COP 21 PROPOSALS MERCOSUR COUNTRIES - SUBSEQUENT ACTIONS

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MERCOSUR GROUP

María Kavanagh – Argentina
Pery Saraiva Neto – Brazil
Ana Rita Petraroli – Brazil
Ivy Cassa – Brazil
Ricardo Peralta Larrain- Chile
Roxana Corbran – Uruguay
Andrea Signorino Barbat – Uruguay

General coordination María Kavanagh

Summary

This research aims to analyze the proposals that each member country of Mercosur Group, presented to the cop21, and the actions that each of the Countries implemented as mitigation measures to climate change.

The Mercosur region, its geography and location itself for the implementation of renewable energy.

In each country the issue of wind energy is treated as a mitigation measure to Climate Change.

Glossary

Oilsands

tar sands d, known as tar sands, oil sands, oil sands, are a combination of clay, sand, water and bitumen.

Tar sands bitumen similar to oil which is converted into a synthetic crude oil or refined directly by refineries is extracted.

Biodiesel

Liquid obtained from natural lipids such as vegetable oils or animal fats with or without use, by industrial processes of esterification and transesterification and applied in the preparation of total or partial replacement for petroleum diesel or gas oil oil.

Biodiversity

The term refers to the variety of life on Earth and the natural patterns that shape it.

Wind power

It is the energy from wind generated by the effect of air currents.

Fracking

Hydraulic fracturing is a technique to enable or increase oil and gas extraction from underground.

Acronyms

ADME	**Administration electricity market**
ALOP	**Advance Loss of benefits**
BAU	**Business as usual**
CDEC	**Loading central grid**
CH4	**Methane**
UNFCCC	**Framework Convention on Climate Change**
EEDD	**public and private rural electrification**
URE	**unconventional renewable energies**
FC	**Capacity Factor**
Gg	**UoM giga equivalent mass (grams) 10 9 employee**
	To report issued grams CO2
GHG	**greenhouse gas**
ILPF	**Livestock Integration Lavoura Floresta**
INDC	**National Contribution determined**
IRENA	**International Renewable Energy Agency**
KW	**Watt**
MMA	**Ministry of Environment**
MW	**Megawatt**
NAPs	**National Adaptation Plans**
N2O	**Nitrous oxide**
PSR	**Award rural insurance**
REDD	**Deforestation Emission Reduction in developing countries**
RER	**Renewable energy resources**
SIC	**Central Interconnected System**
USCUSS	**Land use, land use change and forests**
D LULUCF	**use change and forestry**

INTRODUCTION

In Paris, France from November 30 to December 11 took place the twenty-first Conference of the Parties to the United Nations Framework Convention on Climate Change 2015 - COP 21

The Framework Convention of the United nations on Climate Change (UNFCCC) is an international treaty to achieve the reduction of greenhouse gases so not dangerous to people or nature, within as to allow ecosystems to adapt climate change and not jeopardize food production.

The main objective of the annual conference of the signatory parties of this framework is to assess the progress of the Rio Convention and propose improvements. The first COP was held in Berlin in 1995, the most important we highlight the COP3 where progress was made with the Kyoto Protocol (1997) and COP 11 where the Plan of Action Montreal (2005) was established. At COP15 in Copenhagen (2009) failed agreement to succeed the Kyoto Protocol at COP 17, in Durban (2011) the Green Climate Fund, one of the pioneers in its kind materialized.

In the previous COP to Paris, held in Lima Peru, it was decided that all parties should submit their contribution Nationally Determined (INDC by its acronym in English) deadline until 1 October 2015.

INDC contemplates the reduction targets emissions of greenhouse gases that countries offer the world through agreed mitigation activities within their countries and shall take effect in 2020. The proposal is voluntary, there is no minimum contribution To make. Unlike the Kyoto Protocol, which predefinía reduction goal for each country. This format has the advantage of offering a political and flexibility viability, but creates a dilemma: the sum of the self-imposed INDC not guarantee climate security, ie reach the global emissions reduction to reach the target of 2 ° C.

The countries took different parameters to identify the emission reductions to be made, developed selected a fixed year, developing countries selects a screening of "Business As Usual" and China and India, countries with significant economic potential yet with very

large populations, they decided to condition the CO2 to its GDP or reductions in CO "per capita, arguing that its population, compared to other small countries like Norway, emits very little because they have the right to be further developed because of its large population [1]

[1] [1] VILLARES M.I. Cambio Climático: Conclusiones del Acuerdo de París. Revista de Derecho Ambiental Doctrina , Jurisprudencia, Legislación y Práctica. N° 45 Pag. 137/138

ARGENTINIAN REPUBLIC

Proposal to the cop21

The Argentina Republic to the COP 21, presented a country's commitment to reduce emissions of greenhouse gases (GHG) from the "Business as Usual" (BAU) 2030, ie for emissions 30% GHG projected by 2030 compared to the pace and trend of national emissions.

