URUGUAY´S FOURTH NATIONAL COMMUNICATION
TO THE CONFERENCE OF THE PARTIES IN THE
UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

EXECUTIVE SUMMARY

2016

URUGUAY

MVOTMA
Ministerio de Vivienda
Ordenamiento Territorial
y Medio Ambiente

SNRCC
Uruguay

FOURTH NATIONAL COMMUNICATION TO THE CONFERENCE OF THE PARTIES IN THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

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

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PNUD
Al servicio de las personas y las naciones

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NATIONAL CIRCUMSTANCES

1.1. Background

Uruguay's geophysical, environmental, climatic, sociocultural, economic and political-institutional characteristics provide opportunities and challenges when it comes to building a sustainable, resilient and low-carbon country, in order to achieve the UNFCCC objectives undertaken by Uruguay within a strong institutional framework stability, and resorting mainly to the country's own efforts and capacities.

Uruguay has a strong political, social and economic stability, which is supported by a solid, legally robust democracy. This is essential to ensure respect for human rights and to promote the necessary circumstances to develop public policies that will address the challenges posed by climate change.

The country's economy has grown significantly since 2003 with an annual average of 4,7% in the period. This is linked to the implementation of a new model of resilient and low-carbon development. The country's economy is based on agroindustrial chains, which makes it extremely vulnerable to climate variability and climate change.

In this 10-year period there was a significant decline in poverty rates, from 39.9 % to 9.7 %, while extreme poverty was virtually eradicated, dropping from 4.7 % to 0.3 %, reaching a Gini Index of 0.38.

Extreme climate events, mainly floods and droughts, have had different adverse effects on the country's society and economy: both on the most vulnerable communities (population and infrastructure) and on climate-dependent basic services and economic activities. In 2015, the country's water deficit had a strong impact on the agricultural sector, causing major economic losses. In the same year, severe floods in the Departments of Salto, Paysandú and Artigas forced between 5 and 15 % of the population in these areas to evacuate their homes. This caused major losses in housing and urban infrastructure, and had a psychosocial impact on the most vulnerable population.

Regional climate scenarios show an increase in rainfall and temperatures with a strong influence of the El Niño–Southern Oscillation (ENSO) phenomenon.

The population's high education level (97.9 % literacy rate) and a strong state education system throughout the country provide us with an opportunity to include in society and production systems low GHG emissions sustainable practices and climate risk-prevention behaviors aimed at building resilience to climate change and variability. The strong presence of health care systems nationwide is also crucial when it comes to implementing measures to reduce the impact of these events on people's health.

The country's natural heritage, represented by its varied ecosystems, biodiversity and water wealth spread around the country, is an asset that provides us with the opportunity to develop adaptation and mitigation strategies based on ecosystem recovery and conservation.

Although per capita GDP almost doubled in ten years and food production increased threefold, GHG emissions remained almost constant, and in some sectors they even decreased significantly.

The country was able to undergo such a dynamic growth while reducing emissions in the main sectors and incorporating adaptation practices into their strategies, thanks to strong public policies on climate change, a new institutional framework, both at national and departmental level, and to the design of a National Climate Change Response Plan.

Taking on an even greater challenge, Uruguay is working on a new national dialogue that includes all sectors in order to develop a National Climate Change Policy that addresses national needs and the challenges faced by all sectors to comply with the commitments the country has made under the UNFCCC.

Uruguay's international standing

- *Rule of law (2014): Uruguay ranks first in Latin America and 20th in the world.*
- *Democracy Index (2012): Uruguay ranks first in Latin America and 18th in the world.*
- *Economic freedom (2014): Uruguay ranks second in Latin America and 36th in the world.*
- *Corruption Perceptions Index (2013): Uruguay ranks 19th among 176 countries, and 1st in Latin America as a reliable country with the lowest levels of corruption.*
- *Human Development Index (2013-2014): Uruguay ranked 50th with an 0.79 index.*
- *In this period there was a significant decline in poverty rates, from 39.9% to 9.7%, while extreme poverty was virtually eradicated and a Gini Index of 0.38 was reached.*

1.2. Institutional framework

Uruguay adopted climate change as an important matter within its institutional framework very early on. We currently have a strong political commitment to integrate climate change into the different areas of public policy. This is now possible thanks to a process that promoted the development of domestic tools and capacities in order to create the necessary institutional, regulatory and management framework.

The first stage of this process was between 1992 and 2008, when international instruments were ratified, such as the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. The Ministry of Housing, Land Planning and Environment (MVOTMA) became the focal point and competent national authority in charge of enforcing the Convention and the Protocol. Additionally, the country strengthened its domestic capacities to develop national greenhouse gas inventories, climate scenarios, and to implement pilot projects on adaptation and mitigation technologies and strategies.

Between 2009 and 2014, with the creation of the National Climate Change Response System and the Variability (SNRCC) and the participatory development of the National Climate Change Response Plan, the topic is brought to the forefront, and interinstitutional and cross-sectoral coordinated work is promoted. In this period, climate change became part of sectoral public policy and decentralization strategies. Therefore, sectors such as energy, agriculture, tourism, health, disasters risk and water resource management begin to include climate change and variability in their sectoral policies, plans and lines of action. Specific interinstitutional areas were created and progress is made regarding knowledge creation and the implementation of adaptation and mitigation measures. In turn, departmental and local governments began to include the climate change perspective in their institutional design, and plans and lines of action to better face diverse local impacts.

As of 2015, the Administration strengthened its commitment to achieve sustainable and resilient development in the country. This can be seen in the support given to the SNRCC, in the creation of a political management position for all climate change affairs within the MVOTMA, and in the creation of the National Environmental System (SNA), the National Environmental Cabinet and the National Environment, Water and Climate Change Secretariat (SNAAC) under the Executive. As of 2016 in particular, this can be seen in the participatory development of a National Climate Change Policy (PNCC) to strengthen the country's structural transformation with a view to 2050. This new perspective strengthens cross-sectoral and interinstitutional work and its engagement in the territory by optimizing management and public policy tools.

Uruguay is now working on developing the PNCC, looking to include climate change in public policy, particularly in development policies. This is done through a participatory process with the commitment and participation of the public and private sectors, the civil society and sectors that create scientific-technical knowledge. This has required a multi-stakeholder and multi-sectoral approach to be able to analyze the national and local impact of climate change, to analyze the related problems and to develop strategic guidelines with a view to 2050 within a sustainable, inclusive, low-carbon and climate-resilient development model.

CHAPTER 2

GREENHOUSE GAS INVENTORY

This National Communication summarizes the results of the 2012 National Greenhouse Gas Emissions Inventory (NGHGI), as well as a Comparative Study of the Country's Net Greenhouse Gas Emissions for 1990, 1994, 1998, 2000, 2002, 2004, 2006, 2008, 2010 and 2012.

The study was conducted as per the Guidelines for the Preparation of National Communications approved by the Non-Annex I countries parties to the UNFCCC (Decision (17/CP.8). The following are the national sectors included in this inventory: Energy, Industrial processes, Solvent and other product use, Agriculture, Land use, land-use change and forestry (LULUCF) and Waste. Sources and sinks were grouped by sectors, and these in turn included activities, sub-activities, categories, sub-categories and other divisions, to reflect the measurement of greenhouse gas emissions and removals as accurately as possible.

