ORIENTAL REPUBLIC OF URUGUAY

SUBMISSION ON THE TYPE AND NATURE OF ACTIONS TO ADDRESS LOSS AND DAMAGE FOR WHICH FINANCE MAY BE REQUIRED

In response to the invitation made by the Executive Committee of the Warsaw International Mechanism for Loss and Damage associated with Climate Change Impacts.

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1. CLIMATE CHANGE IMPACTS.

Uruguay is particularly vulnerable to the adverse effects of climate change, including extreme events such as droughts, floods, cold and heat waves, strong winds, tornadoes, hailstorms, frosts, heavy rains and severe storms. The El Niño phenomenon impacts strongly on the country, especially during spring and autumn increasing the probability for excess rainfall. Meanwhile, during years in which La Niña predominates, the country generally suffers long and serious droughts, particularly in the north of the country. Climate change can modify El Niño normal characteristics increasing the frequency of extreme events.

Additionally, the slow onset events, among others, that have important adverse effects in Uruguay are:

a) Increasing temperatures, both minimum and maximum, which accelerate the hydrological cycle,
b) Loss of biodiversity, which adversely affects the ecosystems resilience and the provision of ecosystem services,
c) Land degradation and erosion as a consequence of the increased erosivity of rainfall,
d) Desertification, due to the loss of organic matter in soils,
e) Pollution of water sources for human consumption, animal consumption and irrigation, due to an increase in surface runoff and the transport of sediments, nutrients and other pollutants.

These hazards of climate origin, and their interaction with social exposure and vulnerability, have caused multiple impacts on populations, infrastructures, ecosystems, biodiversity and especially Uruguay's agricultural sector and in most vulnerable social communities.

Losses and damages due to the effect of these extreme events tend to be very significant, reflecting the country's vulnerability. These phenomena have indeed multiple consequences for the country's society and economy, impacting on the most vulnerable communities and infrastructure, as well as on climate dependent services and economic activities.

These examples demonstrate that attention and permanent availability of public resources is necessary to face the impacts of natural phenomena derived from climate change and variability. In this sense, the Uruguay is currently unable to assume the cost of the losses incurred. Additional financial support is needed for the implementation measures that alleviate impacts and prevent future losses and damages.

2. RESPONSE TO CLIMATE CHANGE IMPACTS.

Uruguay created in 2009 the Climate Change National Response System (SNRCC, in its Spanish acronym), that aims to coordinate climate change policies and actions. The SNRCC, which promoted the elaboration of the National Climate Change Policy in 2016 and the first National Determined Contribution (NDC), both which defined the need to address loss and damage and created an *ad hoc* working group for this purpose

Moreover, adaptation to climate change is a national priority, therefore, policies have been developed and implemented in order to assess and reduce vulnerabilities. Both the National Climate Change Policy and the NDC, prioritize adaptation to climate change and present strategies and measures to reduce vulnerabilities, as well as specific actions to address loss and damages associated to climate change impacts. Also, Uruguay defined its first NDC to be its first Adaptation Communication.

During 2017 the loss and damage working group focused its activities in sharing methodologies for registering and evaluating climate change impacts. This working group goal for 2018 is to develop standardized protocols and methodologies for registering and evaluating loss and damages caused by climate change impacts in order to evaluate and inform public policies.

Furthermore, the consolidation of the National Emergency System (SINAE) –comprised in the SNRCC– as a permanent public and decentralized system, provides a framework for a national strategy for the protection of people, properties and the environment when faced to severe events, including those caused by climate change. SINAE has representation in every local government to promote the coordination of public and private efforts with other sectoral policies, for the prevention, emergency care, rehabilitation, recovery and disaster risk management planning.

The integral approach to climate risk management has made significant progress, particularly on hazards knowledge and on the design of Early Warning Systems (SAT in its Spanish acronym) for communities that are vulnerable to floods, optimizing resources, reducing structural damage and minimizing social impacts.

Additional progress has been made in integrated planning of territorial development, with resettlements, land management plans and zoning measures being defined in urban risk areas. As a complement to this work and in order to optimize and protocolize procedures during the different stages of management of climatic disaster risks, progress has been made in fostering education and raising awareness for the construction of a culture of prevention. The implementation of a series of instruments to reduce risks has contributed to incorporate a prevention approach in sectors such as agriculture, through climate index insurance, and energy, through different financial instruments for risk reduction.

In the last decade, Uruguay has developed social policies to effectively reach vulnerable populations, by decentralizing structures and deploying services across the territory. This has for example, positively impacted population affected by floods. The National Resettlement Plan, which was awarded the 2014 Momentum for Change – Lighthouse Activity for the Urban Poor Award of the UNFCCC Secretariat[1], coordinates efforts among policies or programs and has actively involved communities impacted by flood in strengthening their resilience.