The main topics to be worked as measures within the INDC and allow the country to reach 15% reduction will concern promotion of renewable energies, water heaters with electronic ignition, nuclear, hydroelectric plants, cargo preference to railway , energy efficient appliances, efficient boilers, efficient engines, solar heaters, economizers water, alternative fuels (biodiesel, ethanol), distributed power generation, cogeneration with fossil fuels, crop rotation, recovery of native forests, treatment of industrial wastewater , modernization of the fleet.

Argentina is responsible for less than 0.9 percent of total emissions in the world and is not a historical issuer.

Actions to Mitigate Climate Change

Climatic and geographical of Argentina, conditions should be allowed to glimpse the first world power in wind energy. It has huge undeveloped surfaces where build parks and many areas with a capacity factor (CF) of 45%.

The ecological benefits are indisputable. Emissions of greenhouse gases (GHGs) of the electricity generated in this way are a small fraction of those emitted by power plants.

Wind power [2]

It is that generated by wind movement. The kinetic energy of the wind can become mechanical, electrical or thermal.

[2] Manual de Buenas Prácticas. Energías Alternativas. Energía Eólica. Ministerio de Ambiente y Desarrollo Sustentable. Presidencia de la Nación.

Argentina has areas with significant air currents. Patagonia is one of the regions with the highest wind potential, three variables are present in almost simultaneously: direction and wind speed record.

The way wind measurement is in meters per second (m / s), when its speed exceeds 4 m / s (equivalent to 14km / h) is suitable for wind farms. In Patagonia there are regions with averages of 9 m / s.

In an area of 1 km2 with 16 kW capacity 450/500 turbines can generate 23 GW / year. The power increase with variations in wind speed.

There are two types of equipment used for the exploitation of wind energy:
There are two types of equipment used for the exploitation of wind energy:

1. The mills used to extract groundwater, are composed of a large number of blades (12 to 16). They are activated at low wind speed by operating a pump that draws water from underground.

2. Wind turbines are used to produce electricity. They have fewer blades, a rotor and a generator entrainment moving rotor.

The powers of these teams vary between 100/150 and 700/800 kw w. They are currently in experimental stage models up to 1500 kw.

Environmental impact of wind energy

• Noises from the passage of wind through the sails of the mills and moving parts. Most modern turbines generate less impact on the environment, because it takes into account in the design and construction criteria to minimize these effects.

• It should take into account: the size of the turbines in relation to the distance of the observer (s least 6 km away), spatial distribution, quantity and turbine design.
• should avoid the wind farm site on migratory routes of birds, as this would cause mortality, stress and disorientation in birds caused by the operation of the turbines

• Effect "shadow flicker" or flashing or oscillating shadow produced by the passage of sunlight between the blades rotating. This is corrected slowing rotation of the blades.
environmental benefits

The advantages of wind power are significant:

• Environmental protection: use of a resource that is not exhausted. Getting clean and non-polluting energy. Reduction in greenhouse gas emissions in the atmosphere.
• Economic growth is obtained freely and cheaply.

• Creating jobs, diversification of energy supply, quick installation. Its fuel is free, abundant and inexhaustible.

• Increased quality of life of the population due to the arrival of electricity to rural communities.

• Although the initial investment is higher than that required for a type of fossil fuel, these machines have low maintenance costs, no fuel costs and a lifespan of more than 20 years. If we add the environmental cost, the final costs are lower in relation to the use of fossil fuels

Windfarms in Argentina

Pico Truncado (Santa Cruz): 1200 KW

average wind 9 m / s

Owned by the Municipality of Pico Truncado.

During 1997 this park prevented the emission of 1500-3000 tons of pollutants into the atmosphere gases.

Today is an industry that brings with it important benefits for society, supplies electricity to an important local industry, create jobs and industry active.

Currently it has signed a contract between the German company Wobben Winpower and the municipality of Pico Truncado for the acquisition of two new wind turbines that will generate twice in 8 months electric power (2.4 MW). The investment was 1.2 million. Pico Truncado will have enough wind power to supply 70 to 80% of average electricity demand of 12,000. The mean monthly savings will be about U $ S 30,000, so the investment of U $ S 1,2millones be comfortably repaid. Weather South Chubut. Park Río Mayo (Chubut): 120 kW / 0.12 Mw

Located 5 Km. Of Río Mayo is the first wind farm in South America, it was inaugurated on February 22, 1990, under a cooperation agreement between the Federal Republic of Germany and the Directorate General of Public Service of the Province of Chubut. It is currently out of service for technical reasons.