After the 2006 NGHGI, arrangements were developed between the Ministry of Housing, Land Planning and Environment (MVOTMA), the Ministry of Livestock, Agriculture and Fisheries (MGAP) and the Ministry of Industry, Energy and Mining (MIEM) to estimate greenhouse gas (GHG) emissions and their evolution. In this sense, MVOTMA is in charge of coordinating the inventory and preparing the final report, and of estimating emissions and their evolution in the following sectors: Industrial processes, Waste, Solvent and other product use. The ministry also collects sector-specific information submitted by other ministries, develops the general emissions overview from sector-specific reports, and drafts the final NGHGI document to be submitted to the UNFCCC. Moreover, MGAP estimates and reports on greenhouse gas emissions and their evolution in the following sectors: Agriculture and Land use, land-use change and forestry. MIEM does the same work in the Energy sector.

The analysis includes the estimation of carbon dioxide (CO_2) emissions and removals, as well as methane (CH_4) and nitrous oxide (N_2O) emissions. It also includes estimations of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF6) emissions. Furthermore, it includes the estimation of the emissions of the following indirect greenhouse gases (tropospheric ozone precursors): nitrogen oxide (NOx), carbon monoxide (CO), non-methane volatile organic compounds (NMVOCs) and sulfur dioxide (SO_2).

The Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories (Volumes I, II and III) were used, as well as the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories (GPG 2000). The 2006 IPCC Guidelines were used to estimate Solid Waste Disposal in the Waste sector. Additionally, emission factors from these Guidelines were used (2006 IPCC) when there were values that reflect more accurately the country's situation (the source was mentioned in such cases). Emissions from the Solvent and other product use sector (NMVOCs emissions were determined for Domestic solvent use) were estimated according to the methodology and factors suggested in the EEA Guidebooks (2013) [(1)].

The main categories were estimated applying the 2003 IPCC Good Practice Guidance for LULUCF (tier 1). This document includes both emissions and removals, which are assessed per tier and trend, while uncertainty is analyzed qualitatively.

This information is included in the Fourth National Communication as well as the tables summarizing methodologies and worksheets.

In Uruguay, carbon dioxide (CO_2) emissions were mainly produced by the Energy sector through burning fossil fuels. In 2012, this sector generated 8199 Gg, accounting for 95% of total gas emissions. In turn, the Industrial processes sector generated 420 Gg, accounting for 5% of total gas emissions. In contrast, Land Use, land-use change and forestry (LULUCF) captured 2126 Gg of CO_2 on account of changes in soil woody biomass. A projected future improvement is to estimate the emission/removal on account of biomass change in grassland to cropland conversion, as well as carbon stock changes in soils. Uruguay has no net deforestation and no burning of forests or croplands.

Therefore, a national CO_2 net emission of 6493 Gg was reached. The most important emissions for CO_2 comes from the Energy Sector, and the Subsectors of "Energy Industries" and "Transportation" that in 2012 contributed with 37.9% and 37.8 each one. In 2012, rainfall levels were low, which led to a lower generation of hydroelectric power, causing a higher fuel consumption in thermal power plants.

Methane emissions reached 799 Gg in 2012. These were generated mainly by the Agriculture sector, accounting for 93.3% of the total emissions, followed by the Waste sector with 5.9%, and finally the Energy sector with just 0.8% of the total methane emissions. The largest CH_4 emissions came from enteric fermentation, which accounted for 87.0% of the country's total in 2012. Of these, the largest amount came from the enteric fermentation process of beef cattle.

In 2012, nitrous oxide (N_2O) emissions were of 43 Gg, divided as follows: 98.4% from the Agriculture sector, 1.0% from the Energy sector and 0.6% from the Waste sector. Given the lack of activity data, the emissions

(1) EEA (2013) EMEP/EEA Air Pollutant Emission Inventory Guidebook 2013. Technical guidance to prepare national emission inventories. EEA Technical report Nº12/2013. European Environment Agency, Copenhagen.

for Solvent and other product use sector were not estimated. Within Agriculture, the highest contributing category was Agricultural land: 98.0% of the country's total emissions. The largest emissions came from cattle manure on grazing areas.

It must be noted that Uruguay does not produce hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs). Therefore, the demand is met exclusively by importing these gases for different uses. In this sense, the use of HFCs in the country to substitute chlorofluorocarbon (CFCs) following the Montreal Protocol, mainly in the Refrigeration sector, gave rise to a potential HFCs emission of 0.12 Gg. In addition, it was estimated that there were no PFCs emissions in 2012, as these gases were not imported and there is not information regarding their use in the country.

Regarding indirect gases, the Energy sector accounted for 95.4% of NOx emissions, followed by the Industrial processes sector with 3.5% and the Agriculture sector with 1.1%. Regarding carbon monoxide, the Energy sector emissions were 97.3% of the country's total, followed by the Agriculture sector with 1.4% and the Industrial processes sector with 1.3%. Regarding NMVOCs emissions, the Energy sector produced 70.8 % of the country's emissions, the Industrial processes sector 21.3% and the Solvent and other product use sector 7.9% of the country's total for 2012. There were SO_2 emissions in the Energy sector (82.1%) and Industrial processes sector (17.9%).

The aggregation of direct gas emissions in CO_2 eq units used by the Global Warming Potential (GWP) in a 100-year time horizon is based on the relative importance of greenhouse gases in relation to carbon dioxide, in the production of an amount of energy (per area unit) several years after emission impulses. When measured in terms of the increase in average temperature on the Earth's surface, rising sea levels or any other damage-related weather statistics, climate change is not proportional to energy, except for a short period. Therefore, the use of the GWP overestimates the importance of greenhouse gases that remain in the atmosphere for a short period, especially methane. The Fifth Assessment Report (AR5) presents and describes alternative metrics: the Global Temperature Change Potential (GTP). Despite the increased estimation uncertainty as it resorts to the sensitivity of the climate system, the GTP is more appropriate to measure the effects of different gases regarding a temperature goal, such as the one included in the Paris Agreement. Additionally, it provides better guidance when it comes to more effective mitigation policies in the context of a temperature goal. In this inventory, the GWP is still used in a 100 year time horizon (as per the IPCC Second Assessment Report [2]). However, the use of GWP leads to an overestimation of the proportion of methane. The Inventory results are also presented using the GTP, in a 100 year time horizon, as a metric to add greenhouse gases given its relevance for public policy design and its best relation to the temperature goal. Methane overestimation on account of GWP metrics makes us focus on its sources, the main one being Agriculture: beef and rice production. It also reduces the need to decrease CO_2, fossil fuel emissions and the control of some industrial gases that remain in the atmosphere for a long period of time.

