness and interest on the part of local communities, civil society organizations, micro, small and medium-sized enterprises, the third level of government and young people—as affected actors, but also as drivers of development at the local level—to participate in the detection of vulnerabilities, planning and implementation of solutions to enhance adaptive capacity and manage risks in the face of climate change. Thus, there is a need to develop or strengthen processes and tools that are specific to each stakeholder group to ensure increasingly efficient participation.

**Gender mainstreaming.** The review and update of AdCom1 gender measures carried out based on the first categorization of 2021, showed a significant increase in gender-responsive measures. This is evidence of the existence of a set of gender-responsive actions that are integrated into the different planning processes.

## 7.8. Cooperation to enhance adaptation at the national, regional and international levels

In a climate risk context with increasingly frequent and severe impacts and uncertainty, it is critical to strengthen cooperation at the national, regional, and international levels to enhance the implementation of adaptation actions.

At the national level, Uruguay has the SNRCC. This inter-institutional technical exchange forum brings together different ministries and other bodies, such as the Congress of Mayors, civil society organizations, and academia.

In addition to the Coordination Group (GdC), several working groups have been set up under the scope of the SNRCC, made up of technical experts representing the institutions covering the different subjects around climate change. There are two closely connected groups for adaptation: The Climate Change Adaptation Working Group (CCA-WG) and the Working Group for Climate Change Adaptation in Cities, which was set up during the preparation of the NAP-Cities and which, after its submission to the UNFCCC, is now responsible for reviewing, updating and outlining the five-year work plans and promoting the adaptation actions of the NAP-Cities. There is also a network working group with the municipalities of the coastal departments, Colonia, San José, Montevideo, Canelones, Maldonado and Rocha, to follow up on the actions planned within the framework of the NAP-Coasts.

Other Working Groups in place, addressing more cross-cutting topics but contributing to the development of adaptation actions are: Loss and Damage; Climate Services; Gender; and Education, Communication, and Awareness.

At the regional level, participation is enhanced in settings where adaptation to climate change is critical, such as the Meeting of Ministers of the Environment of MERCOSUR and the Community of Latin American and Caribbean States (CELAC).

In addition to the possibility of progressing in regional climate change adaptation projects, the EU's Cooperation Program with Latin America and the Caribbean—EUROCLIMA—and the Ibero-American Network of Climate Change Offices (RIOCC), are an important setting for the exchange of best practices at the regional level.

Among the regional initiatives, we can find the Binational Project (Uruguay - Argentina), which is currently being implemented: Adaptation to Climate Change in Vulnerable Cities and Coastal Ecosystems of the Uruguay

River. This project is funded by the Adaptation Fund, and its program allows for the implementation of pilot adaptation actions to reduce vulnerability to floods and enhance river ecosystems knowledge and management. Together with Argentina, Bolivia, Brazil, and Paraguay, Uruguay is also part of developing the Strategic Action Plan for the La Plata Basin (PAE). This plan promotes adaptation actions focused on comprehensive water resources management, risk management, sustainable land management, research and technology development, among others.

At the international level, Uruguay participates actively in the climate change negotiations that take place mainly within the scope of the UNFCCC. In this context, Uruguay considers compliance with the provisions on international cooperation established under the UNFCCC and the Paris Agreement to be especially relevant.

It is also critical to achieve the global adaptation goal established in the Paris Agreement. To this end, it is essential to make steady progress and strengthen international cooperation to address the challenges relating to methodological, empirical, conceptual and political visions to achieve this goal.

Uruguay is committed to advancing the global goal of adaptation and the global stocktake. A concrete action towards this end is submitting three national adaptation plans (NAP-Agr, NAP-Coasts, NAP-Cities and Infrastructures) and preparing two more that are currently underway (NAP-Health and NAP-Energy), in addition to the first and current AdComs.

## **7.9. Monitoring and evaluation**

The adaptation measures included in the first NDC have been monitored, and the progress in their implementation has been reported in detail in the public viewer tracking system<sup>17</sup>. The progress in the implementation of adaptation measures is outlined, and management indicators are generated based on the achievement of the milestones or stages defined for each measure. These illustrate the progress made in a transparent and quantitative manner.

The evaluation of adaptation actions in terms of impact continues to be a challenge, both for AdCom1 and the current AdCom2. In addition, the challenge of migrating to a monitoring, evaluation and learning (MEL) framework is becoming a global trend. In addition to monitoring adaptation actions management, this metric makes it possible to assess, adjust and adapt methodological processes to improve the development of strategies and actions to reduce vulnerability, increase adaptive capacities, identify risks, strengthen the resilience of socio-ecological systems and significantly reduce losses and damages.

Another strength of the MEL framework is the opportunity to learn, and exchange good practices and the potential to enhance adaptation processes, considering: the influence of each particular context where adaptation actions are implemented; the fluctuating weather circumstances that require greater flexibility as an intrinsic principle in adaptation processes; the uncertainty about the direct and collateral effects of adaptation actions and the need to generate co-benefits for the local development and social welfare of the population.

The monitoring and evaluation plans defined within each NAP will inform the monitoring and evaluation of the AdCom2 measures. This will imply a simultaneous effort and a need for coordination and mutual support among the teams in charge.

---

<sup>17</sup> See [NDC viewer - Progress and other related indicators](#).

The Biennial Transparency Reports will describe the progress made on adaptation MEL of the AdComs, in line with the guidelines outlined in the modalities, procedures and guidelines for the transparency framework for action and support outlined in Article 13 of the Paris Agreement (Decision 18/ CMA.1).

MEL efforts will include reviewing, monitoring and updating gender measures in each of the AdCom actions, building on the efforts already made to achieve a gender-responsive monitoring system.

#### **7.10. Means of implementation**

This National Adaptation Communication is considered necessary and a priority for Uruguay to tackle the challenge of climate change and move forward on the path of sustainable development. Uruguay is particularly vulnerable to the effects of climate change. The country needs to find a way to generate more opportunities for its inhabitants, tackle poverty and destitution, and achieve higher social equity while preserving its ecosystems and biodiversity.

The implementation of this Communication will only be possible through access to external means of implementation, mainly through non-reimbursable funds, but also through access to financing on preferential terms, technology transfer, capacity building and foreign direct investment from developed countries. The availability of additional means of implementation provided by developed countries is a requirement for Uruguay to implement climate action within a framework of just transition and climate justice.

Uruguay has a good compliance and transparency record when receiving external means of implementation for climate action. The implementation of this AdCom and the climate urgency require the flow of means of implementation into the country to start as soon as possible. In this sense, Uruguay is an ideal destination for the implementation of pilot actions that can then be replicated in other countries.

Beyond the adaptation efforts already implemented and to be implemented in Uruguay, the impacts of climate change result in losses and damage in our society, livelihoods, infrastructure and ecosystems, and this is why the country needs access to funds specifically designed for this purpose.

## **8. Information needed to facilitate the clarity, transparency and understanding of the Second Nationally Determined Contribution**

### **8.1. Scope and coverage**

Mitigation objectives in Uruguay's NDC address CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions and the HFC consumption in the country. As reported by the 2019 NGHGI (GWP<sub>100</sub> AR5), these account for 99.2% of Uruguay's CO<sub>2</sub>-eq emissions.

Pursuant to the provisions of the Paris Agreement, only the unconditional objectives of Section 5.1.1 shall be bound to the enhanced transparency framework for action and support defined in Article 13 [1] and to the eventual provisions to facilitate implementation and promote compliance, in a manner that is non-adversarial and non-punitive, as defined in Article 15 [1] and as decided by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

### **8.2. Main assumptions**

The mitigation objectives in Uruguay's NDC were defined considering the country's current development pathway, excluding the structural transformations of its productive matrix by 2022, and taking into account the official economic growth projections for 2022-2026 and adopting an estimated GDP growth between 2027 and 2030.

The following electric vehicle fleet defines the 2030 CO<sub>2</sub> objective value under Section 5.1.1.1: 900 buses, 600 cabs, private hire and rideshare app cars, 5,000 utility vehicles and 20,000 light vehicles. The following process improvements at the ANCAP refinery are also presumed: replacement of fuel oil with natural gas, increased condensate recovery and advanced control in some processes and equipment. Furthermore, to define the conditional objective to specific additional means of implementation value, a fleet of approximately 600 hydrogen-powered trucks is considered.

### **8.3. Methodological approach for estimating emissions and removals**

Uruguay's NDC2 mitigation objectives were prepared using the 2006 IPCC Guidelines. It will be monitored using this or another methodology in accordance with the Intergovernmental Panel on Climate Change and approved by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement.

### **8.4. Implementation and reporting period**

The implementation of NDC2 may begin before 2026 and its effects will be reflected in the Biennial Transparency Reports submitted between 2028 (1990-2026 NGHGI) and 2034 (1990-2032 NGHGI), given that in order to calculate the values of the indicators in section 5.1 we will need to have estimates on the 2031 NGHGI.

### **8.5. Types of unconditional and conditional to additional specific means of implementation objectives and measures**

The unconditional mitigation objectives in Uruguay's 2030 NDC, as well as the mitigation measures included in Section 5.3.1, may tap into the Foreign Direct Investment, the Clean Development Mechanism of the Kyoto Protocol, Article 6 of the Paris Agreement [1], plus the provision of additional means of implementation, including funding, technology transfer and capacity building.

The conditional mitigation objectives in Uruguay's 2030 NDC and the mitigation measures set forth in Section 5.3.2 will need the support of specific additional means of implementation, which would mainly entail, but it is not limited to, non-refundable and/or concessional external public funding. The type of support will be defined and reported by Uruguay on a case-by-case basis, and in relation to the corresponding conditional objectives in Section 5.1.2 and/or the measures in Section 5.3.2.

#### **On the measures of Chapters 4 and 6:**

The measures listed in Sections 4 and 6 have been deemed to be necessary and priorities for Uruguay to tackle the challenge of climate change, through adaptation, capacity building and knowledge creation. However, the full implementation of these actions will require support from means of implementation, including funding, technology transfer and capacity building.