Comodoro Rivadavia, Antonio Morán, Cerro Arenales: 17.060 Kw

It is scheduled to be expanded to 25,400 kw.

Rada Tilly (Chubut): 400 Kw

Tandil (Province of Buenos Aires.): 800 Kw.

Punta Alta (Province of Buenos Aires...): 2.200 KW

Darregueira (Province of Buenos Aires...): 750 kw

Mayor Buratovich (Province of Buenos Aires...): 1,200 kw

Claromecó (Province of Buenos Aires...): 750 kw

Cutral Co (Province of Buenos Aires...): 400 kw

General Achal (La Pampa):

"The Pampero" (2003) and was baptized by the school of General Acha generates 900 kW. demand minimum maintenance, preventive controls every 6 months and has a lifespan of 20 years. The energy generated directly enters the transformer Provincial Energy Administration in General Acha.

"The Hurricane" (2004) is located 15 kms from Gral Acha. It is considered the largest and most powerful mill in South America.

With the installation of wind turbines in the town of General Acha total wind power equipment in Argentina it rises to 26,560 kW.

How much goes to install a mill?

U $ S 2,500 / kw. A school in Castelli is supplied with 2kw mill.

Although Argentina has grown from 1994 to 2003 from 10 to 26 megawatts, it is well below the values that are used in other countries: 9,500 MW, Spain 3,500 MW, USA 3,200 Mw, is currently estimated that worldwide there are installed 24,000 Mw Comodoro Rivadavia in 10% of the electricity supply is wind power.

Law No. 25.019 promotes wind energy: it gives legal certainty to investing in this technology and reimbursement of 0.01 / kW of power generated. Currently this is not true. In the province of Buenos Aires, there are 376 rural schools energized. It would be good news if it were not because they are abandoned. Some have wind power, solar energy and other others with both. But as they are not carried out any inspection or maintenance, it is an investment unless fully coming "Hector Von Raver, executive director of the Argentina Association for Rational use of energy.

Pico Truncado Wind Farm Santa Cruz Province-Argentina

Insurance during the construction phase [3]

The construction of wind farms require transport insurance and all-risk installation, plus additional coverage for individuals, bonds and others.

[3] **Leza, Escriña & Asociados S.A. Consultores en Ingeniería de Riesgos y Valuaciones**

To a lesser extent ALOP coverage (loss of anticipated profits) is required. In the assembly all-risk policy, the insured goods are to be the foundation, modules and equipment, buildings and fences, civil and electrical works including substations. These policies cover all those direct, sudden and unforeseen damage that is not explicitly excluded (innominate risks)

These works are usually delivered in phases, from each generator to the operational phase at different dates, which requires special conditions to set the start and end of coverage for each module as well as the need to protect the various interests of people including the promoter, operator, financial, awarded the work and subcontractors.

Risks in shipping

In September 2000 there was a fire inside the hold of the ship carrying 16 wind turbines to Argentina.

Losses were higher than u $ s 7,000,000, with a delay of eight months at the start of the operation covered in the ALOP insurance.

Important smoke damage could be reduced by a significant operating a specialist company.

The risks covered by the policy assembly can be divided into:

Conventional risks: Fire, explosion and lightning, theft, robbery and vandalism, falling aircraft, vehicle crash and impacts.

Optional risks: the impact of design error, broken machines, terrorism and sabotage, strike, riot and civil commotion, safe maintenance (12 months), civil liability under existing properties seek protection.

Technical hazards include poor management, assembly, testing, landslides, short, voltage, arc voltaic, excessive pressure, centrifugal force

Human failures include assembly errors, negligence, inexperience, malicious damage, natural hazards, wind, hail, snow and rain, other extraordinary stormy phenomena such as freezing and thawing, overflow and flooding sinking, detachment and landslides, earthquakes and volcanic phenomena.

Damage to roads during use is often .The subject of controversy to the exent that its construction has been completed prior to its use for the assembly of wind turbines. These events also generale frequent hability claims.

Risks in the testing period

On 17 July 2006 the first wind turbine installed in Comodoro Rivadavia (Argentina) series collapsed.

The generator is accelerated by causes of failure during the test period, when trying to connect the automatic control system, which first caused the loss of a blade of 24 meters long which Imbalance and collapsed the whole.