Total net GHG emissions in Uruguay measured with a 100-year GWP amounted to 36,765 Gg CO_2 eq [3] in 2012, which represents 0.07% of the global anthropogenic GHG emissions. (This estimation was made considering the 2010 global emissions value reported by the IPCC [4]: 49 Gt CO_2 eq). In 2012, the Agriculture sector made the highest contribution to total emissions (excluding removals) with 73.8%, followed by the Energy sector with 21.8%, Waste with 2.7%, and finally the Industrial processes sector with 1.7% of emissions (the Solvent and other product use sector is excluded since only indirect gases were included). Net methane emissions expressed in CO_2 eq Gg as per GWP metrics represent 43% of the country's total emissions (excluding removals), net nitrous oxide emissions represent 34% of total emissions (excluding removals), carbon dioxide emissions 22%, and, despite their high global warming potential, HFCs and SF_6 represented 0.6% (excluding removals), which is negligible when compared to the three other greenhouse gases.

Using GTP metrics, given the strong presence of CH_4, Uruguay's net emissions decreased significantly in CO_2 eq (-81%), and the country's net emissions decreased 43% compared to emissions estimated using GWP metrics. In Uruguay, the metrics used have a strong impact on the relative weight of activities that generate methane in relation to other activities in the total national emissions. GWP leads mitigation strategies to focus on CH_4, while GTP metrics indicate that N_2O is the main greenhouse gas in Uruguay. It represents 46% of emissions, followed by CO_2 (39%) and methane (15%), and HFCs and SF6 in smaller amounts (less than 1%) when GTP metrics are used. Although the Agriculture sector produces the largest percentage of emissions as determined through both metrics, the prevalent GHG changes: methane according to GWP and nitrous oxide when GTP is used.

(2) IPCC, 1995. Second Assessment Report Climate Change, 1995 (SAR).

(3) This includes net total emissions of all direct GHG: CO2, CH4, N2O, HFCs and SF6.

(4) IPCC, Climate Change 2014, Trends in stocks and flows of GHG and their drivers. Working Group III contribution to the IPCC Fifth Assessment Report.

The evolution of net emissions (including LULUCF) of greenhouse gases considered when developing the inventories is presented below as country's total and by sector for the years 1990, 1994, 1998, 2000, 2002, 2004, 2006, 2008, 2010 and 2012, following GWP and GTP metrics.

The country's emissions increased 22% compared to what is reported for the 1990 NGHGI, and 19% compared to the 2010 NGHGI. The emissions historic low was recorded for the 2002 NGHGI, with a net emission of 19,657 Gg CO_2 eq (GWP100). In 2002 the country faced an economy downturn which was reflected in the lower emissions produced by the Energy and Industrial processes sectors, while at the same time the highest capture from commercial tree plantations was recorded. In addition, 2002 marked the historic maximum in hydroelectric power production (only surpassed in 2014). This led to a decrease in fossil fuel consumption for electricity generation, which in turn also led to a decrease in emissions.

The main source of emissions in this period was the Agriculture , being its relative weight compared to the country's total depends on the metrics used (GWP or GTP) to determine the contribution to global warming. Within the Agriculture sector the main source for emissions are methane from enteric fermentation when GWP is used, and the main source for emissions are nitrous oxide from agriculture soils when GTP is used.

Net removals from forestry activities increased substantially between 1990 and 2000, and then decreased. Removal increase until 2000 is mainly explained by the increase in the area covered by commercial tree plantations used for the sawmilling and pulp industry. A secondary explanation is the increase in native forest removals. As of 2002, harvesting began on a growing number of the plantations established in the 1990s; net removals decreased steadily until 2012. Trends indicate a gradual saturation process of the sink effect between 2002 and 2012. This was mainly due to the gradual stabilization of the forested areas that were harvested annually. There was an increase in emissions recorded in the last period due to a decrease in CO_2 removals due to harvesting of planted forests. In turn, the increase in CO_2 emissions in the Energy sector was due to an increase in fossil fuel consumption to generate electrical power to compensate for the low hydroelectric power generation on account of low rainfall.