#### **8.6. Definition of the target year and data sources to facilitate monitoring, reporting and verification of the NDC mitigation objectives under Article 13 of the Paris Agreement and Decisions 1/CP.21 and 4/CMA.1**

##### **Definition of the target year and sources to verify the global GHG emissions objectives:**

- The target year is 2030, from January 1 through December 31;
- CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O emissions will be those reported in the 2030 NGHGI building on the emissions subcategories estimated in the 2019 NGHGI (last NGHGI available at the time of preparing NDC2), without considering category 3.B Land (category according to IPCC 2006 Guidelines) and subcategory 3.C.4, F<sub>SOM</sub> source, which is directly dependent on category 3.B. Land. In the 2019 NGHGI, this source only accounted for less than 0.78 % of national emissions (without considering category 3.B Land). Category 3.B Land showed net removals over the entire 1990 - 2019 series and specific conservation and carbon stock enhancement targets are set for Land-Use and Forestry.
- SF<sub>6</sub> emissions are not included, since it accounts for less than 0.003% of national emissions (without considering category 3.B Land).
- The CO<sub>2</sub> target under Section 5.1.1.1 may be adjusted based on 2030 hydraulicity conditions as follows:
  - If hydropower generation in 2030 is greater than or equal to 6,070 GWh<sup>18</sup>, the 2030 objective value, in Gg, will be the value listed in Section 5.1.1.1 of this NDC;
  - If hydropower generation in 2030 is less than 6,070 GWh, the value that results from subtracting CO<sub>2</sub> emissions from the 2030 exported power generation and 440 Gg of CO<sub>2</sub> that represent the level of power generation emissions in a year of average hydraulicity from the 2030 CO<sub>2</sub> emissions of Category 1.A.1.a.i Power Generation, will be added to the 2030 objective outlined in the figure under Section 5.1.1.1 of this NDC, in Gg, according to the following formula:
    - 2030 target value (in Gg CO<sub>2</sub>) = X + (Z – Y – 440)
    - Where:
      - X = 2030 CO<sub>2</sub> target value as listed in Section 5.1.1.1 of this NDC, Gg.
      - Z = CO<sub>2</sub> emissions from category "1.A.1.a.i. - Power generation" of the year 2030, according to 2030 NGHGI 2030, Gg.
      - Y = CO<sub>2</sub> emissions from exported power generation in the year 2030, published in the 2030 National Power Balance, Gg.

<sup>18</sup> Generation level assuming the average hydraulicity value.

- 440 = Level of CO<sub>2</sub> emissions from power generation for a year of average hydraulicity considering projected energy demand by 2030, Gg.
  - (Z - Y - 440) will be less than or equal to 1,350 Gg CO<sub>2</sub>.
  - If (Z - Y - 440) is negative, the value used will be 0.
- The HFC consumption reduction objective is defined based on a baseline that will be established from the average consumption for 2020 to 2022, as indicated in the text of the Kigali Amendment to the Montreal Protocol approved in 2016; that value will be the one reported to the Ozone Secretariat when appropriate.
  - The consumption (considered equal to imports) of HFCs will be reported as activity data in the 2030 NGHGI.

**Definition of the target year and sources to verify the specific GHG emission intensity objectives for beef production:**

- CH<sub>4</sub> and N<sub>2</sub>O intensity in 2030 (Gg gas/Gg beef production in live weight) is estimated as the average annual intensity in the 2027-2031 period, excluding the annual maximum and minimum values; CH<sub>4</sub> and N<sub>2</sub>O emissions are those of the years 2027 to 2031, reported in the NGHGI, considering only CH<sub>4</sub> emissions from enteric fermentation and manure management, and N<sub>2</sub>O from direct and indirect emissions in managed soil from grazed beef cattle urine and dung. The Statistical Yearbook of the Directorate of Agricultural Statistics (DIEA) under the Ministry of Livestock, Agriculture and Fisheries (MGAP) will report beef production (measured as Gg of beef in live weight) for the 2027-2031 period.

**Definition of the target year and sources to verify the specific conservation and carbon stock enhancement objectives for Land-Use and Forestry:**

- Native forest area: area reported for the year 2030 in the Forest cartography of the General Forestry Directorate (hereinafter DGF) of the MGAP.
- Forest plantation area: effective area of forest plantation under management in 2030, reported by the Directorate of Agricultural Statistics (DIEA).
- Shade and shelter forest plantation area, including silvopastoral systems: shade and shelter forest plantation area in 2030, including silvopastoral systems, reported in the Forest cartography of the DGF of the MGAP.
- Grasslands under good natural grassland and breeding herd management practices: this results from the systematization of information from a survey of livestock farmers on the management of the natural pastures and the practices carried out with cattle and sheep.
- Peatland area: the peatland area in 2030 will be obtained from a map developed using satellite images and field verification.
- Cropland area: The cropland area under Soil Use and Management Plans (PUMS) in 2030 will be obtained from the database of the PUMS management system of the General Directorate of Natural Resources of the MGAP. The cropland areas that include pastures in more than 30% of the rotation length are those that will be able to maintain SOC levels. The cropland areas that include pastures in more than 60% of the rotation length are those that will be able to increase SOC levels.

## 8.7. Base years, base year values or latest available data for NDC2 mitigation objectives

### Latest available data on global GHG emissions objectives:

- 6.707 Gg of CO<sub>2</sub>, according to the 2019 NGHGI (latest NGHGI available at the time of preparing NDC2), without considering category 3.B. Land;
- 760 Gg of CH<sub>4</sub>, according to the 2019 NGHGI (latest NGHGI available at the time of preparing NDC2), without considering category 3.B Land;
- 25 Gg of N<sub>2</sub>O, according to the 2019 NGHGI (latest NGHGI available at the time of preparing NDC2), without considering category 3.B Land and subcategory 3.C.4. source F<sub>SOM</sub>.
- Metric tons for each HFC, according to activity data reported in the 2019 NGHGI (latest NGHGI available at the time of preparing NDC2). The values are presented in the following table:

Gas	Metric Tons
HFC-32	25.018
HFC-134	89.578
HFC-125	51.038
HFC-143a	26.543
HFC-227ea	0.900
HFC-152a	-
HFC-23	-
HFC-245fa	-
HFC-365mfc	-

### Baseline year and values of the specific GHG emission intensity objectives for beef production:

- CH<sub>4</sub> emissions from enteric fermentation and manure management of non-dairy cattle, and direct and indirect N<sub>2</sub>O emissions in managed soils from non-dairy cattle urine and dung for the 1987-1989 period and 1991 are estimated by technical experts of the Office of Agricultural Policy and Planning (OPYPA) of the Ministry of Livestock, Agriculture and Fisheries (MGAP). Emissions for 1990 are taken from the 1990 NGHGI. Beef production (Gg of beef in live weight) for the 1987-1991 period is also estimated by the Office of Agricultural Policy and Planning. Detailed information on the calculation methodology is available in the study conducted by Bervejillo, J and Garcia, F., published in the 2018 OPYPA Yearbook<sup>19</sup>. The values are shown in the table below:

Absolute values						
Gas and activity	Unit / Year	1987	1988	1989	1990	1991
CH <sub>4</sub> Beef cattle (BC)	Gg	517.76	546.55	532.87	485.06	469.49
N <sub>2</sub> O Beef cattle (BC)	Gg	15.69	16.57	16.15	14.70	14.23
Live weight of beef cattle produced	Gg	850.11	656.09	346.96	567.88	714.94
Relative values - Intensity						
Gas and activity	Unit / Year	1987	1988	1989	1990	1991
CH <sub>4</sub> Beef cattle (BC) / Live weight of beef cattle produced	Gg/Gg	0.61	0.83	1.54	0.85	0.66
N <sub>2</sub> O Beef cattle (BC) / Live weight of beef cattle produced	Gg/Gg	0.02	0.03	0.05	0.03	0.02

<sup>19</sup> [2018 OPYPA Yearbook](#), MGAP Edition 26.



Base values		
Gas and activity	Unit / Year	Values
CH <sub>4</sub> Beef cattle (BC) / Live weight of beef cattle produced	Gg/Gg	0.78
N <sub>2</sub> O Beef cattle (BC) / Live weight of beef cattle produced	Gg/Gg	0.02

- The estimation of emissions may be modified, affecting the results, due to improvements in estimation methodologies. When estimates for a given year change, the GHG emissions and removals for the entire series, including the baseline year, must be reviewed and eventually recalculated to obtain a consistent time series. In the latter case, the estimates for 1987, 1988, 1989, and 1991 are calculated from the implicit emission factor for 1990 multiplied by the number of heads in the corresponding year.

#### Baseline years, baseline year values or latest available data for specific conservation and carbon stock enhancement objectives for Land Use and Forestry

- Native forest area: 2012 area reported in the Forest cartography of the DGF of the MGAP (baseline value: 849,960 ha).
- Forest plantation area: effective area of forest plantation under management in 2020, reported by the DIEA (baseline value: 1,053,693 ha).
- Shade and shelter forest plantation area: shelter and shade forest plantation area in 2018 reported in the DGF-MGAP 2018 Forest Mapping and area of silvopastoral systems estimated from a mapping exercise carried out in 2020 using satellite images and field verification (baseline value: 88,348 ha).
- Area of grasslands under good natural grasslands and breeding herd management practices: this is the result of the systematization of information from a survey of livestock farmers conducted in 2020 on the management of the natural grasslands, and the practices carried out with cattle and sheep (latest value available: 652,455 ha).
- Peatland area: the peatland area in 2020 was obtained from a map carried out using satellite images and field verification (total area 2020: 9,513 ha).
- Cropland area: the cropland area under Soil Use and Management Plans (PUMS) is obtained from the database of the PUMS management system of the General Directorate of Natural Resources of the MGAP. The cropland areas that include pastures in more than 30% of the rotation length can maintain SOC levels (latest value available, 2021: 570,299 ha). The cropland areas that include pastures in more than 60% of the rotation length can increase SOC levels (latest value available, year 2021: 271,482 ha).

## **8.8. International transfer of mitigation outcomes under Article 6 of the Paris Agreement**

While Uruguay does not rule out taking part in international GHG mitigation trading markets, thus prioritizing compliance with the commitments outlined in NDC2 as stated herein. Any transfer of GHG mitigation reduction outcomes pursuant to Article 6 of the Paris Agreement, of those units that have been achieved in Uruguayan territory, must be expressly authorized through a resolution issued by the Ministry of Environment (MA) acting as the competent national authority to implement and apply the Convention and the Paris Agreement. All other GHG mitigation outcomes obtained in Uruguayan territory that have not been authorized for their transference, shall be counted towards the achievement of the mitigation objectives of Uruguay's NDC2<sup>20</sup>.

---

<sup>20</sup> Our team strives for the use of language that does not discriminate between men and women. However, there is no agreement among linguists on how to achieve this in our language. Therefore, and to avoid the overburden of using "o/a" in Spanish to show the presence of both sexes, we have chosen to use the traditional generic masculine in the understanding that every time we use such gender, it represents men and women.