Insurance during the period of operation

Once the wind farm goes into operation, the risks to be covered to pass the policy of operation (Business Insurance).

Major insurance losses caused by falling towers (especially lost profits) generated normally not ensure that these transmission lines or distribution of electricity out of more than 500 meters from the insured premises radio.

Neither ensure prototypes, prototype considered any model that has not exceeded 10,000 hours of operation at any location.

Policies exclude loss of earnings when the incident be protected by manufacturer warranties or claims caused by terrorism.

The usual conditions include clause 72 hours. Damage of nature, sabotage, strike, malevolence and sinister clause in series.

The clause sinister serial states that claims that are due to the same cause are compensated according to a decreasing table: 100% of the loss for the first event, 75% for the second incident, 50% for the third claim, no the fourth or next incident will be compensated due to the same cause.

This clause, usually linked to breaking machine is extended in this type of policy to incidents of any kind, provided that the event has been generated in an internal causality to the machine or equipment. Ie it does not apply to lightning and acts of malevolence. Some policies make it clear that improvement work is no refuge in road access for heavy equipment approach.

The table below analyzes the different factors to analyze for coverage of operation

FACTOR	INFLUENCE	ASPECTS TO EVALUATE
Technology and size	insurance cost Design risk Sinister clauses in series	avoid prototypes study background Contingency Plan
Geographic location	Limit of indemnity natural hazards Cost	Contingency Plan
processing plants (Own and receivers)	Loss of benefits	Fire protection
Number of generators	alternative treatment massive risks deductibles	
age overlap	Overlap with warranty	Maintenance control

The grouping of wind turbines in wind farms generate increased exposure to catastrophic risks (affecting several machines) and CP concentration in processing plants and distribution, as shown in the photograph, which require increasing measures security. Mechanical damage: The most common damage is damage to the gears and bearings, which may be due to breakage, wear, reverse or broken teeth, these damages are due to material defects, fatigue, use of improper oil error oil temperature, vibration, overload. The wear damage is not usually covered, although this covered the most damage occurring in the rest of the machine.

The blades are also subject to breakage, especially vibration and speed, which generates its release, the unbalance of the assembly and subsequent fall of the tower. Minor repairs can usually be done at the time, but when they are more complicated its cost

is substantially increased by the need to raise the parties, renting a crane so check importance replacing the damaged part, delaying repair parts and increasing its cost. Rays: Rays tend to fall into the highest point, for this reason, wind turbines are a natural target, both because of its height and its elevated position.

When lightning hits, an electrical arc extending from the point of contact through other conductive components that can reach a temperature of 30.000º creates C. The result is an explosive expansion of air in the plastic that makes up the shovel , causing cracks and melting.

It has been found that in some wind farms, generating record up to 10 lightning strikes in each blade per year, events that usually do not generate damage due to modern protection systems to intercept and transmit the beam effectively and safely to the other parts of the protection system of the wind turbine, these systems have an efficiency of approximately 95% of the rays, which is why the rays are still today an important source of losses, proving to be approximately 60% of claims and 30% of total loss.

It is important that the wind farm will count with shovels parts and system contingencies that allows replacement of the blades in the shortest time the deductible stated in the policy for loss of profits, getting the coverage for extraordinary situations, ie when several accidents occur simultaneously or when weather conditions do not allow repair planned.

Fires:

Fires can be as much lightning as overheating bearings, faulty lubrication system (generator has 200-400 liters of oil inside), short circuits and sparks especially during maintenance work.

The ability to fight fires in height are very few, why fires usually conclude with the total destruction of the module, which has a cost S of about US $ 1,000,000 for a team of 1.2 MW.

Liability: Because the generators are usually located in isolated places, damages for injuries to third parties are best chance, but this situation must be studied case by case, a blade detachment can cause significant damage up to 1000 meters away, and damage adjacent electrical installations, risks that many of which are not adequately warned. There is an additional risk related to the attraction generated by generators movement and visibility in relation to unwanted visitors, especially children. Regarding the material damage is frequent forest fires and we claim for environmental issues such as pollution by oil, mortality birds, noises and even visual pollution.

Loss control

There are two options in which insurers can play an important role, first take enough precautions in the policy (such as serial sinister clause) and on the other hand through inspections to ensure maintenance management. The most important preventive aspects are:

Mechanical damage is prevented by regular inspections, use of original spare parts and proper maintenance.

The fire damage are avoided by restricting the amount of flammable material limiting the sources of ignition, with inspection by infrared thermography and with detection systems

and even automatic deletion at critical points (substations and transformers) Control of physical access to prevent malevolence damage also requires special attention.