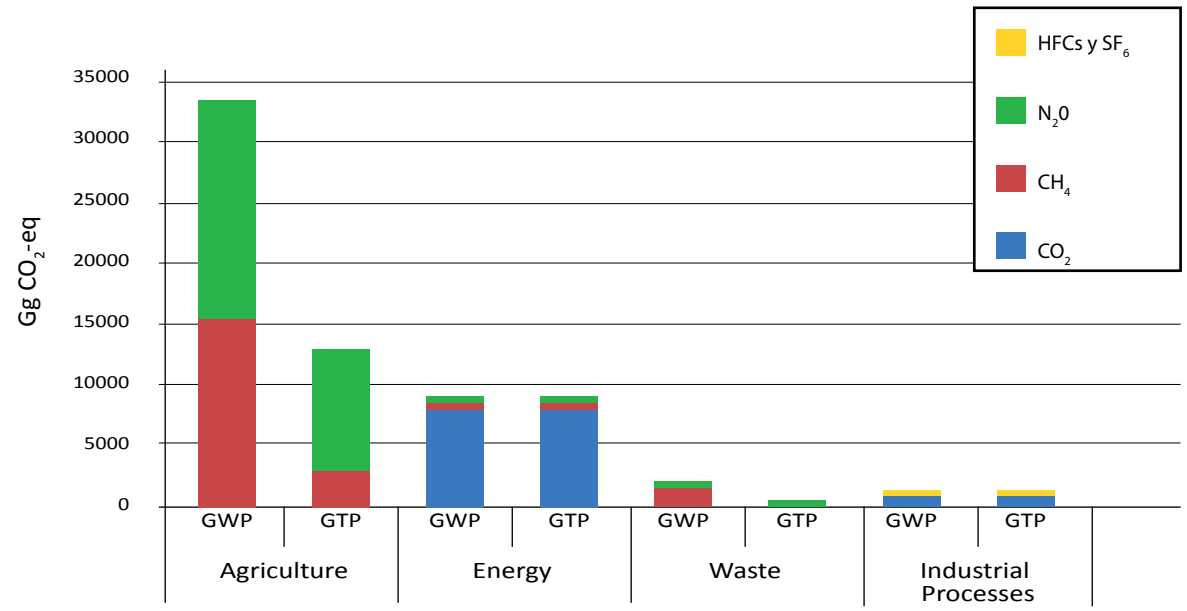

Figure 1. Country's emissions by sector and gas with GWP and GTP metrics, 2012

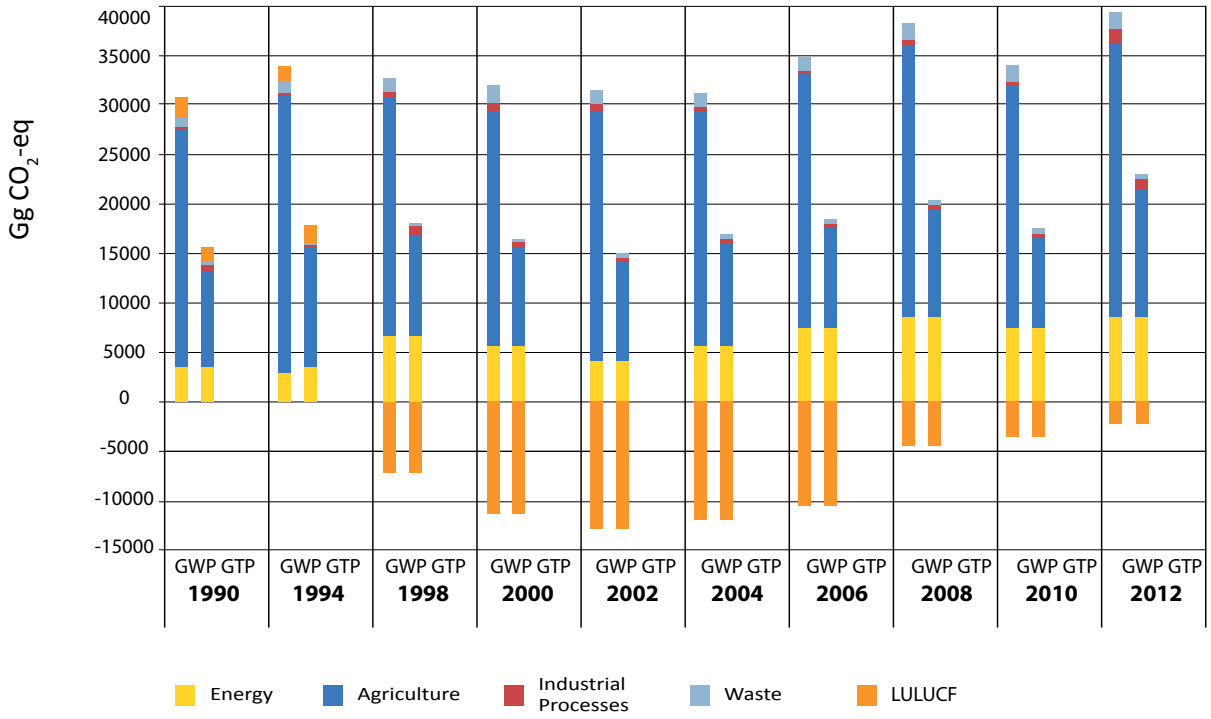

Figure 2. Evolution of the country's emissions by sector and metrics for 1990-2012.

NATIONAL GREENHOUSE GAS INVENTORY SUMMARY REPORT (Gg)								
GREENHOUSE GAS INVENTORY AND SINKS CATEGORIES	**CO_2 Emissions**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**COVDM**	**SO_2**
Country's total emissions and removals	8.619	2.126	799	43	61	590	117	60
1 Energy	8.199		6,1	0,43	58	574	83	49
A Fuel burning (sector-specific method)	8.199		5,6	0,43	58	574	82	47
1 Energy industries	3.263		0,22	3,7E-02	11	3,8	0,37	24
2 Manufacturing and construction industries	642		0,42	0,14	4,6	130	2,0	11
3 Transport	3.260		0,80	0,11	31	294	69	5,0
4 Other sectors	1.033		4,20	0,14	12	146	10	7,4
5 Others (specify)	0,58		NE	NE	NE	NE	NE	1,2E-04
B Fugitive emissions from fuels			0,51	NO	0,11	0,18	1,2	1,8
1 Solid fuels			NO	NO	NO	NO	NO	NO
2 Oil and natural gas			0,51		0,11	0,18	1,2	1,8
2 Industrial processes	420		NO	NO	2,1	7,9	25	11
A Mineral products	419						16	0,27
B Chemical industry	NO		NO	NO	NO	NO	NO	0,51
C Metal production	0,35		NO	NO	NO	NO	NO	NO
D Other types of production (paper, paper pulp, food and beverages)					2,1	7,9	9,5	9,9
E Production of halocarbons and sulfur hexafluoride								
F Consumption of halocarbons and sulfur hexafluoride								
G Others (specify)	NO		NO	NO	NO	NO	NO	NO
3 Solvent and other product use	NE			NE			9,3	
4 Agriculture			746	42	0,71	8,3		
A Enteric fermentation			693					
B Manure management			16	0,33				
C Rice production			36					
D Agricultural land				42				
E Controlled savanna burning			0,22	0,015	0,53	5,6		
F Burning of land with agricultural waste			0,13	0,0051	0,18	2,7		
G Others (specify)			NO	NO	NO	NO	NO	
5 Land-use change and forestry(2)		2.126						
A Biomass change of forests and other types of woody vegetation		2.126						
B Forest and land conversion	NO/NE	NO/NE						
C Abandonment of farmed land		NO						
D CO2 emissions and removals from soils	NE	NE						
E Others (specify)	NO	NO						

NATIONAL GREENHOUSE GAS INVENTORY SUMMARY REPORT (Gg)								
GREENHOUSE GAS INVENTORY AND SINKS CATEGORIESW	**CO_2 Emissions**	**CO_2 Removals**	**CH_4**	**N_2O**	**NO_x**	**CO**	**COVDM**	**SO_2**
6 Waste			47	0,25				
A Solid waste disposal			34					
B Wastewater treatment			13	0,25				
C Waste burning	NE		NE	NE				
D Others			NO	NO	NO	NO	NO	NO
7 Others	NO	NO	NO	NO	NO	NO	NO	NO
Memorandum items								
International bunkers	1.183		9,2E-02	4,1E-02	27	1,7	2,7	5,5
Maritime transport	894		8,3E-02	2,4E-02	25	0,54	2,36	5,35
Air transport	284		8,2E-03	7,9E-03	1,2	0,58	0,07	0,04
Air transport (Tier 2 - Jet)	289		1,4E-03	9,2E-03	0,89	0,53	0,24	0,09
CO2 emissions on account of bio-mass burning	5.976							
	NO: Non-occurring		NE: Not estimated					

Table 1. National Greenhouse Gas Inventory Summary Report.

* NO/NE It does not occur (NO) the conversion of forests to farmland because there is no net deforestation in Uruguay / not estimated (NE) the conversion of prairies to farmland.

NATIONAL GREENHOUSE GAS INVENTORY SUMMARY REPORT (Gg)								
GREENHOUSE GAS INVENTORY AND SINKS CATEGORIES	**HFC** (TIER 1)						**PFC**	**SF6** (TIER 1)
	HFC-134a	**HFC-125**	**HFC-143a**	**HFC-32**	**HFC-23**	**HFC-152a**		
Country's total emissions and removals	0,07	0,02	0,02	3,2E-3	8,0E-6	1,9E-3	NO	1,7E-4
1 Energy								
A Fuel burning (sector-specific method)								
1 Energy industries								
2 Manufacturing and construction industries								
3 Transport								
4 Other sectors								
5 Others (specify)								
B Fugitive emissions from fuels								
1 Solid fuels								
2 Oil and natural gas								
2 Industrial processes	0,07	0,02	0,02	3,2E-3	8,0E-6	1,9E-3	NO	1,7E-4
A Mineral products								
B Chemical industry								
C Metal production	NO	NO	NO	NO	NO	NO	NO	NO
D Other types of production (paper, paper pulp, food and beverages)								
E Production of halocarbons and sulfur hexafluoride	NO	NO	NO	NO	NO	NO	NO	NO
F Consumption of halocarbons and sulfur hexafluoride	0,07	0,02	0,02	3,2E-3	8,0E-6	1,9E-3	NO	1,7E-4
G Others (specify)								
3 Solvent and other product use								
4 Agriculture								
A Enteric fermentation								
B Manure management								
C Rice production								
D Agricultural land								
E Controlled savanna burning								
F Burning of land with agricultural waste								
G Others (specify)								
5 Land-use change and forestry(2)								
A Biomass change of forests and other types of woody vegetation								
B Forest and land conversion								
C Abandonment of farmed land								
D CO2 emissions and removals from soils								
E Others (specify)								
HFCs AND SF6: They correspond to potential emissions (TIER 1)			NO: Non-occurring			NE: Not estimated		