## List of Acronyms

**ACCV:** Adaptation to Climate Change and Variability  
**AdCom2:** Second Adaptation Communication  
**AFOLU:** Agriculture, Forestry and other Land Use  
**ANCAP:** The National Fuel, Alcohol and Cement Administration  
**ANEP:** National Public Education Administration  
**AR2:** Second Assessment Report of the Intergovernmental Panel on Climate Change  
**AR5:** Fifth Assessment Report of the Intergovernmental Panel on Climate Change  
**CCA-WG:** Climate Change Adaptation Working Group  
**CDS:** Cost of Demand Supply  
**CELAC:** Community of Latin American and Caribbean States  
**CH<sub>4</sub>:** Methane  
**CMA:** Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement  
**CMIP:** Coupled Model Intercomparison Project  
**CO<sub>2</sub>:** Carbon dioxide  
**DGF:** General Forestry Directorate  
**DIEA:** Directorate of Agricultural Statistics  
**DINABISE:** National Biodiversity and Ecosystem Services Directorate  
**DINACC:** National Climate Change Directorate  
**DINACEA:** National Directorate of Environmental Quality and Assessment  
**DINAGUA:** National Water Resources Directorate  
**DINAVI:** National Housing Directorate  
**DINOT:** National Land-use Planning Directorate  
**DNE-Sinae:** Sinae National Emergencies Directorate  
**EbA:** Ecosystem-based Adaptation  
**ENACE:** National Action for Climate Empowerment Strategy  
**ENSO:** El Niño Southern Oscillation  
**FRM:** Flood Risk Map  
**F<sub>som</sub>:** Nitrogen mineralization associated with loss of soil organic matter resulting from change of land use or management of mineral soils  
**Gg:** Gigagrams  
**GGA:** Global Goal on Adaptation  
**GHG:** Greenhouse gases  
**GWP:** Global Warming Potential  
**ha:** Hectare  
**HFC:** Hydrofluorocarbons  
**INUMET:** Uruguayan Institute of Meteorology  
**IOM:** International Organization for Migration  
**IPCC:** Intergovernmental Panel on Climate Change  
**IPPU:** Industrial Processes and Product Use  
**JNM:** National Migration Board  
**ktoe:** Kilotonnes of oil equivalent  
**L&D-WG:** Loss and Damage Working Group  
**LTS:** Long-term Climate Strategy for Low Emission and Climate Resilient Development  
**MA:** Ministry of Environment  
**MEF:** Ministry of Economy and Finance  
**MERCOSUR:** Southern Common Market  
**MGAP:** Ministry of Livestock, Agriculture and Fisheries

**MIEM:** Ministry of Industry, Energy and Mining  
**MINTUR:** Ministry of Tourism  
**MRREE:** Ministry of Foreign Affairs  
**MSP:** Ministry of Public Health  
**MVOT:** Ministry of Housing and Land-use Management  
**MVOTMA:** Ministry of Housing, Land-Use Planning and Environment  
**N<sub>2</sub>O:** Nitrous oxide  
**NAP-Ag:** National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector  
**NAP-Cities:** National Adaptation Plan to Climate Change and Climate Variability for Cities and Infrastructure  
**NAP-Coasts:** National Adaptation Plan to Climate Change and Climate Variability for Coastal Areas  
**NAP-E:** National Adaptation Plan for the Energy sector  
**NAP-Health:** National Health Adaptation Plan  
**NbS:** Nature-Based Solutions  
**NDC:** Nationally Determined Contribution  
**NDC1:** First Nationally Determined Contribution  
**NDC2:** Second Nationally Determined Contribution  
**NDVI:** Normalized Difference Vegetation Index  
**NGHGI:** National Greenhouse Gases Inventory  
**OPP:** Budgeting and Planning Office  
**OPYPA:** Office of Agricultural Policy and Planning  
**PAE:** Strategic Action Plan for the La Plata Basin  
**PFC:** Perfluorocarbons  
**pMRV:** Programming, Monitoring, Reporting and Verification  
**PNCC:** National Climate Change Policy  
**PNGIRED:** National Policy for Comprehensive Emergency and Disaster Risk Management  
**PNGR:** National Waste Management Plan  
**PUMS:** Soil Use and Management Plans  
**R&D&I:** Research, Development and Innovation  
**RCP:** Representative Concentration Pathways  
**RIOCC:** Ibero-American Network of Climate Change Offices  
**SARU:** Agroecological and Resilient Systems in Uruguay  
**SDGs:** Sustainable Development Goals  
**SF<sub>6</sub>:** Sulfur hexafluoride  
**SINAE:** National Emergency System  
**SNIA:** National Agricultural Information System  
**SNIDER:** National Rural Development and Innovation System  
**SNRCC:** National Climate Change and Climate Variability Response System  
**SOC:** Soil Organic Carbon  
**SUDS:** Sustainable Urban Drainage Systems  
**UNFCCC:** United Nations Framework Convention on Climate Change  
**UTE:** National Power Generation and Electricity Transmission Utility

## References

- [1] United Nations, Paris Agreement of the United Nations Framework Convention on Climate Change (UNFCCC), Geneva: United Nations (UN), 2015.
- [2] MGAP, "Estrategia Nacional de Bosque Nativo," Montevideo, 2018.
- [3] IPCC, "Climate-Resilient Pathways: Adaptation, Mitigation and Sustainable Development.," 2022.
- [4] United Nations, "Additional guidance regarding adaptation communication, presented for example as a component of nationally determined contributions, referred to in Art.7, paragraphs 10 and 11 of the Paris Agreement.," Framework Convention on Climate Change, 2018.
- [5] SNRCC, "Estrategia Climática de Largo Plazo de Uruguay," - Uruguay's Long-term Climate Strategy, SNRCC, Montevideo, 2021.
- [6] M. d. P. Bueno, "Segundo Informe IC URU18G31-1243 Consultor/a para elaborar una propuesta de Segunda Comunicación de Adaptación de Uruguay," SNRCC, Montevideo, 2022.
- [7] Ingeniar, "Evaluación probabilista del riesgo e indicador integrado de riesgo por eventos extremos IREE para Uruguay," Ingeniar, Bogotá, 2019.
- [8] I. Losada, "Adaptación al cambio climático en la costa: Terminología y elementos principales," AECID, Cantabria, Cantabria, 2022.
- [9] J. Moreno, C. Laguna-Defior, V. Barros, E. Calvo Buendía, J. Marengo and U. Oswald Spring, "Adaptación frente a los riesgos del Cambio Climático en los países Iberoamericanos," RIOCCADAPT Report, Madrid: McGraw-Hill, 2020.
- [10] IPCC, "Annex I, Glossary. Global warming of 1.5 °C, IPCC Special Report on the impacts of global warming of 1.5 °C relative to pre-industrial levels," IPCC, Geneva, 2018.
- [11] M. Barreiro, F. Arizmendi and R. Trinchín, "Variabilidad y Cambio Climático en Uruguay. Material para capacitación de técnicos institucionales nacionales" MVOTMA-UdelaR Agreement, Project UNDP-URU/16/G34. NAP-Coasts, Montevideo, 2019 (a).
- [12] M. Barreiro, F. Arizmendi and R. Trinchín, "Variabilidad observada del clima en Uruguay.," Document produced within the framework of the National Plan for Coastal Adaptation and the National Plan for Adaptation in Cities, Agreement MVOTMA - School of Sciences, 52 pp. Funded by UNDP URU/18/002 and AECID-ARAUCLIMA 2016 projects, Montevideo, 2019 (b).
- [13] M. Barreiro, "Influence of ENSO and the south Atlantic ocean on climate predictability over Southeastern South America," Clim. Dyn, no. 35, pp. 1493-1508, 2010.
- [14] FCIEN, "Escenarios climáticos futuros y del nivel del mar, basado en los modelos climáticos globales y efecto de los vientos y caudal sobre las fluctuaciones del nivel del mar. Informe Nº II: Información sobre los resultados de los productos 3, 6 y 8," Agreement School of Sciences – Project URU/07/G32, Montevideo, 2009.
- [15] SNRCC, "Plan Nacional de Adaptación para la Zona Costera ante la variabilidad y el cambio climático" (NAP-Coasts) Executive Summary, DINACC, Montevideo, 2021.

- [16] Executive Office of the President of Uruguay, "INFORME NACIONAL VOLUNTARIO - URUGUAY 2019," Uruguay SumaValor, Montevideo, 2019.
- [17] DINAGUA - MA, "Atlas Nacional de inundaciones y drenaje pluvial urbano," Urban Flood and Rainfall Drainage Team (IDU), Montevideo, 2022.
- [18] SNRCC, "Plan nacional de adaptación a la variabilidad y el cambio climático para el sector agropecuario," (NAP-Agr) MGAP, Montevideo, 2019.
- [19] MGAP - OPYPA, "Anuario OPYPA: Impacto de déficits y excesos hídricos en la producción lechera," OPYPA, Montevideo, 2021.
- [20] SNRCC, "Implementación de un mecanismo de evaluación de daños y pérdidas atribuidos a eventos de origen climático: el caso Uruguay," Euroclima Thematic Studies Series, Montevideo, 2022.
- [21] M. Barreiro, F. Arizmendi and R. Trinchín, "Proyecciones del Clima sobre Uruguay. Producto realizado en el marco del Plan Nacional de Adaptación Costera y el Plan Nacional de Adaptación en Ciudades, Convenio MVOTMA-Facultad de Ciencias (UDELAR)," Funded by UNPD-URU/16/G34 and AECID-ARAUCLIMA 2016, Montevideo, 2019 (c).
- [22] GAUSS Int, "Plan de mejoras al sistema de seguimiento de la primera CDN de Uruguay y Recomendaciones para implementarlo," UNDP, Montevideo, 2022.
- [23] L. Atwoli, A. Baqui, T. Benfield, R. Bosurgi, F. Godlee and S. Hancocks, "Llamamiento a adoptar medidas urgentes para limitar los aumentos de temperatura en el mundo, restablecer la diversidad biológica y proteger la salud.," Revista Argentina Salud Pública, vol. 13, nº 55, 2021.
- [24] Ministry of Public Health "Brote de dengue en Uruguay," MSP, Montevideo, 2016.
- [25] M. Borba, S. Castro, M. Mojoli and A. Rodriguez, "Situación actual de la leishmaniasis en el Uruguay," Salud Mil, vol. 39, nº 1, pp. 20-34, 2020.
- [26] B. Biagini and A. Miller, "Engaging the private sector in adaptation to climate change in developing countries: importance, status, and challenges," Climate and Development, vol. 5, nº 3, pp. 242-252, 2013.
- [27] I. R. Noble, S. Huq, Y. A. Anokhin, J. A. Carmin, D. Goudoud, F. R. Lansing and E. Chu, "Adaptation needs and options," In Climate Change 2014 Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects, pp. 833-868, 2014.
- [28] S. Agrawala, M. Carraro, N. Kingsmill, E. Lanzi, M. Mullan and G. Prudent-Richard, "Private sector engagement in adaptation to climate change: approaches to managing climate risks," 2011.