Moreover in its agriculture sector, Uruguay has defined adaptation to climate change as one of its six agricultural policies priorities. Vulnerability studies were therefore conducted and a first set of measures and projects were identified and implemented in order to increase the adaptation of the country's major agro-ecosystems. These ecosystems are integrated in the National Adaptation Plan for climate change and variability for the agricultural sector (NAP-Ag) currently in process.[2]

Uruguay considers that more efforts are needed in order to address losses and damages from climate change impacts. Moreover, cconsidering the aforementioned progress and efforts, the country considers it necessary

[1] http://unfccc.int/secretariat/momentum_for_change/items/8692.php

[2] http://www.mgap.gub.uy/unidad-ejecutora/oficina-de-programacion-y-politicas-agropecuarias/sostenibilidad-y-cambio-climatico/plan-nacional

to undertake the following type of actions, which will require additional financial resources for implementation.

3. NATIONAL ACTIONS FOR WHICH FINANCE IS REQUIRED.

a) Developing methods and protocols to estimate loss and damage in a systematic way.

Loss and damage assessment can make a significant contribution to the design and evaluation of public policies for integral risk management (prevention and risk reduction, emergency preparedness and response) and adaptation to climate change, all of which increase the resilience of urban areas and productive systems, and contribute to sustainable development. The evaluation of losses and damages also contributes to the reporting of indicators of the Sustainable Development Goals and the application of the Sendai Framework for Disaster Risk Reduction.

As mentioned above, the SNRCC defined in 2017 the address of losses and damages as a main working area and created an *ad hoc* working group. This *ad hoc* working group aims to develop standardized protocols and methodologies in Governmental offices that will allow to register and evaluate losses and damages of climate change impacts in order to obtain systematic series, covering all sectors and social areas, data that will be a fundamental input for policy definition and evaluation.

The Ministry of Livestock, Agriculture and Fisheries has estimates losses due to climatic events in the agro-industrial sector and on that basis has analyzed and implemented contingent support measures for producers. The results show the significance of the losses and damages in economic terms (for example, reduction of 36% of the agro-industrial GDP due to the intense drought of 2008/2009).

With the support of the National Adaptation Plan for the Agricultural Sector Program (NAP-Ag), and supported by the Program for the Integration of Agriculture into the National Adaptation Plans (FAO-UNDP, funded by the International Climate Initiative of the BMUD of the German Government), the country is also working to develop a system for the recording of losses and damages in the agricultural sector, based on the system proposed by the Economic Commission for Latin America and the Caribbean (ECLAC), this work is articulated with the SNRCC work.

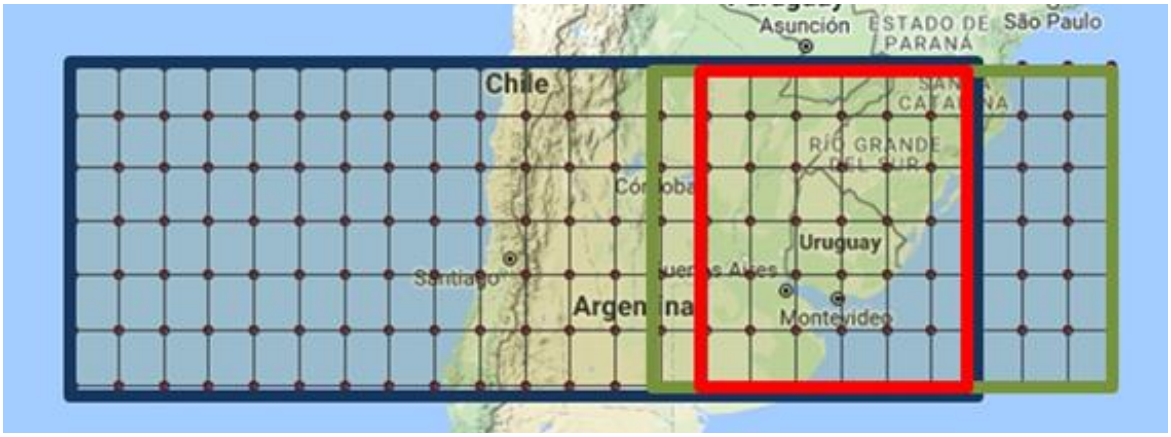
However, there are no standardized protocols and methodologies for the systematic monitoring of impacts, which prevents obtaining consistent historical series to be able to estimate the magnitude of the risk in terms of probability of occurrence of losses due to different threats in the different systems of production. At the same time, it is difficult to identify trends and monitor and report the impact of policies designed to reduce losses and damages.

b) Improving and updating downscaled climate scenarios in the medium and long term and modeling impacts.