NATIONAL GREENHOUSE GAS INVENTORY SUMMARY REPORT (Gg)								
GREENHOUSE GAS INVENTORY AND SINKS CATEGORIES	**HFC** (TIER 1)						**PFC**	**SF6** (TIER 1)
	HFC-134a	**HFC-125**	**HFC-143a**	**HFC-32**	**HFC-23**	**HFC-152a**		
Country's total emissions and removals								
6 Waste								
A Solid waste disposal								
B Wastewater treatment								
C Waste burning								
D Others								
7 Others	NO	NO	NO	NO	NO	NO	NO	NO
Memorandum items								
International bunkers								
Maritime transport								
Air transport								
Air transport (Tier 2 - Jet)								
Emisiones de CO_2 por quema de biomasa								
HFC Y SF6 : Corresponden a emisiones potenciales (TIER 1)			NO: No Ocurre			NE: No estimado		

Table 2. National Greenhouse Gas Inventory Summary Report for HFCs, PFCs and SF6.

CHAPTER 3

ACTIONS TAKEN OR MEASURES PROPOSED TO IMPLEMENT THE CONVENTION

The country has made progress towards achieving sustainable, resilient and low-carbon development thanks to a process which entailed the implementation of different public policies and the participation of multiple sectors of the economy and the society, both at national and subnational level.

Adaptation and mitigation actions have been supported by an innovative and well-suited institutional, regulatory and management framework at national and sectoral level. In some cases this allowed for the development of sector-specific adaptation and mitigation strategies, such as the 2008 energy policy and the 2010 smart agriculture policy. In those sectors where progress has been more moderate, as in social and economic policies, these circumstances have allowed for the consideration of a novel approach towards a low-carbon and resilient development model. The incorporation of an environmental perspective into the design of sustainable productive development initiatives has been essential in this stage. Likewise, the inclusion of vulnerability reduction and social inclusion perspectives has been central in the design and implementation of sectoral and cross-cutting public policies aimed at building resilience.

3.1. Adaptation measures, programs and projects executed or in progress

Through the combination of public policies, strategic actions and programs for adaptation, we have aimed to build communities that are resilient to climate variability and extreme events as we consider this to be essential to reduce vulnerability with equity and social inclusion. Adaptation based on the sustainable conservation and management of natural resources and ecosystems was also addressed. These are considered as fundamental actions necessary to ensure that food production and the basic needs of the population are met, which is one of the core aspects of our national policy.

The measures promoted to increase the adaptive capacity of the agricultural sector, and that of livestock farming in particular, have entailed, among other actions, water source and feed availability planning, as well as the development of sustainable management measures based on access to climate information.

In order to formulate specific actions for a sustainable management of water resources while integrating climate variability impact assessment we have had to lead interinstitutional and cross-sectoral coordinated work, supported by the National Water Policy and the design of the National Water Plan. We have produced information and management tools to tackle droughts and floods, tapping into interinstitutional collaboration for the development of such tools at all levels.

Throughout this period there has been a significant change in perception regarding biodiversity and ecosystems and how important their preservation and restoration are, due to all the goods and services they provide. The 2016-2020 National Strategy for the Sustainable Conservation and Use of Biodiversity sets out strategies to address our country's needs in the face of future climate change and variability scenarios as it undergoes a process of expansion and intensification in the use of natural resources.

Since climate variability has a deep impact on coastal ecosystems and these are fundamental to our country's urban development and tourism, successful restoration and conservations strategies have been developed, showing how effective collaboration between the community and local governments can be to take ownership and incorporate such practices.

This comprehensive approach to climate risk management has allowed for significant progress. Especially in terms of learning about hazards, Early Warning System (EWS) development for flood vulnerable areas, such as Durazno, Artigas and Treinta y Tres, maximizing resources, mitigating structural damage and minimizing psychosocial impacts. Moreover, progress has been made in integrated land-use planning, outlining relocation initiatives, management plans and urban development measures in urban at-risk areas. In addition, we have been able to streamline and set forth protocols for comprehensive disaster risk management, concentrating on education and awareness to develop a culture of prevention. The implementation of a set of measures to reduce sector-specific risks has helped streamline a prevention-based approach in sectors such as agriculture, through climate index insurances, and in the power sector through different financial tools for risk reduction.

The tourism sector has committed to promoting a multidisciplinary implementation of public policies at national level that will translate into actions at local level to include climate change perspectives in the conservation of resources and coastal attractions and the sustainability of travel destinations.

The Land-use Planning and Sustainable Development Act has allowed the land-use sector to deploy several tools (national, departmental and sector-specific guidelines, the Strategic Environmental Assessment) to streamline actions and management initiatives in the country, including the social and environmental components, to ensure sustainability. These tools have been essential for the design of climate change strategies nationwide, which, in addition, have been supported by the different climate change offices appointed under the scope of the departmental governments. Both departmental and municipal governments as well as the communities have adopted measures and taken actions to face the effects of climate change. These include, among others, local emergency plans, technology replacement and infrastructure arrangements. A clear example of this is the Metropolitan Region Climate Plan developed by the metropolitan area municipalities and the new institutional framework set out in several departments.

For the last decade the Government has made efforts for social policies to actually and thoroughly reach the most vulnerable sectors in society, through decentralization strategies and service deployment nationwide. This has especially reached the flood affected populations. An example of this is the National Resettlement-localization Plan, which has required the coordination of decentralized policies and programs together with the efforts of departmental and municipal governments. In addition, the communities have been greatly engaged in preparedness processes in the face of early warnings, in the assessment of local capacities in case of extreme events, promoting solidarity, implementing adaptation measures, the design of local adaptation and risk management plans, and it has all unfolded under a framework that promotes a culture of prevention and increased adaptive capacity.

Moreover, the widespread coverage of health care services nationwide has made it possible, in close coordination with other social policies, to bring prevention and assistance programs to those communities facing hazards that could have health impacts. This has been possible thanks to the support and awareness of the communities that have been able to identify risks and adopt the preventive measures set out by authorities in the face of events such as cold and heat waves or vector-borne diseases.

The implementation and design of an Energy Policy has led the country towards a structural change in the energy sector. This can be clearly observed in the diversification of the electricity mix. In 2015 renewable energy sources accounted for 92,8% of total electricity generation. Moreover, renewable energy sources account for 57% of the global primary energy mix. The introduction of renewables came hand in hand with the promotion of energy efficiency strategies. What is more, these guidelines have contributed to reducing the sector vulnerability and cost overruns of the power system in case of hydropower generation deficits due to water deficits.