## **Annex**

## CROSS-CUTTING MEASURES

### CLIMATE INFORMATION AND SERVICES

(relative to paragraph 7 of the PNCC)

**Strengthen information systems for decision-making, enhancing the available information and knowledge on the risks caused and amplified by climate change, addressing the frequency, severity, and impacts on people, property of outstanding universal value, and the environment.**

<b>#1</b>	<b><i>GIS on risk and climate change</i></b>	<b><i>Climate Information and Services</i></b>		
By 2030, a geographic information system will be in place that integrates the components of the leading social and natural risks susceptible to being enhanced by climate change.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b><i>Enhancing adaptive capacity:</i></b> Improves risk assessment actions and the design and planning of measures for risk reduction and climate change adaptation, through the provision of geo-referenced layers with information on the main social and natural hazards, the main elements exposed to these hazards, methods for estimating physical vulnerability and agreed-upon indicators for defining social vulnerability.				
<b>Mitigation co-benefits</b>				
Not identified.				
<b>Contribution to Loss and Damage Assessment</b>				
It provides tools for identifying the main elements exposed (people, significant assets, critical infrastructure and environmental systems) in the face of social and natural hazards, which can be enhanced by climate change.				
<b>National Framework</b>		<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC paragraphs 6, 7, 10 and 13 NDC1: Measure 101 PNGIRED section 3		Potentially responsive	SDGs 5, 11, 13 Sendai, Priority 1	DNE-Sinae

<b>#2</b>	<b><i>National database on emergencies and impacts.</i></b>	<b><i>Climate Information and Services</i></b>		
By 2030, there will be an updated information and reporting system on social and natural emergencies and impacts, achieving greater efficiency in the information and sources, homogenization of variables, analysis of magnitude, intensity, frequency, impact, causality, and their relationship with climate change.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b><i>Enhancing adaptive capacity:</i></b> Improves processes and protocols for reporting and collecting information on emergency response and its impacts on the territories, unifies the criteria, procedures and indicators, and provides information to generate and increase knowledge on how climate variability and change affect the national context.				
<b>Mitigation co-benefits</b>				
Not identified.				
<b>Contribution to Loss and Damage Assessment.</b>				
Contributes to understanding the impacts of climate-related events and related costs.				
<b>National Framework</b>		<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC paragraphs 6, 7, 10 and 13 PNGIRED sections 3.1.4 & 4.3		Potentially responsive	SDGs 5, 11, 13 Sendai priority 1	DNE-Sinae

<b>#3</b>	<b><i>Climate Services Information System</i></b>	<b><i>Climate Information and Services</i></b>		
By 2030, a Climate Services Information System will be developed and available in open data format.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b><i>Enhancing adaptive capacity:</i></b> Improves conditions for the preparation of climate change variability studies and projections, and also improves decision-making based on historical and trend information in the country's different sectors.				
<b>Mitigation co-benefits</b>				
Not identified.				
<b>Contribution to Loss and Damage Assessment.</b>				



It provides information on the climatic phenomena recorded in a certain period of time, improving the association between the weight of these events and the potential impacts on the territory.

National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC paragraphs 6, 7, 10 and 13 NDC1: Measure 96 PNGIREC sections 3.1.4 & 4.3	Potentially responsive	SDGs 5, 11, 13 Sendai priority 1	Inumet

**#4 Climate Change Projections** **Climate Information and Services**

By 2030, official climate change projections for 2050 and 2100—based on the best available scientific information and climate change scenarios—have been agreed upon, updated and laid out within the framework of the SNRCC.

**Contributions to the Global Goal on Adaptation**

**Enhancing adaptive capacity:** Having agreed upon climate projections makes it possible to achieve progress in terms of interinstitutional and interdisciplinary coordination and improves the conditions for developing research, simulations and the design of adaptation measures. It also enables better conditions for decision-making.

**Mitigation co-benefits**

Provides information for decision making regarding the design of mitigation measures.

**Synergy with the Loss and Damage mechanism.**

It makes it possible to devise scenarios considering the changes in climate change-sensitive variables and produce a quantitative estimation of the negative effects of such changes.

National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC paragraphs 6, 7, 10 and 13 PNGIREC section 3.4	Potentially responsive	SDGs 5, 11, 13 Sendai priority 1 and 2	Inumet; SNRCC; Udelar

**#5 Very short-term forecasts** **Climate Information and Services**

By 2030, there will be a *mesoscale* atmospheric model and a *nowcasting* system for developing very short-term forecasts, as well as human resources trained in their generation and update.

**Contributions to the Global Goal on Adaptation**

**Reducing vulnerability:** It produces real-time information, resulting in forecasts that reduce uncertainties, describing atmospheric conditions in great detail on a local scale, allowing for improved emergency response, monitoring and surveillance of potential risks due to adverse weather events.

**Mitigation co-benefits**

Not identified.

**Contribution to Loss and Damage Assessment**

Reduces the window of uncertainty of the social and economic impacts caused by adverse weather events.

National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC paragraphs 6, 7, 10 and 13 NDC1: measures 96 and 97 PNGIREC section 3.6	Potentially responsive	SDGs 5, 11, 13 Sendai priority 4	Inumet; SNRCC

**#6 Climate Services Governance** **Climate Information and Services**

By 2030, an inter-institutional group for climate services governance was set up and operational under the scope of the National Meteorological Council and the SNRCC.

**Contributions to the Global Goal on Adaptation**

**Enhancing adaptive capacity:** It enables effective climate information to be produced and shared with end users for the design of measures to reduce and transfer risk.

**Mitigation co-benefits**

Not identified.

**Contribution to Loss and Damage Assessment**

It makes it possible to use timely information on hydroclimatic events to moderate the loss and damage resulting from such events.

National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC paragraphs 6, 7, 10 and 13 NDC1: measure 97 PNGIREC section 3.3	Potentially responsive	SDGs 5, 11, 13 Sendai priority 2	Inumet; SNRCC

## DISASTER RISK REDUCTION

(relative to paragraph 10 of the PNCC)

**Strengthen comprehensive emergency and disaster risk management by incorporating a climate change perspective.**

#7	<i>Information system for multi-risk analysis</i>	<i>Disaster Risk Reduction</i>	
By 2030, an information system has been designed, updated and set up, based on the comprehensive risk and impact monitor (MIRA), to carry out multi-hazard analysis, estimate the probability of occurrence, impact, response capacity, and recovery from social and natural events that could be exacerbated by the effects of climate change.			
<b>Contributions to the Global Goal on Adaptation</b>			
<i>Enhancing adaptive capacity:</i> Having an updated tool with information on the main hazards, vulnerabilities, system capacities and probability of occurrence, improves coping capacities and the design of measures to reduce specific vulnerabilities arising from risks caused and enhanced by climate change.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
It enhances the conditions for evaluating and recording information on the impacts nationwide.			
National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC paragraphs 6, 7, 10 and 13 PNGIREC section 3	Potentially responsive	SDGs 5, 11, 13 Sendai, Priority 1	DNE-Sinae

#8	<i>Comprehensive Risk Management Planning</i>	<i>Disaster Risk Reduction</i>	
By 2030, the periodic updating and development of tools for prospective, corrective and/or compensatory management of emergency and disaster risks at the departmental level has been promoted.			
<b>Contributions to the Global Goal on Adaptation</b>			
<i>Enhancing adaptive capacity:</i> The capacities for prevention, reduction, planning, coping and recovery from emergencies and disasters are improved at the departmental level.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
It can potentially collect and systematize information on the impacts nationwide.			
National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC Paragraphs 6, 7 and 10 PNGIREC section 3.4; points 4.2, 4.6 and 5.	Potentially Responsive	SDGs 5, 11, 13 Sendai 7 targets and 4 priorities	DNE Sinae SNRCC; MA.

#9	<i>Risk assessment by the private sector</i>	<i>Disaster Risk Reduction</i>	
By 2030, at least three guides for private sector companies to assess climate risks and identify adaptation measures will have been developed and made available.			
<b>Contributions to the Global Goal on Adaptation</b>			
<i>Enhancing adaptive capacity:</i> New tools are developed for preventive and reactive actions to tackle the risks and potential impacts resulting from or enhanced by climate change, in the private sector.			
<b>Mitigation co-benefits</b>			
The proposed adaptation measures to be implemented by the private sector will take into account that they are low GHG emission measures and will promote co-benefits with mitigation measures in the corresponding sector of activity.			

<b>Contribution to Loss and Damage Assessment</b>			
Risk awareness and the application of adaptation measures makes it possible to moderate the costs associated with the impacts of climate events.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraphs 6, 7 and 10	Potentially Responsive	SDGs 5, 11, 13; Sendai A-G	SNRCC

**Strengthen governance related to knowledge generation and interoperability of information regarding the risks and the associated emergency and disaster events in Uruguay. It involves coordinating, planning and promoting relevant knowledge and information generation.**

<b>#10</b>	<b>Strengthening risk governance.</b>	<b>Disaster Risk Reduction</b>	
By 2030, new work areas have been generated, and existing working groups between the SNRCC and SINAE have been strengthened, promoting comprehensive risk management with a climate change perspective.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Working groups and tools for comprehensive risk management with a climate change perspective are strengthened and reinforced, in coordination with the SNRCC and the SINAE.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
The articulation between the institutions of both systems is strengthened, improving the compilation, reporting and methodologies for the analysis of the effects of adverse events nationwide.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraphs 6, 7 and 10	Potentially Responsive	SDGs 5, 11, 13 Sendai A-G	DNE Sinae SNRCC

<b>#11</b>	<b>Early Warning Systems</b>	<b>Disaster Risk Reduction</b>	
By 2030, seven flood-prone cities have incorporated a flood early warning system, integrated into the action and communication protocol, which improves inter-institutional interaction and the dissemination and communication of warnings and alerts to the population and stakeholders involved in emergency response and care.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It reduces the likelihood of severe impacts, prevents loss of life and reduces the economic and environmental impacts of flooding.			
<b>Enhancing adaptive capacity:</b> Improves the country's ability to prepare for floods by enabling individuals, communities and organizations exposed to this hazard to prepare and act accordingly and well in advance.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Reduces the economic, social and environmental impacts caused by floods, preventing loss and associated damage.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 8, 10 & 14; NDC1: Measure 73; PNGIRED section 3.6	Potentially Responsive	SDGs 5, 6; 13; Sendai Priority 4	MA: DINAGUA

## LOSS AND DAMAGE

(relative to paragraph 10 of the PNCC)

**Strengthen the processes of identifying, measuring, and evaluating the impacts of adverse climate-related events and their chains to estimate losses and damages at the national, local, and sectoral levels.**

<b>#12 Estimation of loss and damage due to adverse events</b>		<b>Loss and Damage</b>	
By 2030, a work plan has been implemented for loss and damage assessment, including mechanisms and procedures to improve the recording, storage, estimation, and visualization of losses and damages caused by socio-natural events and their respective impact chains at the national, local and sectoral levels.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> It contributes to the design of adaptation actions to: avoid, minimize and cope with impacts, improve recovery and increase the resilience of social and natural systems.			
<b>Mitigation co-benefits</b>			
Awareness about the losses and damages associated with climate change-related events makes it possible to design measures that can capture greenhouse gases as a co-benefit.			
<b>Contribution to Loss and Damage Assessment</b>			
It produces knowledge, evaluates, quantifies and makes it possible to design and plan measures to tackle, reduce and recover from the impacts of climate change.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC paragraphs 6, 7, 10 and 13	Potentially responsive	SDGs 5, 11, 13	SNRCC; L&D-WG

<b>#13 Impact Information System Energy infrastructures.</b>		<b>Loss and Damage</b>	
By 2030, an information system associated with the impacts on energy infrastructure has been developed and implemented to quantify climate-related losses and damage to the system.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Relevant information is produced on the vulnerability of the energy system components to improve decision-making regarding the design of adaptation actions.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Generates tools for recording losses and damages in the sector.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 18 & 20	Potentially Responsive	SDGs: 5, 7, 9, & 13	MIEM; L&D-WG

<b>#14 Damages and losses in the tourism sector</b>		<b>Loss and Damage</b>	
By 2030, the processes for recording and evaluating the impacts of climate-related adverse events will have been improved to quantify and estimate losses and damages in the tourism sector, improving databases and information sources.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> The conditions for recording, evaluating, mapping and quantifying impacts on the tourism sector are improved, making it possible to design adaptation and risk reduction measures and improving information for decision-making.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Enhance impact evaluation and their effects on the tourism sector.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 19	Potentially Responsive	SDGs 5, 11, 12, 13, 14, 15	MINTUR, SNRCC, L&D-WG

## MIGRATION AND DISPLACEMENT

(relative to paragraph 8 of the PNCC)

To understand Uruguay's context concerning climate change-related migration movements, human displacement, and associated impact chains.