Climate scenarios and impacts models are key inputs and instruments to define and implement measures to reduce the effects of climate change, and in particular to develop strategies for facing water excess or deficit, such as relocation plans, improvement of housing in vulnerable areas and hydroelectricity generation.

Even if climatic prediction is difficult, understanding that production systems are exposed to growing climatic risks is key to initiating adaptation strategies that reduce vulnerability and increase the resilience of agro-ecosystems once they are established. Most recent IPCC scenarios allow exploration of long term trends in averages but also to perform extreme events, which are of great importance for the agricultural sector planning. It should be noted that most extreme events do not depend on a single variable; in general they depend on several parameters. In the case of a heat wave for example, it will depend on the length of time that an elevated temperature and humidity are maintained (Saravia et al., 2011).). In the case of droughts, the water deficit depends on the availability of water on the surface, the precipitated water, the type of soil, among others.

Within the framework of the NAP-Ag formulation, it was possible to support a study of national climate scenarios based on statistical downscaling, in order to obtain more realistic results at local scales. The work was done with the technical collaboration of FAO (MOSSAIC) and the MetGroup Santander of the University of Cantabria, which has developed a portal that allows statistical downscaling. The inclusion of the Uruguayan database to this portal was possible by the contribution of the Uruguayan Institute of Meteorology (INUMET) and the National Institute of Agricultural Research (INIA).



The results in terms of central tendency show a positive trend in the three variables studied (Tmax, Tmin, precipitation) regardless of the scenario, period or season. The differences are in the magnitude of these. In the case of the maximum and minimum temperature, a greater tendency was observed in the cold season, while for precipitation in the 2010-2040 period a greater tendency was observed in the warm season. In the period 2040-2070, the opposite occurs. In the temperatures a significant tendency was found, while in the precipitation a clear signal was not found.

Regarding the analysis of extremes, a negative tendency was found for the total of days with frost, one positive trend regarding heat waves, and the number of events could double. In all models, a significant positive trend of mean temperature was found throughout the period for both scenarios. In all the groups studied, there is a tendency to an increased number of rain events of more than 20mm. However, studying the consecutive dry days it was not possible to reach clear conclusions, since there would not seem to be a change regarding the climatology.

The next step is the modeling of the impacts on the future scenarios for main crops and pastures, which will be done with the technical support of FAO (MOSSAIC) and the support of the NAP-Ag process. Modelling the impacts is a fundamental stage to feed planning and adaptation strategies. It is intensive in qualified human resources and requires financing.

c) Developing economic instruments.

Regarding economic instruments, Uruguay has developed the Energy Stabilization Fund (FEE in its Spanish acronym) with the objective of reducing the impact of water deficits impact on the public Electric Power Utility Company (UTE) balance and on the public sector fiscal results. Since its creation, the FEE has been a fundamental part of the strategy to minimize the risk of adverse climate events. Additionally UTE has also been protected from exposure to droughts and high oil prices by climate insurance.

Furthermore, Uruguay is developing a first climate insurance index for drought on a pilot scale, based on NDVI, in two regions of the country and for family livestock producers.

Nonetheless, being insurances a promising tool to deal with climatic risks, their adoption by farmers in developing countries faces the barrier of the cost of premiums, particularly in the case of smallholders. For this reason, we see climate insurances as one of the main national actions that require financing for up-scaling their operationalization in the Loss & Damage framework.

d) Developing early warning systems (EWS).

EWS can have an important role in the reduction of losses and damages for the agricultural sector, health, coastal zones, water resources, and in particular for urban flood areas and infrastructures. They assist farmer's decision making and help governments and other institutions to respond quickly to potential impacts of extreme events. Developing EWS requires having robust and easily applicable criteria and mechanisms, to timely meet the demand of the authorities and those affected in time. It is also necessary to prepare the contingency action plans once the alert has been triggered.

As part of the country's progress in addressing urban floods, there was a need to implement methodologies to anticipate events reducing social vulnerability and impacts on the territory. In this regard, Uruguay developed a EWS for the city of Durazno and it is considered necessary to expand these systems to other locations, for which additional support is required.

e) Building integral risk management systems.