3.2. Mitigation measures, programs and projects executed or in progress

In terms of mitigation, for the past decade Uruguay has deployed a set of early and voluntary reduction actions supported by policies and programs and a significant number of investments promoted by, among others, instruments such as tax benefits set forth in the Investment Promotion Act (as is the case of the integration of renewable energy sources), afforestation subsidies, and the incorporation of new technologies in livestock, dairy and rice farming, which allowed us not only to improve productivity but also reduce emission intensity. It is through these actions that the country has tried to contribute to the overarching objective of the Convention, engaging in international negotiations and adopting early on the mechanisms and tools set forth under the UNFCCC to support and enhance domestic policies, in particular, the Clean Development Mechanism (CDM), and more recently the Nationally Appropriate Mitigation Actions (NAMAs) and REDD+ (Reducing emissions from deforestation and forest degradation). This engagement has contributed to the success of certain strategic lines of action and, in particular, to achieve emission reduction in Uruguay.

It is worth noting that although per capita GDP has almost doubled in the past ten years and food production increased threefold, GHG emissions remained almost constant, and even decreased significantly in some sectors.

In the *energy sector*, several key initiatives were developed in order to meet the objectives of the Energy Policy, that is, to reach a share of 50% renewable energy in the primary energy mix by 2015. These initiatives have allowed for the incorporation of different renewable energy sources to the national electricity grid. Both the use of wind power and biomass from agroindustrial waste for electricity generation have been essential to unfold the cultural change set forth by the policy.

The *agricultural sector* has also undergone significant changes that allow for an increase in productivity based on environmental best practices while reducing emission intensity per unit of product through environmentally responsible intensification of production. This is possible thanks to adequate soil use and management and greenhouse gas emission control . In the livestock farming sector these practices have led to a reduction in emission intensity per unit of product in the past few years.

The *forestry sector* has increased the number of commercial tree plantations for timber and pulp. The area covered increased by 430% in 20 years. In addition, Uruguay is the only country of the region which had an increase of native forest area in the last years, accordingly to the National Forestry Directorate of MGAP is the only country in the region where there is no native forest deforestation. La superficie cubierta con dichas plantaciones se incrementó un 430% en 20 años, al tiempo que en Uruguay según la Dirección General Forestal del MGAP la superficie de su monte nativo ha aumentado en los últimos añosUruguay was able to become a net CO_2 sink in the 1998 -2004 period, due to the nature and dynamics of tree plantations for commercial purposes and the protection of native forests.. Uruguay might hopes to oncebecome again become a net CO_2 sink by 2030 thanks to the expected native forest management and upward growth trend for planted areas in the upcoming years.

With regard to the *waste sector*, several strategies have been put in place for better management and recovery. In particular for solid urban waste, it is worth noting biogas capture and flaring, which are conducted in the final disposal site in Montevideo, where around 60% of nationwide waste is generated. There is a biogas capture site for power generation outside Montevideo that has been operational for a decade and which supplies one of the largest urban centers in the country. In terms of agroindustrial waste, 12 energy cogeneration projects have been developed combining forestry waste, rice husk and black liquor from pulp, for a total installed capacity of 408 MW, accounting for 30% of the country's mean demand. These actions are an example of mitigation initiatives and the potential collaboration strategies and synergies among the different sectors, within a framework that promotes the development and integration of renewable energies to the national power grid. In terms of industrial wastewaters, different projects have been developed for the use of methane energy resulting from site anaerobic treatments. In terms of domestic sewage, the integration of aerobic treatments has helped improve treatments in the main cities nationwide.

Several initiatives have been undertaken in the *transport sector*, especially in road transport, which is the most widespread in the country. The participation of the State is essential due to the very own nature and complexities of the sector. It is important for the State to promote initiatives and set public policies that will drive the necessary changes to achieve tangible results in culture, infrastructure and technology. The Interinstitutional Transport Energy Efficiency Group was set up for this purpose and it aims to promote policies and find solutions to tackle increasing GHG emissions in the sector. The 2015 National Energy Efficiency Plan addresses, among other actions, labeling initiatives for light-duty vehicles as a way to promote the introduction of more efficient vehicles in the market. In addition, since 2008 national legislation addressing biofuel mix into conventional fuel has been in place: biodiesel accounts for 7% of diesel oil and bioethanol for 10% of gasoline, both entirely produced in the country.

In the 2013 - 2015 period, different pilot initiatives were undertaken in the tourism sector integrating clean energies into hospitality tourism facilities located in rural and natural areas. Since 2015 the Ministry of Tourism has been working together with the MIEM towards including the tourism industry in the National Energy Efficiency Award and on the implementation of an energy efficiency label for the undertakings in this sector. In addition, it encourages the enforcement of the laws that promote cleaner production, sustainable development, environmental protection and the introduction of renewable energies, through the assessment of the investment projects that aim to leverage the tax benefits set out in such instruments.

At departmental level, different efforts have been designed and implemented under the Sustainable Urban Mobility Plan framework currently in place in Montevideo. The plan sets out the implementation of public transportation corridors and the promotion of active transport by means such as bike lanes and public bicycles. In addition, a mobility management center has been set up and electric vehicles operating as cabs, buses and commercial vehicles have been made available in the city.

CHAPTER 4

ADDITIONAL RELEVANT INFORMATION

4.1. Climate information generation and Climate Services Development

For the past few years several institutions in the country have been engaged in meteorological and climate information generation and climate services, providing essential input for the different sectors in the Uruguayan economy to plan their undertakings and to protect the population. However, there are still shortcomings both in the quality of the information produced and its utilization. The efforts have mainly been focused on: the development of a Flood Early Warning System to forecast and manage floods in the cities of Durazno and Artigas; the development of a Climate Index Insurance for hydropower generation in Uruguay and for different sectors in farming production; the development of instruments to monitor water excess and droughts in the country; and the rollout of the MCH2 National Climate Database.

Furthermore, progress has been made towards the development of additional Information Systems to supplement efforts to manage the impacts of climate change: the Environmental Information System (SISNIA), National Environmental Observatory (OAN), National Agricultural Information System (SNIA), Information and Support System for Decision making (SISTD) for climate risk management in agriculture, the GIS viewer of the National Emergency System, and the National GHG inventory System currently under development.

4.2. Research

Over the past few years there has been a vast body of research on climate change and variability in the country. This has helped promote and consolidate knowledge creation and research teams and at different institutions, who have taken on collaborative and supplementary lines of work, coordinating undertakings with other sectors of applied research, government agencies and regional research centers. Likewise, since climate change studies take on a strong territorial component, several research/action lines have been developed to validate and develop adaptation and mitigation strategies in different sectors, thus, allowing for multidisciplinary and cross-sectoral efforts, engaging national and local governments, NGOs, farmers and local communities.