#15	Migration and Climate Change	Migration and displacement	
By 2030, a database has been developed to report on the situation in Uruguay regarding the influence and impact of climate change on migration and human displacement to, from, and within Uruguay, considering an intersectional approach.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Generates knowledge on the number of people entering and leaving the country, or moving internally, due to problems resulting from and exacerbated by climate change and their social and economic condition, in order to improve decision-making and promote actions and policies that reduce the vulnerabilities of these population groups.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Generates information on socioeconomic impacts on specific population groups.			
National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 7 & 8.	Sensitive	SDGs 5, 10, 11, 13 Sendai E IOM EIM 2021-2030	MRREE - JNM; SNRCC

## MEASURES BY ADAPTATION AREA

### HEALTH

(relative to paragraph 9 of the PNCC)

Monitor and assess progress in implementing adaptation actions and targets developed for the Health area.

#16	Follow-up NAP-Health	Health	
By 2030, the 2026-2030 Action Plan of the National Health Adaptation Plan (NAP-Health) has been implemented.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Adaptation policies, programs and measures are improved, adapted and developed at the national and local levels to protect and reduce the health impacts of those people who, due to pre-existing health conditions, socioeconomic status, occupation or age, may be affected by extreme and slow-onset events resulting from climate change.			
<b>Enhancing adaptive capacity:</b> Adaptation policies, programs and measures are improved, adapted and developed at the national and local levels to address the specific needs arising from the impacts of climate change in the health sector.			
<b>Mitigation co-benefits</b>			
Emissions reduction in the health sector infrastructure through the implementation of actions that, in addition to improving safety, operability and continuity before, during and after a disaster, implement energy efficiency strategies and manage waste, among others.			
<b>Contribution to Loss and Damage Assessment</b>			
Generates information on the impact of climate change in the health sector.			
National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC, Paragraph 9	Potentially Responsive	SDGs 3, 5, 13	MSP

<b>#17 Occupational health and climate change</b>		<b>Health</b>	
By 2030, the consequences of climate change on occupational health have been assessed to develop policies for preventing impacts and promoting occupational health.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Improved information and monitoring of the main climate hazards affecting occupational health, as well as workers vulnerabilities.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
It sets forth a system for outlining and monitoring the impacts of climate change on occupational health.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC, Paragraph 9	Potentially Responsive	SDGs 3, 5, 13	MSP

<b>#18 Epidemiological and entomological surveillance systems</b>		<b>Health</b>	
By 2030, epidemiological and entomological surveillance has been strengthened, as well as the development and implementation of an early warning and response system for outbreaks of vectors and diseases derived from or exacerbated by climate change's effects.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It improves the availability of timely information on climate-sensitive diseases, while allowing the study of spatial and temporal changes in the patterns of vector distribution and disease, to design prevention and response plans to potential outbreaks.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
The records on outbreaks and disease control and response are enhanced for economic evaluation.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC, Paragraph 9	Potentially Responsive	SDGs 3, 5, 13	MSP

**Strengthen governance in the area of health to address issues related to climate change and its effects, within the Ministry of Public Health and related institutions, under the framework of the SNRCC.**

<b>#19 Strengthening climate governance for health</b>		<b>Health</b>	
By 2030, a technical working group on climate change has been created, institutionalized, and put into operation within the Ministry of Public Health, which develops the cross-cutting programmatic line of climate variability and change in health policies, plans, and programs.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Conditions for mainstreaming of health, risks and climate change issues in documents, plans, policies and programs are improved, as well as for the design, implementation and monitoring of climate change adaptation actions across the different components of the health sector.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Improve conditions for tracking, monitoring and reporting the impacts of climate change events on the sector, and their implications for associated losses and damages.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC, Paragraph 9	Potentially Responsive	SDGs 3, 5, 13	MSP

## CITIES, INFRASTRUCTURE AND LAND-USE PLANNING

(relative to paragraph 11 of the PNCC)

**Monitor and evaluate progress in the implementation of adaptation actions and targets identified as a priority for cities and land-use planning.**

<b>#20</b>	<b>NAP-Cities</b>	<b>Cities, Infrastructure and Land-use planning</b>		
By 2030, the 2026-2030 Action Plan of the National Cities and Infrastructures Adaptation Plan (NAP-Cities) has been implemented.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> The implementation of the NAP-Cities improves the conditions in cities and urban environments in the face of climate change and variability through the adaptation measures included in its strategic lines: “Changes in the urban habitat” and “Comprehensive emergency and disaster risk management”.				
<b>Enhancing adaptive capacity:</b> The strategic lines on land management and planning in cities and on capacity building, awareness raising and communication provide tools that contribute to improving the information available on the effects of climate change and specific actions for adaptation to climate change, in addition to generating technical and political instruments, such as guidelines and regulations, which together improve the conditions for decision-making, planning, response and evaluation of society in the face of climate change.				
<b>Mitigation co-benefits</b>				
This potential co-benefit is contingent on the type of measure adopted, such as those using the ecosystem-based adaptation approach, or promoting energy efficiency, among others.				
<b>Contribution to Loss and Damage Assessment</b>				
Potential link subject to the type of measures for the assessment, categorization and quantification of risks and impacts arising from climate change and variability.				
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC Paragraph 11	Potentially Responsive	SDGs 5, 11, 13; NAU Habitat III	SNRCC: CCA-WG in Cities	

**Deepen the incorporation of adaptation to climate change and variability in land-use planning instruments, urban planning and management, the urban landscape, building regulations under a climate risk framework and adopting an ecosystem-based adaptation approach.**

<b>#21</b>	<b>ACCV in Land Use Planning Instruments</b>	<b>Cities, Infrastructure and Land-use planning</b>		
By 2030, all departments will have incorporated climate change adaptation measures and climate risk reduction strategies in new and revised Land-Use Planning Instruments.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> Through climate change adaptation strategies such as: densification and land-use patterns in safe areas; preservation of permeable soil; green areas and natural spaces that are critical for their ecosystem services; proper management of urban solid waste; climate-resilient sanitation and drainage infrastructure; and promotion and use of public spaces, among others.				
<b>Mitigation co-benefits</b>				
Co-benefit potential, linked to the characteristics of the measures to be incorporated into the land-use planning instrument, such as those that promote ecosystem-based adaptation.				
<b>Contribution to Loss and Damage Assessment</b>				
Potential co-benefit linked to risk reduction, resulting from the measures implemented.				
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC Paragraph 11	Potentially Responsive	SDGs 5, 11, 13; NAU Habitat III	MVOT - DINOT	



<b>#22</b>	<b><i>Flood Hazard Maps in Cities</i></b>	<b><i>Cities, Infrastructure and Land-use planning</i></b>		
By 2030, 100% of cities with very high, high or medium flood risk levels will have flood risk maps for riverbank flooding, drainage, and/or sea level rise and storm surges.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> The Flood Risk Map categorizes flood-prone land according to risk levels. Through their approval within the framework of the land-use planning instruments, it is possible to establish measures to manage the risks associated with each area.				
<b>Enhancing adaptive capacity:</b> Improve the capacities of human resources and institutions to respond to and plan for flood risk in cities.				
<b>Mitigation co-benefits</b>				
Not identified.				
<b>Contribution to Loss and Damage Assessment</b>				
It contributes to a better and faster assessment of losses and damages after an event. It is possible to evaluate the losses and damages prevented thanks to the proposed adaptation measures.				
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC: Paragraphs 8, 10, 11 & 14 NDC1: Measure 74 PNGIRD, Law 18621	Sensitive	SDGs 5, 6, 13 Sendai Target G	MA: DINAGUA	

<b>#23</b>	<b><i>ACCV in City Planning.</i></b>	<b><i>Cities, Infrastructure and Land-use planning</i></b>		
By 2030, support materials will have been updated and disseminated to incorporate climate change and variability in the planning efforts of Uruguayan cities.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> Land use planning and sustainable development instruments are part of a set of actions and adaptation measures that, depending on the particularities of the different areas and considering the type of instrument and territorial governance, reduce the vulnerability of the populations and increase awareness on climate risks and associated elements and the implications of planning and decision making.				
<b>Mitigation co-benefits</b>				
Co-benefit potential, linked to the characteristics of the measures to be incorporated into the land-use planning instrument, such as those that promote ecosystem-based adaptation.				
<b>Contribution to Loss and Damage Assessment</b>				
Potential co-benefit linked to risk reduction, resulting from the measures implemented.				
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC Paragraph 11	Potentially Responsive	SDGs 5, 11, 13; NAU Habitat III	MVOT - DINOT	

<b>#24</b>	<b><i>National Urban Stormwater Drainage Plan</i></b>	<b><i>Cities, Infrastructure and Land-use planning</i></b>		
By 2030, implementation of the National Urban Stormwater Drainage Plan has begun.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> Sustainable drainage infrastructure combines green, blue and gray infrastructures, incorporates the perspective of climate change, city dynamics and offers multiple benefits: flood reduction, reduction of heat islands, improvement of water quality and protection of ecosystems in urban environments, among others.				
<b>Mitigation co-benefits</b>				
The use of non-renewable energy in buildings is reduced. It also reduces the energy consumption of storm drainage systems (e.g., water treatment and pumping).				
<b>Contribution to Loss and Damage Assessment</b>				
Potential effect on the reduction of impacts and reduction of losses and damages due to flooding.				
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC: Paragraphs 8, 10, 11 & 14	Potentially Responsive	SDGs 5, 6, 13 Sendai Target G	MA: DINAGUA	



Law N° 19.772; Water National Plan, P02			
---	--	--	--

<b>#25</b>	<b><i>EbA in cities and infrastructure</i></b>	<b><i>Cities, Infrastructure and Land-use planning</i></b>		
By 2030, all departments will have incorporated ecosystem-based adaptation in at least one urban area as a strategy to improve habitat conditions in urban environments and optimize their climate performance.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> The application of EbA in towns and urban environments contributes to the reduction of vulnerabilities in urban environments, improves the quality of urban spaces, increases resilience to climate change and variability due to the increase in temperature and rainfall.				
<b>Mitigation co-benefits</b>				
They enhance carbon sequestration and reduce energy consumption linked to thermal conditioning due to increased temperatures.				
<b>Contribution to Loss and Damage Assessment</b>				
Costs associated with health impacts are reduced thanks to improvements in public space.				
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC Paragraph 11	Potentially Responsive	SDGs 5, 11, 13; NAU Habitat III	SNRCC: CCA-WG in Cities	