A holistic approach to articulate the efforts in disaster risk management is needed. The assessment and monitoring of current and future risk (adequate information systems, loss and damage statistics), the prevention and reduction of climatic risks, as well as effective response during emergencies, are all part of this integrated approach. The lack of articulation between areas makes it difficult to take advantage of the synergies between the different risk management and adaptation strategies to climate change and achieve greater efficiency and effectiveness in the prevention and reduction of risk. With integrated approaches, it is expected in the future to link EWS to contingency protocols so that they can be activated before the situation has scaled to disaster.

In order to achieve a comprehensive policy of risk management and adaptation to climate change it is necessary to improve the management of flood risks, by expanding the relocation of vulnerable population and including new land use planning measures.

Another need is to promote community-based adaptation strategies as a way to increase resilience and reduce social vulnerabilities in different territories and contexts of the country. Additionally, regarding droughts management, there is a need to identify new water sources, to promote the construction of associative infrastructure such dams, and improve the efficiency in water use.

The agricultural sector requires working on governance and coordination between public and private sector actors, for which it is necessary to strengthen the capacities, and access technical support and finance.

Moreover, Uruguay has not developed enough knowledge to adapt to slow onset events in its agricultural sector and other key strategic sector such as energy, tourism and health, having paid more attention to extreme events. In this regard, it is important to recognize that there are synergistic interactions between rapid onset and slow onset events that increase the risk of loss and damage, emphasizing the relevance of integrated risk management approaches as well as the necessity to develop both short- and long-term planning. Uruguay needs to integrate the management of slow onset risks into its national development plans, coordinating transversal actions among sectors. There is a need for support to develop and implement risk management options for this type of events.

f) Research, development and equipment.

As stated above, Uruguay will have to face diverse problems associated with climate change. The reduction of losses and damages is key to build resilience and for safeguarding food security. It is necessary to include in the national adaptation plans, measures aimed at improving the management of climate risks. These measures are varied and refer to, among others:

(1) Supporting decision-making at the territorial level through better information systems,

(2) Digitalization of loss and damages data and Use of ICTs
(3) Diversification of production considering risk management,

And specifically in the agricultural sector:

(1) Use of varieties tolerant to water stress, lack of cold hours, diseases and pests.
(2) Improvement of water harvesting and development of irrigation systems,
(3) Restoration of ecosystems and their services and increase of organic matter in degraded soils,
(4) Precision agriculture,
(5) Design of financial risk management tools to increase the resilience to extreme events.

It is necessary to finance the research programs that develop and validate these good practices for the different production systems. It is also important to strengthen the network of meteorological stations to increase the representativeness of the climate impacts at the national level. In addition to stations, radars, access to satellite information, specific software for the registration and analysis of climatic data and technical training are needed. The strengthening of these systems requires relevant finance, that usually exceeds the country´s budgetary capacaties.

g) Promoting new transformational paradigms.

Uruguay is working in order to generate a cultural change in its society to incorporate climate change and risk management in every day decisions. In this sense, Uruguay is working in order to promote community-based adaptation and contribute to empower local governments and communities.

Moreover, ecosystem based adaptation (EbA) and integrated management of natural resources have a very meaningful role in the strategy to reduce loss and damages, including not only extreme events but also slow onset events, since they have implicit long-term resilience building strategies. As a national example, the proposal for the adaptation of Uruguayan livestock is basically one based on the ecosystem services of natural grasslands and their care and restoration. Its implementation at large scale can significantly reduce climate losses, but requires financing; it is costly, since it implies strengthening the mechanisms of technology transfer, capacity building and investment in infrastructure.

Likewise, it is necessary to promote sustainable land management as a tool to deal with the adverse effects of both slow onset and rapid events. In its lands under cultivation, Uruguay is applying a mandatory Soil Use and Management Plan System that minimizes the erosion using a calibrated the Universal Soil Loss Equation (USLE / RUSLE). This policy aims to conserve or recover the organic matter and the carbon in the soils. This type of action requires, however, financing for training farmers, to set up monitoring, evaluation and reporting systems, and to implement policies that encourage the adoption of good soil management practices.

References.

1. Clima de Cambios: Nuevos desafíos de Adaptación en Uruguay, Compilado. Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO), Ministerio de Agricultura Ganadería y Pesca (MGAP), 2013.
2. INUMET. Características estacionales del clima de Uruguay. https://inumet.gub.uy/ServCli/caracteristicasEstacionales
3. Anuario OPYPA 2010: Estimación del impacto de una eventual sequía en la ganadería nacional y bases para el diseño de políticas de seguros. Pág. 277-287.
4. Technical Paper on Slow onset events. FCCC/TP/2012/7.
5. Política Nacional de Cambio Climático, Uruguay, 2017.
6. Cuarta Comunicación Nacional a la Conferencia de la Partes en la UNFCC, 2016, Uruguay.