The Interdisciplinary Center for Climate Change and Variability Response (CIRCVC) was set up under the scope of the University of the Republic (UDELAR) in 2010. The Center focuses on four main lines of work: climate change mitigation and adaptation in agriculture; land vulnerability in environmental systems; climate change and cities; and energy system and assessment of natural resources. The Interdisciplinary Center for an Integrated Coastal Management in the Southern Cone has undertaken research lines to supplement coastal zone management, taking into account climate change and variability scenarios and their impact on coastal adaptation and risk perception. The Fluid Mechanics and Environmental Engineering Institute (IMFIA), under the scope of the School of Engineering of UDELAR, has developed scientific bases and knowledge for climate prediction and services, and agroclimatic risk management in the context of climate change. It has done so together with other departments under UDELAR so as to supplement the work of the MGAP. The Department of Atmospheric Sciences, under the scope of the School of Sciences of UDELAR, has undertaken basic and applied climate research at different scales (monthly, decadal, among others), so as to provide further input to improve understanding of natural climate variability, in particular, atmospheric and ocean behavior and the causes of climate change. SARAS2 Institute has begun undertaking interdisciplinary research lines on biodiversity and ecosystems. The Integrated Risk Management Group (GGIR) has promoted an opportunity for interdisciplinary work to encourage scientific knowledge and the development of new practices, knowledge and lessons on risk management. In particular, the Theory and Urban Planning

Institute (ITU) of the School of Architecture of UDELAR, has made significant contributions for flood management in the country

The National Climate Change Response System put together a Task Force on Indicators of Variability and Social Vulnerability to Climate Change, which has demanded thorough interdisciplinary and cross-sectional work to draw input for further assessment on the social vulnerability of our country.

The National Agricultural Research Institute (INIA), has measured climate impact on soybean and wheat crops in the area of the Argentinean Pampas and Uruguay. It has also worked on adaptation strategies for family farmers in the Southern Cone, strengthening their climate risk assessment systems and use of satellite information for monitoring purposes. International institutions have encouraged important initiatives on issues such as health, promoted by the Inter-American Research Institute for Global Change Research (IAI), and initiatives in the agricultural sector, promoted by the International Research Institute for Climate and Society (IRI) of the University of Columbia (USA).

4.3. Education, capacity strengthening and sectoral networks

The national education policy in place has gradually begun integrating environmental and climate change matters into the formal and non-formal fields of education. This process has found a foothold in Article 6 of the Convention (on education and public awareness), the Education Act (which integrates environmental education across the board), the existing Environmental Education National Plan and in the National Climate Change Response Plan (which defines Education and Communication as core strategic pillars).

During this time, tools and methodologies were developed to promote quality learning initiatives for all ages nationwide, encouraging solidarity, reflective and inclusive processes that contemplate local circumstances and contribute to a sustainable and equitable development of our society. Both formal and informal learning institutions at all levels have been key players in this process. As a result, climate change has taken on a more preeminent position in curriculum planning, teacher training and textbooks for classroom work, both at primary and secondary education levels. The National Plan for Environmental Education (PlaNEA) represents a new opportunity to make climate change more visible as a subject matter and to reflect upon its impact and the need to develop prevention strategies. Research/action took on a leading role in the non-formal education initiatives to validate and develop adaptation and mitigation strategies in different sectors, thus, allowing for multidisciplinary and cross-sectoral efforts, engaging national and local governments, NGOs, farmers and local communities. The SNRCC pushed for the engagement of the civil society developing climate change and environment initiatives that would strengthen vulnerable communities and that would foster cross-sectional dialog and the implementation of public policies on climate change with social participation. At higher education level, progress was made by introducing new fields of study and by generating new lines of research and extension for faculty members.

The networks have provided crucial support for following up on processes and commitments under the Convention, as for the enhancement of scientific knowledge, capacity strengthening and the implementation of adaptation and mitigation actions in the country. An example of these are the Ibero- American Network of Climate Change Offices (RIOCC), the MAIN Network to support the design of NAMAs and low-carbon development initiatives through open dialog among the countries in the region, the Euroclima initiative supported by the EU Commission, the Southern Agricultural Council (CAS) which brings together regional agricultural institutions, the Latin American Technical Cooperation Network on National Parks, Other Protected Areas and Wildlife (RedParques) and other ad hoc research networks.

4.4. Resources available and support received

Uruguay allocated significant resources and made efforts early on to implement climate change adaptation and mitigation actions. Through different initiatives and instruments we have encouraged and promoted investment in environmentally friendly technologies and processes, namely tackling the effects and addressing the causes of climate change. Both the public and private sectors have engaged in the different areas of our country's economy promoting collaborative work and synergies between them and achieving more effective and efficient mitigation actions, for example, the introduction of wind power into our country's electricity grid.

The external financial support received to comply with the commitments taken on under the United Nations Framework Convention on Climate Change has been essential to allow for an uninterrupted implementation of the initiatives developed. Particularly speaking, to comply with the commitment to submit National Communications under the UNFCCC, for the preparation of the Fourth National Communication on Climate Change Uruguay had the support of the GEF through the Institutional Strengthening Project of the MVOTMA, with the UNDP as the implementing agency. In addition, Uruguay has received support to comply

with the submission of the first BUR to the UNFCCC and to conduct studies such as the Technology Needs Assessment.

The assessment conducted in 2015 by the Uruguayan International Cooperation Agency (AUCI) on the status of international cooperation in Uruguay revealed that 483 international cooperation initiatives were undertaken in Uruguay in 2014, out of which 55 % entailed traditional cooperation, 14% south-south bilateral cooperation, only 1% triangular cooperation and almost 30% regional and multi-country cooperation. Although the global figure remained unchanged compared to 2012, non-traditional cooperation forms increased in number. Out of the total number of projects, environment came in second in terms of the total number of projects under each main field, and it was the sector with the most largest number of projects under traditional, regional and multi-country cooperation forms.

CHAPTER 5

BARRIERS, GAPS AND RELATED FINANCIAL, TECHNOLOGICAL AND CAPACITY NEEDS

In 2015 Uruguay carried out the drafting of the Intended Nationally Determined Contributions (INDCs) and submitted it to the UNFCCC. In addition to the assessment of the actions currently underway in the country, further actions were also identified for potential implementation if the necessary resources were to be made available to continue on the path of low-carbon, resilient development.

In terms of adaptation, based on the lessons learned and outcomes of the actions already undertaken, Uruguay identified a number of contributions that would need the support of external means of implementation.

- Design and implementation of inclusive subnational and sector-specific National Adaptation Plans (NAPs) to adapt to climate change and variability in high-priority areas, such as the coastal area, hydrographic basins and urban rural areas.

- Development of new early warning systems and new hydrometeorological insurances, within the disaster risk reduction framework for the agricultural and health sectors, coastal areas, water resources and, in particular, for flood sensitive urban areas and infrastructure.

- Strengthen climate risk management against floods, through the expansion of vulnerable population resettlement processes and the implementation of new land-use planning measures. Moreover, with regard to drought management, it is necessary to identify new water sources, promote the construction of associative works, such as large reservoirs to serve various users and improve efficiency in water use.

- Promote community-based adaptation strategies as a way to increase resilience and reduce social vulnerabilities in the different areas and contexts of the country.

- Improve the protection of surface and underground water sources, such as aquifer recharge areas, through the promotion of good drilling practices, the control of point source and non-point sources pollution, and the implementation of conservation and restoration measures for gallery forests.