<b>#26</b>	<b><i>National building regulations.</i></b>	<b><i>Cities, Infrastructure and Land-use planning</i></b>		
By 2030, departmental regulatory bodies will have adopted parameters on adaptation to climate change and variability to inform the design, construction, and maintenance of housing, infrastructure, and equipment, considering each territory's particular characteristics.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> Buildings perform better in the face of events associated with Climate Change and Variability and improve comfort and living conditions for users.				
<b>Mitigation co-benefits</b>				
The application of these regulations will have an indirect impact on the reduction of emissions from energy consumption.				
<b>Contribution to Loss and Damage Assessment</b>				
Not identified.				
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC Paragraph 11	Potentially Responsive	SDGs 5, 11, 13; NAU Habitat III	MVOT: Dinavi SNRCC: CCA-WG in Cities	

**Promote the development of financing instruments for the implementation of adaptation actions that improve the resilience of cities to climate change and its effects.**

<b>#27</b>	<b><i>Financing adaptation in cities.</i></b>	<b><i>Cities, Infrastructure and Land-use planning</i></b>		
By 2030, a public-private financing instrument will have been implemented to improve climate resilience in new and/or existing buildings and urban infrastructure, including an ecosystem-based adaptation approach.				
<b>Contributions to the Global Goal on Adaptation</b>				
<b>Reducing vulnerability:</b> Buildings perform better in the face of events associated with Climate Change and Variability and improve comfort and living conditions for users.				
<b>Mitigation co-benefits</b>				
The implementation of the instrument aimed at resilient buildings indirectly leads to a reduction of emissions from energy consumption.				
<b>Contribution to Loss and Damage Assessment</b>				
Not identified.				
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>	
PNCC Paragraph 11	Potentially Responsive	SDGs 5, 11, 13; NAU Habitat III	SNRCC	

**Promote the development of sustainable and resilient infrastructures in the face of climate variability and change that contribute to reducing greenhouse gas emissions.**

<b>#28</b>	<b>Waste - Final disposal sites</b>	<b>Cities, Infrastructure and Land-use planning</b>	
By 2030, all final disposal sites for household waste and similarly operated sites managed by the municipalities will have conditions in place that reduce the risk and impact probability of climate change-related adverse events.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> The design of climate-resilient waste management infrastructures and improvements in their operation are favored, so that adverse weather events (floods or extreme heat events) do not result in damage to the facilities or disruptions to their normal operation, thus avoiding environmental impacts derived from these events.			
<b>Mitigation co-benefits</b>			
Methane capture and flaring, for example, contributes to both mitigation and adaptation. A measure of this nature is included in NDC2 on mitigation.			
<b>Contribution to Loss and Damage Assessment</b>			
Not identified.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 21 PNGR	Potentially Responsive	SDGs 6, 11, 14 and 15	DINACEA (MA)

## BIODIVERSITY AND ECOSYSTEMS

*(relative to paragraph 12 of the PNCC)*

**Promote the integration of climate change, its effects, and adaptation strategies in planning and regulatory instruments focused on conserving, protecting and restoring natural ecosystems to ensure the delivery of ecosystem goods, services, and functions.**

<b>#29</b>	<b>Updating Biodiversity Strategies and Plans</b>	<b>Biodiversity and Ecosystems</b>	
By 2030, the National Biodiversity Strategy, the National Protected Areas System Strategic Plan, the Marine Spatial Planning, and the Land Degradation Neutrality Strategy have mainstreamed climate change and variability.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Improve diagnostic and planning activities for the conservation of biodiversity and inland, coastal and marine ecosystems, as well as the ecosystem services they provide, incorporating early risk management and assessment of the effects of climate variability and change, as well as the contribution of biodiversity and ecosystems to adaptive capacities.			
<b>Mitigation co-benefits</b>			
Potential contribution given the capacity of ecosystems to be carbon sinks when in an adequate state of conservation, including actions for ecosystem monitoring and conservation			
<b>Contribution to Loss and Damage Assessment</b>			
Potential contribution including actions for ecosystem monitoring and conservation.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 12	Potentially Responsive	SDGs 6; 13	MA: DINABISE

<b>#30</b>	<b>Wetland Protection and Restoration</b>	<b>Biodiversity and Ecosystems</b>	
By 2030, a legal instrument for protecting and restoring wetlands is being implemented based on their ecosystem services and contribution to climate change adaptation.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing Vulnerability:</b> Recognizes and ensures the conservation or restoration of ecosystem functions and services of wetlands, including their contributions to climate change adaptation, such as reducing the impacts of extreme events, floods and droughts, on cities, ecosystems and communities.			
<b>Mitigation co-benefits</b>			

Protects, conserves and restores wetlands as potential carbon sinks.			
<b>Contribution to Loss and Damage Assessment</b>			
Decreases the probability of severe impacts that can generate losses and damages due to extreme and slow onset events.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 12	Potentially Responsive	SDGs 6; 13	MA: DINABISE

<b>#31</b>	<b>Protected Area Management Plans</b>	<b>Biodiversity and Ecosystems</b>	
By 2030, risk analysis and specific goals and actions on adaptation to climate change and variability will have been incorporated in 100% of the Protected Areas with approved and updated Management Plans as of 2025.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Enhance knowledge on the effects of climate change on biodiversity and ecosystems that are especially relevant for the country, and generate the capacity to restore adaptive capacity, reduce vulnerability and exposure of sensitive species and/or ecosystems in protected areas. At the macro scale, protected areas with healthy ecosystems contribute to increasing the adaptive capacities of the country and society.			
<b>Mitigation co-benefits</b>			
Through the protected areas we can preserve ecosystems that are particularly relevant for climate change mitigation.			
<b>Contribution to Loss and Damage Assessment</b>			
Creates databases on the impacts on biodiversity and ecosystems that are particularly relevant.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 12	Potentially Responsive	SDGs 6; 13	MA: DINABISE

**Incorporate and deepen risk assessment with a climate change perspective and considering its effects on biodiversity and ecosystems, further focusing on the role of ecosystems in adaptation to design of instruments and measures for risk reduction and ecosystem-based adaptation.**

<b>#32</b>	<b>Climate risk assessment of biodiversity</b>	<b>Biodiversity and Ecosystems</b>	
By 2030, a risk analysis of biodiversity and key ecosystems considering the effects of climate change has been prepared, and data will be available through an information system.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Improve knowledge about the effects of climate change on the country's biodiversity and key ecosystems, in addition to generating the capacity to project specific actions to reduce vulnerability and exposure to future changes.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Create databases on biodiversity and ecosystem impacts.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 12	Potentially Responsive	SDGs 6; 13	MA: DINABISE

<b>#33</b>	<b>Biodiversity Risk Management Guidelines</b>	<b>Biodiversity and Ecosystems</b>	
By 2030, guidelines will have been developed on how to manage climate change and variability risks to biodiversity and ecosystems, and key stakeholders will have been trained to implement them.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Once aware of the risks and understanding the vulnerabilities, through the application of the guidelines, specific actions will be carried out to prevent and reduce the potential impacts of climate change effects on biodiversity and ecosystems, and to strengthen coping actions.			
<b>Enhancing adaptive capacity:</b> The response of environmental managers to the potential effects of climate change is improved by increasing understanding and incorporating management methodologies into existing tools.			
<b>Mitigation co-benefits</b>			

Potential contribution, given the capacity of ecosystems to become carbon sinks when they are adequately conserved, including the increase in their adaptive capacity when risks are better managed.			
<b>Contribution to Loss and Damage Assessment</b>			
It improves risk management and reduces the likelihood of losses and damages due to extreme and slow-onset events, and also enhances the generation of information on the state of ecosystems and the effects of changes in the variables affected by climate change.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 12	Potentially Responsive	SDGs 6; 13	MA: DINABISE

<b>#34</b>	<b>Ecosystem Services and Climate Change</b>	<b>Biodiversity and Ecosystems</b>	
By 2030, knowledge and understanding of the ecosystem functions and services associated with reducing vulnerabilities to climate change of key ecosystems and their co-benefits in mitigation will have increased.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Recognizes, draws attention to and promotes the conservation of key ecosystem functions and services in climate change adaptation by associating them with specific vulnerabilities, describing the ecosystem health conditions necessary for them to provide such services.			
<b>Mitigation co-benefits</b>			
Potential contribution, given the capacity of ecosystems to be carbon sinks when they are in an adequate state of conservation. Increased knowledge of ecosystem services linked to climate change adaptation will also enable the inclusion of ecosystem co-benefits to mitigation.			
<b>Contribution to Loss and Damage Assessment</b>			
It generates information on the relationship between ecosystems and their capacity to act as buffers to the effects of climate change, thus making it possible to establish measures to protect them and acknowledge their value for anthropic systems.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 12	Potentially Responsive	SDGs 6; 13	MA: DINABISE

## COASTAL AREAS

(relative to paragraph 13 of the PNCC)

**Strengthen policy and adaptation planning instruments for coastal areas in the face of climate change and variability.**

<b>#35</b>	<b>National Coastal Guideline Regulations</b>	<b>Coastal areas</b>	
By 2030, Law No. 19.772 on the National Guidelines for Land-use Planning and Sustainable Development of the Atlantic Ocean and Río de la Plata Coastal Area has been regulated.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Decision-making will be strengthened by having clear criteria for defining vulnerable components and georeferenced information for the country's entire coastal area.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
The action will provide knowledge to promote the assessment of vulnerable ecosystems loss to the impacts of climate variability and change.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 13 Law N° 19.772	Potentially Responsive	SDGs: 5, 13 and 14 Biodiversity Convention	MA (DINABISE, DINACEA, DINACC), MVOT (DINOT), Municipalities.

<b>#36</b>	<b>Operational Plan 2026-2030 NAP-Coasts</b>	<b>Coastal areas</b>
By 2030, the 2026-2030 Action Plan of the National Adaptation Plan to Climate Change and Climate Variability for		

Coastal Areas (NAP-Coasts) will have been implemented.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> The implementation of the NAP-Coasts enhances conditions in coastal areas, including urban settings, ecosystems and infrastructures, to tackle the effects of climate change and variability through the adaptation actions included in its strategic lines.			
<b>Enhancing adaptive capacity:</b> The Five-Year Operational Plan is a guiding framework for the coordination and implementation of adaptation actions among the different agencies and stakeholders with competencies and strategic interests in the national coastal areas. It seeks to integrate climate variability and change into planning, management and participation processes.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
The implementation of the NAP-Coasts implies the use of different methodologies to assess the cost-benefits of the implementation of adaptation actions, so it can therefore provide economic estimates to be used in the evaluation of damages and losses resulting from extreme events that impact coastal areas.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 13 Laws: 19.772; 16.466; 18.303;	Potentially Responsive	SDGs: 5, 13 and 14 Biodiversity Convention	MA (DINABISE, DINACEA, DINACC), MVOT (DINOT), Municipalities.