FEDERAL REPUBLIC OF BRAZIL

Proposal to the cop21

Brazil's proposal to COP 21, published by the Ministry of Environment (MMA), the country must reduce its absolute emissions by 37% by 2025 and 43% by 2030, taking 2005 as the base year. The commitments have involved changes in the energy matrix in the forestry sector, involving land use.

In INDC [contribution of Brazil to the United Nations] Brazil 2030, it is expected that the Brazilian energy matrix has an 18% increase in the share of bioenergy. This includes the use of biofuels - ethanol and fuel oil, and the second generation biofuels - and a greater mix of biodiesel in diesel.

In the field of power generation, the proposal estimates that the contribution of renewable energy should have a share of over 5% in the current national energy matrix, ranging from 40% today to 45% in 2030. This includes keeping the rate of contribution of hydropower and expand the supply of renewable sources from 28% to 33% in 2030. and also increase domestic use of renewable sources to 23%, as the inclusion of wind and solar energy, and the hydroelectric power. Another important point would be to increase energy efficiency by 10% by 2030.

In forestry and land use, there is a commitment to strengthen compliance Forestal levels, federal, state and municipal Code. And in policies and measures at least in the Brazilian Amazon, achieve zero illegal deforestation in 2030. There is also a commitment to offset emissions of greenhouse gases from legal deforestation, restore and reforest 12 million hectares of forest in 2030 .

In the agricultural sector, the main measures were a further restoration of 15 million hectares of degraded pastures and incorporate 5 million hectares of integrated crop-livestock-forest (ILPF) in 2030.

For industry and transport, Brazil does not undertake to objective and / or quantitative targets. The text of the national INDC only says the country should promote the use of clean technologies and expand energy efficiency measures and low carbon infrastructure.

For transport, there is indication of promoting efficiency measures and improvements in transport infrastructure and public transport in urban areas. Brazil also pledged to implement a REDD + mechanism, in accordance with the requirements of the Climate Convention. This mechanism will be created by the National Committee on REDD +, and implemented by Decree 8,576 / 2015.

REDD + in Brazil

The REDD + mechanism is one of the proposals that divide opinions between the third sector [NGOs] and the Brazilian government during cop21. The mechanism involves a strategy discussion in the United Nations Framework Convention on Climate Change (UNFCCC), which provides incentives (compensation) for developing countries to reduce emissions of gases that cause the greenhouse, from effect of forests and invest in development and low-carbon practices for land use.

Although there is no global consensus on the issue, there are two news about REDD + in Brazil. The first was the creation of a National Commission on REDD + by Decree 8,576 / 2015 - four days before the cop21 - and second, the publication of the Ministerial Order 370/2015 of the Ministry of Environment, which contains the so-called Strategy national REDD +. The strategy is one of the requirements of the Convention on access to resources for REDD.

The disproportionate participation of members of the federal government (eight), state (two), municipal (one) and civil society (two) is one of the main criticisms of the proposed national REDD +. "This problem occurs especially in civil society, as there are at least five blocks of key players for REDD + in this segment, including indigenous peoples, traditional communities, non-governmental organizations, the business sector and academia. Without But there are only two places to represent all these sectors, which do not always have common interests, "says Brenda Brito, a researcher at the Institute of Human Environment (Imazon).One solution to this problem would be to follow the same rule of the committee guiding the Amazon Fund (Cofa). In this model, it is scheduled bloc

voting between segments; that is, the federal government has a single vote, like the other groups.

Outside the international market.

The creation of a fund. This process will be decided by the Commission on REDD +. At first, the decree that established the commission states that will not be allowed to use the REDD + credits in regulated international markets, namely to contribute to reducing emissions in other countries. However, it does not preclude an internal market is established to reduce emissions (eg, between states) where REDD + credits. They are used. "However, there still was in Brazil, a qualified discussion on this subject, and the way the decree prohibited access to international markets for REDD + without prior discussion, ended up hemorrhaging groups in the country, who see this option interest"

Soybeans, cows, and trees: the recipe of Brazil to Climate Change[4]

The model ILPF Integration Lavoura -Pecuaria Floresta, seeks to combine agriculture, livestock and forestry in the same space. The ILPF model is applied in two million hectares, mainly in the center and west of the country, Brazil committed itself at the 21st Climate Conference (COP 21) to increase the surface at least five million hectares by 2030. The model is part of public policies such as the Agriculture Sector Plan for Low Carbon and credit line ABC program, which provides funding for this activity to 4.5%. At the same time, there is a network of integrated ILPF promotion by various companies between her John Deere. In Brazil, contend that keep degraded pastures is to accelerate the process of emission of gases responsible for global warming.