- The introduction of methodologies for loss and damage assessment, as well as reporting, measuring and evaluation systems for adaptation measures.

- Design, adapt and maintain a resilient infrastructure, considering the effects of climate change and variability.

- Promote ecosystem-based adaptation, strengthening ecosystem and biodiversity conservation strategies.

- Articulation and development of new integrated information systems and climate services for systematic observation by strengthening academic and monitoring institutions.

- Build research, development and innovation capacities to enhance domestic response to climate change and variability.

- Implement education, training and awareness programs that address climate change response needs.

- Enhance visibility of climate change adaptation measures within the allocations of the national budget, by developing a national system of environmental indicators.

In terms of mitigation, the actions the country plans to implement and for which support is needed are associated to the four main emitting sectors of the economy: energy, waste, agriculture and forestry.

The transport sector is one of the action lines identified under the INDCs as having the greatest potential and lower relative development in the country. Both the national and subnational governments are willing and committed to taking these initiatives further and need considerable support. External support is needed to be able to undertake these initiatives as the sector requires more technology and infrastructure. Thus, it is necessary to draft investment plans that will provide considerable resources.

- Among the high-priority actions related to metropolitan public transport, we have identified the implementation of BRT corridors.

- Another action entails the introduction of hybrid and electric vehicles, both for public and private transport. Even though some incentive measures have been adopted (tax benefits) and pilot trials have been conducted, it is necessary to further analyze other tools, more adequate incentives and their impact based on our national circumstances. There are currently projects and studies underway to test different vehicles, mainly public transport and utility vehicles.

- The government has also planned to strengthen policy regarding the introduction of more efficient vehicles and the adoption of a vehicle labeling system. The National Energy Efficiency Labeling System currently covers a number of devices, and through the National Energy Efficiency Plan this list will be expanded to include light-duty vehicles, among others. Additional resources will be needed to broaden the scope of the System. It is estimated that the impact of this measure on consumption and emissions could be quite significant. Moreover, it is necessary to assess the co-benefits on health and the environment.

- Cargo transport is another area identified to potentially reduce emissions, in addition to increasing efficiency. Over the past few years there has been a significant increase in the demand of this service due to a surge in agricultural production. Cargo transport in Uruguay is mainly overland. Therefore, it is necessary to take actions that not only improve the quality of the service but also help maintain the conditions of the infrastructure, maximizing distribution among the different modes. Accordingly, multimodal transport is considered as high-priority for the country and potential multimodal systems need to be assessed to integrate rail and inland water transport.

Meanwhile, it is also important to consider the achievements in the energy sector as it has been able to diversifty the energy mix by integrating renewable energy sources.

- The country is determined to continue integrating elements that will contribute to a cleaner energy mix, such as wave power.

- In this sense, novel actions, such as energy storage, have been identified to ensure security of supply in an energy system that will have an installed wind power capacity over its off-peak consumption by 2016. A feasibility study has been conducted to assess the installation of a water pumping and accumulation plant to store energy by pumping water from a lower to an upper reservoir during peak wind generation hours, when supply exceeds demand. A 200-MW capacity and 12-hour storage plant has been considered and the estimated cost is around USD 300 million. Additionally, we are looking into the possibility to have an electric vehicle fleet contemplating strategies to store their battery charge and retuning a certain amount of it at the times of highest demand. The country needs support to continue analyzing these options, both from a technological and regulatory standpoint.

Also, the industrial processes sector accounts for 6 % of the country´s CO_2 emissions. Even though it does not produce a significant amount of GHG, estimates show it will increase in the next couple of years at a similar rate as GDP increase. Thus, it is necessary to identify medium and long term strategies for this sector. Since cement production accounts for the largest proportion of emissions in the sector, it is necessary to study the technologies that might reduce emissions and the investments needed to implement it.

- The waste sector is relevant not only because of methane emissions but also because of the associated environmental and social aspects. It is imperative to continue taking actions and improve practices in the different subsectors involved. Even though the country has a relevant regulatory framework in place, we need a considerable amount of resources to implement actions that stem from already defined policies.

- We have identified the need to improve treatment and final disposal systems of solid urban waste (SUW): in particular, the construction of landfills in different areas around the country would provide for an opportunity to undertake associated biogas capture and flaring projects with the possibility of energy recovery.

SUW are the main sources of emissions in the sector; therefore, to improve their management practices is considered high-priority, as is the opportunity to generate co-benefits from a social, economic and environmental standpoint.

- Additional resources are needed to improve industrial wastewater treatment systems and effluent management in intensive animal farming establishments. The financial growth experienced over the past couple of years, especially in agriculture, has translated into an intensification in livestock farming systems, making it necessary to improve wastewater treatment and effluent management since these are taking on a more notorious environmental impact. Thus, we are interested in the integration of biogas capture and flaring systems into existing or new anaerobic treatments, with the possibility of energy recovery.

- In terms of solid industrial waste and agro-industrial waste management, we have identified the need to improve waste recovery rates, by increasing the percentage used for recovery processes, anaerobic digestion with the possibility of biogas recovery, alter-

native fuels and animal feed. These types of actions have already been implemented in our country, but we need to enhance and promote their implementation since they not only allow for the reduction of emissions coming from waste itself, but they also make it possible to create synergies with other sectors, strengthening value chains, creating new jobs and indirect environmental benefits by recycling certain substances and byproducts.

In terms of the agriculture and livestock sector, different actions are put forward under the framework of the smart agriculture policy and additional support is needed to enhance implementation.

- These are considered win-win actions, as they not only improve mitigation rates but they also help improve productivity in the sector (increased efficiency and reduced livestock farming overheads) and better quality cattle feed as the pasture area and quality are enhanced.

- Good practices for manure management.

- The increased farming land under irrigation contributes both to mitigation and adaptation, since it not only reduces emissions but it can also help prevent substantial direct and indirect financial losses caused by long dry spells.

- In terms of the forestry sector, an increase in the total coverage of tree plantations is expected and, therefore, reaching significant removals. This would allow the country to become a net CO_2 sink by 2030. This increase in the total coverage has unfolded hand in hand with an increase in the native forest surface area, protected under the regulatory framework, which has entailed fiscal efforts for the country.

- To continue promoting this increase and quality improvement of our native forests we need specific support to strengthen the results achieved by the policy. In this sense, and thanks to the recent incorporation of the country into the REDD+ process, we will be able to continue implementing strategies to reduce native forest degradation and promote sustainable management.

Uruguay began using NAMAs in 2012 to identify support and funding needs, whether financial or technical, to design and develop mitigation actions in the country. These have also been an interesting tool to make ongoing actions more visible as well as the new initiatives the country may undertake in its path to low-carbon development and which may require additional resources beyond national means.

Furthermore, the country needs support to develop the National Inventory System to streamline the production of NGHGI reports, therefore making sure inventory preparation practices are sustainable and achieve reliable results.

Availability and access to reliable, updated information is essential, not only for risk and impact reduction, but also to support the decision-making processes for resource management and general adaptation and mitigation strategies in the different sectors. Therefore, we have identified the need for new practices for information production, management and assessment. and Eexternal support is needed in this regard.

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