<b>#37</b>	<b>EIA and SEA Guide with vulnerability maps</b>	<b>Coastal areas</b>	
By 2030, a guide will have been developed to incorporate climate change vulnerability into environmental impact assessment (EIA) and strategic environmental assessment (EAE) processes in the coastal areas using the best available scientific information, and key stakeholders will have been trained to implement it.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Decision-making will be strengthened in terms of the early identification and assessment of the environmental consequences of a project not yet implemented in the face of climate variability and change. The aim is to eliminate, mitigate or offset its negative environmental impacts both in the field of action itself and its area of influence.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
The action will provide knowledge to assess the losses of vulnerable ecosystems to the impacts of climate variability and change.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 13 Laws 19.772; 18.308.	Potentially Responsive	SDG: 5, 13 and 14 Biodiversity Convention	MA (DINABISE, DINACEA, DINACC), MVOT (DINOT), Municipalities.

**Promote conservation and reduce the vulnerability of coastal areas threatened by climate change and variability through ecosystem-based adaptation measures.**

<b>#38</b>	<b>Conservation of vulnerable components</b>	<b>Coastal areas</b>
By 2030, 100% of the vulnerable components of the coastal areas will be included in climate variability and climate change adaptation plans or programs, which will define their level of protection and/or apply ecosystem-based adaptation measures for both conservation and restoration.		
<b>Contributions to the Global Goal on Adaptation</b>		
<b>Reducing vulnerability:</b> Specific actions are designed and developed, incorporating the ecosystem-based adaptation approach, in local adaptation plans and programs, to protect, preserve and restore vulnerable elements of the coastal areas.		
<b>Enhancing adaptive capacity:</b> Relevant information is produced about the vulnerability of coastal system components. This will enhance decision making for the design of adaptation actions for their protection, preservation and restoration, as well as for monitoring the evolution of the implementation of such actions.		

<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
The action will provide input to assess the losses of vulnerable ecosystems to the impacts of climate variability and change.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 13 Laws 19.772; 18.308; Decrees: 349/005; 178/2009; 221/2009.	Potentially Responsive	SDGs: 5, 13 and 14 Biodiversity Convention	MA (DINABISE, DINACEA, DINACC), MVOT (DINOT), Municipalities.

**Promote financing instruments for the implementation of adaptation actions in coastal areas.**

<b>#39</b>	<b>Financing for coastal adaptation</b>	<b>Coastal areas</b>	
By 2030, a public-private financing instrument will have been designed and implemented for the adoption of adaptation measures in coastal areas.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Specific adaptation actions are implemented to improve conditions in coastal areas, including urban environments, ecosystems and infrastructure.			
<b>Enhancing adaptive capacity:</b> Improves national conditions to cope with the impact of vulnerability and climate change by enabling households, communities and organizations exposed to these hazards to implement adaptation actions.			
<b>Mitigation co-benefits</b>			
Potential. The adaptation actions to be funded by the instrument must be low in GHG emissions and promote co-benefits with mitigation measures, if applicable.			
<b>Contribution to Loss and Damage Assessment</b>			
The action will provide knowledge to assess the losses of vulnerable ecosystems to the impacts of climate variability and change.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 13 Laws 19.772; 18.308.	Potentially Responsive	SDG: 5, 13 and 14 Biodiversity Convention	MA (DINABISE, DINACEA, DINACC), MVOT (DINOT), Municipalities.

**Implement a system for monitoring coastal dynamics of the Río de la Plata and Atlantic Ocean.**

<b>#40</b>	<b>Coastal monitoring system</b>	<b>Coastal areas</b>	
By 2030, a system for monitoring meteo-oceanic, sedimentological and topo-bathymetric variables of the Río de la Plata and Atlantic Ocean will have been implemented, reinforcing areas highly vulnerable to extreme events (river mouths, sandy beaches and ravines)			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Monitoring at different space and time scales improves the assessment of coastal erosion and flooding risk and its corresponding adjustments in a climate change scenario, enabling the development of early warning systems.			
<b>Enhancing adaptive capacity:</b> Understanding coastal dynamics involves understanding the conditions for stability and their variability at different scales, identifying thresholds that, when exceeded, lead the system to a new type of stability, and understanding the processes involved in the corresponding transition are highly relevant for coastal system management			
<b>Mitigation co-benefits</b>			
Not identified			
<b>Contribution to Loss and Damage Assessment</b>			
The action will provide information about changes in the monitored areas and will produce input for the assessment of coastal ecosystem losses.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>

<b>Frameworks</b>			
PNCC: Paragraph 13 Laws 19.772; 18.308.	Potentially Responsive	SDG: 5, 13 and 14 Biodiversity Convention	MA (DINABISE, DINACC, DINAGUA), Municipalities.

## WATER RESOURCES

(relative to paragraph 14 of the PNCC)

**Promote the integration of climate change and variability and their effects in comprehensive water resource management efforts, to improve the protection and security of water availability and water quality, promote good practices, enhance governance, and promote research and comprehensive monitoring.**

<b>#41</b>	<b>Basin and Aquifer Plans</b>	<b>Water Resources</b>	
By 2030, six comprehensive watershed management plans have been formulated, approved and are being implemented.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It makes it possible to enhance water resource management.			
<b>Enhancing adaptive capacity:</b> Improves the capacities of human resources and institutions through actions to assess and disseminate basin information by means of: mapping basins and water resources (including an analysis of variability and extreme events), uses and stress in the basin (including extreme events and climate change if information is available); Information systems and models (hydrological, management and water quality; including extreme events and climate change scenarios); Monitoring of water quantity and quality (surface and groundwater); Institutional strengthening and coordination; Water education, communication, research and capacity building.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Generates conditions to contribute to water resource planning, management and monitoring, reducing losses and damages resulting from climate change-related adverse events.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraph 14 NDC1: measure 85	Potentially Responsive	SDGs 5, 6, 13 Sendai Target E	MA: DINAGUA

<b>#42</b>	<b>Water Security Plans</b>	<b>Water Resources</b>	
By 2030, water security plans have been implemented in 15 drinking water systems; at least two sanitation security plans have been implemented in two towns in the interior of the country, considering climate change-related conditions.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Safety plans reduce the likelihood of potential risks to public health that can occur anywhere in the water supply system (water source, treatment, distribution networks and household facilities), and are also applicable to the entire chain of sanitation services.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Potentially reduce impacts on health and on distribution and sanitation networks.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 11 & 14 Law N° 19.772; Water National Plan, P02	Potentially Responsive	SDGs 5, 6, 13 Sendai Target E	MA: DINAGUA

<b>#43</b>	<b>Water Quality</b>	<b>Water Resources</b>	
------------	----------------------	------------------------	--



By 2030, appropriate technologies and procedures will be in place to prevent, detect and reduce the effects of algal bloom events in priority areas.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> new tools are generated to react to the impacts resulting from or enhanced by climate change in water systems, reducing the risks to: the availability of drinking water, productive systems that are dependent on water quality, recreational areas, etc.			
<b>Mitigation co-benefits.</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
It reduces the costs associated with the impact of algal blooms.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC, paragraphs 13 and 14.	Potentially responsive	SDGs 3, 5, 6, 13, 15	MA: DINACEA

## AGRICULTURE

(relative to paragraph 15 of the PNCC)

**Monitor and assess progress in the implementation of adaptation actions and targets that have been identified as a priority for agriculture.**

<b>#44</b>	<b>National Adaptation Plan for the Agricultural Sector</b>		<b>Agriculture</b>
By 2030, progress in implementing the National Adaptation Plan to Climate Change and Climate Variability for the Agricultural Sector (NAP-Agr) is monitored and reported.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It guides the design, coordination and prioritization of policies, programs and projects that seek to address the climate vulnerabilities of the different agricultural production systems and aims to achieve a paradigm shift towards a development path that is resilient and adapted to climate change and variability in the agricultural sector.			
<b>Enhancing adaptive capacity:</b> It allows for changes in processes, practices and structures within a system to mitigate the potential damages or seize the potential opportunities associated with climate change and variability.			
<b>Mitigation co-benefits</b>			
Building more resilient and adaptive systems makes it possible to increase productivity above the increase in GHG emissions.			
<b>Contribution to Loss and Damage Assessment</b>			
The National Agricultural Adaptation Plan itself is a tool that contributes to the registration or reduction of losses and damages.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

<b>#45</b>	<b>Financial and risk transfer instruments</b>		<b>Agriculture</b>
By 2030, new financial and risk transfer instruments have been developed and implemented, increasing insurance coverage in new areas compared to 2025.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Managing the risk of losses and damage to production systems and infrastructure, associated with a higher frequency of extreme events, allows farmers to partially recover their investments and production levels in a shorter period of time.			
<b>Mitigation co-benefits</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
Contributes to reducing economic losses due to extreme events.			



National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

Promote the implementation of best practices in the different agricultural activities and processes as a strategy for climate change adaptation, upholding production, increasing resilience and reducing risks in agriculture and the environment.

#46	<i>Permits for irrigation and other agricultural and livestock uses</i>		<i>Agriculture</i>
By 2030, the number of permits for the collection of water resources for irrigation and other agricultural and livestock uses will be promoted and increased as an adaptation strategy to the variability in rainfall patterns and the risk of drought, based on 2025 levels; these are subject to water quality and quantity availability and regulated by the National Water Plan, Law No. 16.858 and Decree No. 368/018.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Farmers have water reservoirs, equipment and other tools to face prolonged periods of water shortage, allowing them to reduce yield losses through the use of irrigation water.			
<b>Mitigation co-benefits.</b>			
It will prevent animals yield losses due to lack of water or feed, and will contribute to improving the indicator of GHG emissions intensity per kg of beef produced.			
<b>Contribution to Loss and Damage Assessment</b>			
Contributes to the adaptation of the production systems to periods of water scarcity.			
National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

#47	<i>Research programs</i>		<i>Agriculture</i>
By 2030 there will be comprehensive information systems will be in place for adaptive management in agriculture for the public and private sectors, and there's active promotion of research programs on dryland agriculture, vegetable and fruit crops, forage crops and pastures that better adapt to climate variability.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> Produce input and knowledge for the different sectors. This, together with knowledge sharing activities, will make it possible to develop tools to reduce vulnerability to extreme events and/or events caused by climate change. It provides information for decision making on feasible adaptation actions available to farmers.			
<b>Mitigation co-benefits.</b>			
Being able to avoid significant changes in forage supply through the use of species that are resistant to extreme events leads to co-benefits in the indicator of GHG emissions intensity per kg of beef produced, since animals such as sheep and cattle do not lose weight.			
<b>Contribution to Loss and Damage Assessment</b>			
It helps reduce yield losses in the different production systems and identify which cultivars and species are better adapted to the frequency of extreme events.			
National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