Consider the 200 million hectares is in their savanna there are 70 million less degraded pastures. It is estimated that at least 15 million could recover part with ILPF.

The Forest Code, very strict wants to impose a new form of agriculture in this region between Ecuador and the tropics of Capricorn. The aim of Brazil is not open more areas, but preserve them, this model of integration is the next paradigm of production in that

[4] BERTELLO, F. Diario La Nación Soja, Vacas y árboles: La receta de Brasil ante el cambio climático. Abril 2016 Buenos Aires- Argentina

country. Costa Porta field, called Fazenda Santa Brigida, was elected on a day in which It involved 1,200 people, sought to show that the experiment change between 2006 and 2016 field. In this field work 2500 hectares, of which 1,500 are destined to agriculture, livestock 1000 and 100 hectares are planted with eucalyptus.

This model optimizes the use of land, it is estimated that production could be obtained previously in 420 hectares, with ILPF model is achieved in 70 hectares, that is six times less.

In agriculture in soybeans, yields rose kilos to 2700 kilos per hectare 3700/3800, corn grew from 5,400 to 10,800 / 11,000 kilos.

In meat the field went from 69 to 730 kilos, it boosted production more productive pastures and joined a feedlot for completion.

The integration model proposed, depending on the case, two or four lines with eucalyptus trees. Between a strip and eucalyptus another 30 meters away or 60 meters is left as appropriate, and in them soybean, corn, sunflower, sorghum or pasture is made. The eucalyptus trees are placed in a solar direction from east to west so that the "sun walk" and avoid shading. In the case where four lines of eucalyptus trees are placed outside the two rows (more sensitive to the winds) are cut to six years and will be used for energy (coal). These lines become implanted while the other two plants, which at twelve cut wood remain. The technical study determined that the integration model reduces 55% emissions of warming gases by 2025 Brazil's overall plan is to issue 37% less gases in the atmosphere over 2005.

I planted corn consociated with different pastures for cows then seize

The weather[5] is the main risk factor for rural production. By hiring a policy rural insurance producer can minimize their losses to recover the capital invested in their work.

The program Grant Award Rural Insurance (PSR) offers farmers the opportunity to ensure reduced production through financial aid from federal government cos

[5] Seguros Rurais. Swissre

REPUBLIC OF CHILE

Proposal to the cop21

Chile is one of the countries most vulnerable to climate change ', with this premise part of the explanatory video showing what country the main actions will be to address this phenomenon in the context of the commitments assumed in the cop21 Chile.

The Ministry of Environment explains the scope of climate change and measures to be taken to address this problem and "decarbonise the economy." Among these actions include:

. Promote Renewable Energy Unconventional.

. Promote a law on energy efficiency.

. The development of decontamination plans before 2018.

.electric green taxes and fuel emissions.

. Reforestation of 100,000 hectares of native forest.

The plan to adapt the economy to climate change was developed in 9 sectors: Biodiversity, Health, Fisheries, Infrastructure, Water Resources, Cities, Agroforestry, Energy and Tourism.

The country currently emits 0.26% of the greenhouse gases on a global level and new measures could reduce CO2 emissions per unit of GDP by 30% by 2030.

Wind potential in Chile

The extension of the Chilean coastal territory and its winds coming from the west south, make the country an attractive site for wind development. Investment costs are high relative to other forms of generation. However, in areas with better availability of wind can be a competitive power.

In Chile, the knowledge of the wind potential is developing increasingly. Several companies have started resource assessments. The National Energy Commission, meanwhile, has conducted several studies that helped identify areas with an interesting wind potential. Among these studies is the collection and analysis of surface meteorological information between the regions of Atacama and Los Lagos. In addition, a

preliminary assessment of the wind potential between the Region of Tarapaca and the region of Araucania, based on reprocessing results available meteorological mesoscale models developed.

In 2001, in Chile the first connected to the electrical system Aysen wind farm was inaugurated. The wind farm "High Baguales" has three wind turbines (660 kW c / u) with a combined capacity of 2 MW.

Since November 2007, it is in operation connected to the first wind farm Central Interconnected System (SIC), located in the town of Canela, in the Coquimbo Region. This park has eleven wind turbines of 1.65 MW each, with expected annual generation of 46,000 MWh.

In addition, several small projects providing electrically isolated areas that have materialized as part of the Rural Electrification Program or motivated by some private or international cooperation initiatives.

The pilot of wind generation in the Tac Island, Chiloe Archipelago (Lakes Region) project is the largest of these initiatives. The project is in operation since October 2000 and corresponds to a wind-diesel consisting of two turbines each 7.5 kW hybrid system. It has benefited 79 families and 3 community centers on the island.

Currently the regulations in force in Chile has no specific regulations in the case of wind generation in terms of ability to cope with contingencies (failures), regulatory capabilities, behavior to frequency deviations, etc. The implementation of standards in systems with high penetration has been gradually and responding to the unique characteristics of each

Renewable Energy Policy in Chile

The prevailing economic system in the country, left the market the economic policy decisions, including long-term, so it is very difficult to create incentives for NCREs the feedin type tariffs, which have been so successful in other market economies (in Germany and Spain for example).

Law 19.940 (Ley Corta I):

- Right to sell energy on spot power market and node price
- Simplified operational and commercial Treatment
- Secure connection (<9 MW) distribution networks
- Total exemption trunk toll to <9 MW; and partial exemption trunk toll for 9-20 MW

Law 20.018 (Ley Corta II):

Although the Short Law II was not intended to favor NCREs but to encourage investment in any generation, entering the bidding process that must set prices in the long term, NCREs could help reduce volatility risks of fuel prices that force generators in tenders to index the electricity prices to fuel prices.

Characteristics:

- Allows participation in competitions to supply distributors
- Creating market for NCRE, in conditions similar to energy prices conventional
- The right to supply 5% of the distributor demand at competitive prices

Short Regulations Laws I and II:

- DS 244 (2006): Generation Media and Small Media Unconventional Generation
- Assures generators <9 MW sell their energy to CMg or Pnudo, operating with auto firm
- Define connection procedures, operation and communication with EEDD and CDEC
- Resolution 398 (2006): Mechanism to bid 5% of the Distribution Companies
- Decree 62 (2006): Power Sufficiency
- Technical standard cogeneration (review)
- Technical Standards distribution connection (review)

NCRE Law 20.257 (Short Act III):

- Must provide proof of between 5% and 10% Generators NCREs

REPUBLIC OF PERU

Proposal to the cop21

The Republic of Peru presented to COP 21 a commitment that is summarized as follows:

• In its mitigation component, the proposal suggests a reduction of 30% for emissions of greenhouse gases that would have the Peru in 2030 if the current pace and trend of national emissions. Of this total, 20% will be implemented through public and private domestic resources (non-conditional proposal), and the remaining 10%, is conditional on obtaining cooperation and financing facilities of the international community (conditional proposal). Proposed mitigation actions cover the areas of land use, land use change and forestry (LULUCF), agriculture, energy, industrial processes and solid waste.

• In its component adaptation to climate change targets are presented to reduce levels of vulnerability in the subject areas that the country needs addressing as a priority: water (water resources), agriculture, fisheries, forestry and health. Additionally, planned work in five cross-cutting areas that contribute to achieving the goals adaptation: disaster risk management, resilient public infrastructure, poverty and vulnerable populations, gender and multiculturalism and promoting private investment.

• To formulate the proposal in both components, the participation of relevant sectors in industrial production, energy, forests, agriculture, transportation, solid waste and wastewater was convened; cross sectors and civil society. Thus, the INDC has been built from a solid information base, aligned to plans, programs and instruments; and is the result of an intense participatory process that included a public consultation at the national level with representatives of civil society, NGOs, private sector, academia, youth, trade unions, associations, and regional and local governments.

• The political support required for implementation of the national proposal has been guaranteed through the participation of ministers and deputy ministers in a multi-sectoral commission, approved by Supreme Resolution, which had the task of preparing the Technical Report containing the national proposal that It is presenting the world today.

Peru is a country that depends almost entirely on fossil fuels, 42% of all energy produced in the country goes for the transport sector, which employs mostly oil (91%) and natural gas (8%). Moreover, the industry relies almost equally into electrical energy (36%) in oil (31%), an increase in the use of natural gas (16%) due to the conversion of industrial plants . Finally, in the residential sector is the use of biomass (45%), mainly firewood in rural areas.

They have installed the first photovoltaic and wind farms, as well as the first plants for the treatment of biomass (biodigesters). However, not make visible in the energy matrix because their percentages are very low.

Renewable energy

In March 2013 two photovoltaic power plants in Moquegua and Tacna, which have a capacity of 40 MW and provide electricity to 70,000 households in the area were opened. Combined with two other solar plants launched in 2012 in Arequipa, Peru, generating a total power of 80 MW, which places it as a leader in the production of this type of energy in Latin America.