#48	<i>Thermal stress</i>		<i>Agriculture</i>
By 2030, at least one adaptation measure to reduce animal heat stress has been implemented in at least 50% of dairy and confinement farms.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Production systems that adopt measures to reduce heat stress are less vulnerable to extreme temperature and other weather events. As a result, there are fewer losses due to death and there is higher			

productivity.			
<b>Mitigation co-benefits.</b>			
The measure contributes to improving the indicator of GHG emissions intensity per kg of beef produced.			
<b>Contribution to Loss and Damage Assessment</b>			
Contributes to reducing economic losses due to extreme temperature events (cold and heat).			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

**Promote the development and implementation of adaptation measures that can also produce synergies, parallelisms and co-benefits toward climate change mitigation.**

<b>#49</b>	<b><i>Native forest</i></b>	<b><i>Agriculture</i></b>	
By 2030, 100% of the 2012 native forest area will be maintained, with the option of potentially increasing this area by 5%, especially in water resource environmental protection areas, to revert degradation processes (892,460 ha).			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Native forest areas provide shelter and shade to livestock systems and provide support services for water quality preservation and soil erosion prevention.			
<b>Mitigation co-benefits.</b>			
Ecosystem services that contribute to the goals of the Convention on Biological Diversity and the Convention to Combat Desertification.			
<b>Contribution to Loss and Damage Assessment</b>			
Not identified.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

<b>#50</b>	<b><i>Intermittent irrigation in rice cultivations</i></b>	<b><i>Agriculture</i></b>	
By 2030, intermittent irrigation technology with variable depth has been introduced in between 5% and 10% of the rice growing area.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> It promotes more efficient irrigation practices, potentially reducing the water volume required during the crop cycle when winter and spring rainfall is low and irrigation water reserves are limited.			
<b>Mitigation co-benefits.</b>			
Potential reduction of methane emissions from rice cultivations.			
<b>Contribution to Loss and Damage Assessment</b>			
Not identified.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

<b>#51</b>	<b><i>Shade and Shelter Forest Plantations</i></b>	<b><i>Agriculture</i></b>	
By 2030, 100% of the 2018 shade and shelter forest plantation area is maintained, including silvopastoral systems, with the option of increasing this area by 10%, providing shelter and greater comfort for animals, particularly in unfavorable weather situations.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Enhancement of animal shelter and welfare in livestock production systems, particularly in unfavorable weather conditions (wind, solar radiation, rain and temperature changes) and contributes to enhancing productive efficiency in animal production systems.			
<b>Mitigation co-benefits.</b>			
It contributes to the conservation of carbon stocks in living biomass, among other carbon pools present in these lands.			

<b>Contribution to Loss and Damage Assessment</b>			
Contributes to reducing economic losses due to extreme temperature events.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

<b>#52</b>	<b><i>Good management practices for natural grassland and breeding herd</i></b>		<b><i>Agriculture</i></b>
By 2030, good management practices for natural grassland and breeding herds have been adopted in livestock production farms between 1,500,000 and 4,000,000 ha, reducing vulnerability to climate variability in livestock production systems based on natural grassland.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It preserves the biodiversity of natural grasslands, improves the efficiency of livestock production systems, promotes water quality conservation services and reduces the impacts of soil erosion.			
<b>Mitigation co-benefits.</b>			
These changes in natural grassland and breeding herd management practices help reduce GHG emissions, increase soil organic carbon sequestration (SOC) and reduce GHG emissions intensity per unit of product.			
<b>Contribution to Loss and Damage Assessment</b>			
Contributes to reducing economic losses.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

<b>#53</b>	<b><i>Land Use and Management Plans</i></b>		<b><i>Agriculture</i></b>
By 2030, 95% of the agricultural area under Land Use and Management Plans, which tackle erosion reduction and organic matter conservation in croplands, has enhanced its productivity and water storage capacity and reduced the risk of erosion during extreme rainfall events.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> The pasture phase in agricultural rotation promotes the accumulation of organic matter in the soil, greater water storage capacity, reducing vulnerability to water deficit and soil loss due to erosion.			
<b>Mitigation co-benefits.</b>			
Contributes to preserve and enhance soil organic carbon stocks.			
<b>Contribution to Loss and Damage Assessment</b>			
Contributes to reducing economic losses.			
<b>National Framework</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

<b>#54</b>	<b><i>Wastewater management in dairy farms</i></b>		<b><i>Agriculture</i></b>
By 2030, best wastewater management practices have been implemented in dairy farms, including wastewater recovery as soil improvers, reaching 50% of the national herd.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It helps conserve water resources quality, reducing the amount of wastewater with a high nutrient load discharged into watercourses.			
<b>Enhancing adaptive capacity:</b> Improve soil conditions to increase dairy herd production.			
<b>Mitigation co-benefits.</b>			
Wastewater management systems with zero discharge to streams provide GHG emission mitigation benefits, especially methane. It also contributes to reducing nitrous oxide emissions from nitrogen fertilizers.			
<b>Contribution to Loss and Damage Assessment</b>			
Not identified.			

National Framework	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 15, 16	Potentially responsive	SDGs 2, 13, 15	MGAP

## ENERGY

*(relative to paragraphs 18 and 20 of the PNCC)*

**Strengthen energy planning instruments incorporating adaptation to climate change and variability to improve the resilience and adaptive capacity of the system and infrastructure.**

#55	2025 Action Plan - 2030 NAP-Energy	Energy	
By 2030, the 2026-2030 Action Plan of the National Energy Adaptation Plan (NAP-Energy) has been implemented.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> Specific measures are designed and developed to reduce the sector's vulnerability to the effects of climate change.			
<b>Enhancing adaptive capacity:</b> Relevant information is produced on the vulnerability of the energy system components to improve decision-making regarding the design of adaptation actions.			
<b>Mitigation co-benefits.</b>			
Reduction in GHG emissions as a result of the diversification of the matrix using renewables with different sources.			
<b>Contribution to Loss and Damage Assessment</b>			
It reduces losses due to the impact of adverse events, promotes continuity of supply and tools for assessing losses and damages in the sector.			
National Frameworks	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 18 & 20	Potentially Responsive	SDGs: 5, 7, 9 & 13	MIEM

**Identify and assess energy system risks in terms of power generation, transmission and distribution, as well as improve the resilience of current and future energy infrastructure to climate change.**

#56	Guide for the adaptation of the goods and services production sector	Energy	
By 2030, an energy sector risk reduction guide for power demand sectors has been developed and implemented.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> An instrument is developed for the assessment, identification and implementation of adaptation and risk reduction measures in the production of goods and services sector, both public and private.			
<b>Mitigation co-benefits.</b>			
<i>Not identified</i>			
<b>Contribution to Loss and Damage Assessment</b>			
It reduces losses due to the impact of adverse events, ensuring the continuity of energy supply and generates tools for assessing and recording losses and damages in the sector.			
National Frameworks	Gender Categorization	International Frameworks	Responsible entity:
PNCC: Paragraphs 18 & 20	Potentially Responsive	SDGs: 5, 7, 9 & 13	MIEM

#57	Vulnerability studies in critical infrastructures	Energy
By 2030, a work plan has been developed and implemented to conduct vulnerability studies and identify adaptation and risk reduction measures for critical infrastructure in the face of extreme events.		
<b>Contributions to the Global Goal on Adaptation</b>		
<b>Reducing vulnerability:</b> Adaptation and risk reduction actions are identified and implemented in critical infrastructures of the electric power system.		

<b>Enhancing adaptive capacity:</b> Relevant information is produced on the vulnerability of the energy system components to improve decision-making regarding the design of adaptation actions.			
<b>Mitigation co-benefits.</b>			
Not identified			
<b>Contribution to Loss and Damage Assessment</b>			
It reduces losses due to the impact of adverse events, promotes continuity of supply and generates tools for assessing and recording losses and damages in the sector.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC: Paragraphs 18 & 20	Potentially Responsive	SDGs: 5, 7, 9 & 13	MIEM

## TOURISM

(relative to paragraph 19 of the PNCC)

**Promote research and risk assessment on the effects of climate change on tourism to improve the design of adaptation actions to be implemented in the medium and long term.**

<b>#58</b>	<b>Risk analysis by tourism products.</b>		<b>Tourism</b>
By 2030, vulnerability and hazard analyses will have been carried out in the sector, per tourism products and considering the trends determined by existing climate projections agreed upon within the framework of the SNRCC.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> The availability of information on the analysis and evaluation of risks and impacts, favors coping capacities and the design of measures and actions to reduce the specific vulnerabilities that result from those risks that are caused and enhanced by climate change.			
<b>Mitigation co-benefits.</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
It contributes to understanding the impacts of climate-related events and their associated costs.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 19	Potentially Responsive	SDGs 5, 11, 12, 13, 14, 15	MINTUR, SNRCC

<b>#59</b>	<b>Updated 2030 National Tourism Plan</b>		<b>Tourism</b>
By 2030, the 2030 National Tourism Plan will have been reviewed and updated, based on the risk assessments carried out, in line with the existing National Adaptation Plans.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Enhancing adaptive capacity:</b> It provides tools for decision-making and the design of adaptation actions that, when applied, reduce the vulnerabilities identified and allow key tourist destinations to become more resilient and adapt to the conditions that climate change will bring about.			
<b>Mitigation co-benefits.</b>			
Depending on the actions identified and prioritized, it would allow for a reduction in greenhouse gas emissions by implementing energy efficiency and waste management practices and protecting and conserving ecosystems.			
<b>Contribution to Loss and Damage Assessment</b>			
Depending on the actions identified and prioritized, it will allow for a reduction in the impacts of extreme and slow-onset events, and it will provide tools for assessing and quantifying these impacts.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 19	Potentially Responsive	SDGs 5, 11, 12, 13, 14, 15	MINTUR, SNRCC

Promote the generation of and access to relevant, comprehensive and valuable information, the use of weather information, early warnings and other climate risk management tools for decision-making by institutions and the population.

<b>#60 Tourism information systems and Warnings.</b>		<b>Tourism</b>	
By 2030, at least 4 touristic cities will have integrated weather and emergency warnings into their tourism information systems, and they will have trained their tourism operators and officials in the use of this information.			
<b>Contributions to the Global Goal on Adaptation</b>			
<b>Reducing vulnerability:</b> It reduces the impact of extreme events and protects the local population and visitors by providing them with timely information on weather warnings, emergencies and other risks that may affect them.			
<b>Enhancing adaptive capacity:</b> Tools are available for preventive and reactive action in the face of risks and extreme events in the main tourist cities. The knowledge and response capacity of operators and officials to climate change's potential impacts and risks is improved, which will have a multiplier effect through traction on the behavior of visitors and tourists.			
<b>Mitigation co-benefits.</b>			
Not identified.			
<b>Contribution to Loss and Damage Assessment</b>			
It contributes to the generation of information to identify and register potential impacts in the event of emergency warnings.			
<b>National Frameworks</b>	<b>Gender Categorization</b>	<b>International Frameworks</b>	<b>Responsible entity:</b>
PNCC Paragraph 19	Potentially Responsive	SDGs 5, 11, 12, 13, 14, 15	MINTUR, SNRCC.