In September 2014, the largest wind farm in Peru, consisting of 62 wind turbines located in the northern coast (La Libertad and Piura) was inaugurated. These large mills transform wind energy into electrical energy and have a total capacity of 114 MW, which feed the National Interconnected System (SEIN).

These initiatives are part of the Program of Energy Renewable Peru (RER), which promotes the generation of electricity through tenders called by the Ministry of Energy and Mines, and allow private companies to invest large sums of money in building plants, in exchange for a power purchase agreement for a specified period. To date, Peru has awarded 52 hydroelectric, wind, solar, biomass and biogas (23 are operational and 29 are under construction), totaling more than 800 MW.

"The bids are the first big step to start working with renewable energy. The idea is that these projects expand, its use is widespread and that more solar, wind or biogas digesters plants have, "says the coordinator. So far, the only companies that have the technical and

management capacity to implement them are foreign private companies. The challenge, says Vasquez, is how to ensure that there is appropriate technology transfer to domestic companies are beginning to address this issue.

- **Marcona Windfarm**

REPUBLIC OF URUGUAY[6]

Proposal to the cop21[7]

Uruguay submitted to the COP 21 a summary of the proposed future goals to reduce GHG emissions.

Uruguay is a developing country whose economy should continue to grow to ensure a higher level of equality in their society. The country's contribution to the ultimate objective of the Convention is then focused to develop with the least possible emission intensity, a task undertaken in parallel to building resilience.

In the most important activities (electricity generation and beef production)

Uruguay presents specific indicators showing the level of efficiency sought for the development of the activity. These indicators are presented as emission intensity in relation to the product unit, as detailed below.

On the one hand, because it is the main source sector worldwide, Uruguay has specific targets in relation to electricity generation. These goals are presented in terms of intensity of emissions per kWh produced.

On the other hand, it is given that Uruguay can not mitigate climate change at the expense of food production but work on improving efficiency of emission by product in the sector, the country has specific targets in relation to beef production, an activity that accounts for 78% of national emissions of CH4 (from enteric fermentation) and 63% of national emissions of N2O (available from the manure in the soil). These goals are presented in terms of intensity of emissions per kg of beef (as liveweight).

For all other sectors and economic activities stations, Uruguay presents

aggregate indicators showing the level of efficiency sought in relation to GDP, except for the LULUCF sector for which the absolute value of annual CO2 removal is presented in 2030.

Uruguay presents both goals you can achieve with their own efforts, such as those

[6] www.mvotma.gub.uy

reach should have means of implementation to be provided by sourcesexternal, which would allow it to increase its capacity for mitigation. Later a list of actions additional mitigation that the country wants to develop should have the means of implementation needed as well as a list of the main actions of adaptation that has done is presented and shall continue to perform in parallel with mitigation promoting synergy between the two. Having means of implementation for adaptation action is essential to ensure the goals proposed mitigation.

Over the past 10 years, Uruguay has grown at an average annual rate of 5.8%, a period in which energy demand of the industrial sector tripled and food production increased 3 times and average. This growth was accompanied by a significant reduction in poverty, which fell from 39.9% to 9.7%, while extreme poverty practically disappeared, from 4.7% to 0.3%, reaching a Gini index of 0.38.

Uruguayan production is heavily based on the food production sector in which 70% of national exports originate. In the whole of its agricultural sector, Uruguay today produces food for 28 million people, having a

population of 3.3 million.

A future is expected Uruguay food production to continue to rise, given

the country has particularly fertile soils, global demand is growing and the

country must contribute to global food security. This particular fact makes the

Uruguay GHG inventory is and will remain strongly influenced by emissions of the agricultural sector: using the metric GWP100, 76% of its current emissions correspond to this sector, three-quarters originated in beef production.

Public policies related to climate change, from building new institutions, both national and departmental as well as the design of a National Response Plan to Climate Change (2009) and specific sectoral policies, recent dynamic growth of the country could be further reducing emissions intensity in all sectors and even declining absolute emissions in some of them.

The following briefly describes recent developments in the sectors and activities and removers emitting GHGs from actions implemented early mitigation and ambition levels by 2030 for each of the goals presented above.

Sectors and issuers activities and GHG removers

CO2 removal - LULUCF

Uruguay is a country with no net deforestation, a unique feature among developing countries.

By contrast, the total area of native forests has increased over the past 30 years and is located at 752000 hectares. Carbon stocks in these forests have increased by an increase in area and secondary growth by about one-third of the surface.

This result is due to legal regulations prohibiting logging native forests and the

providing incentives in the form of tax to areas with native forest registered, reaching approximately 5 million USD annual waivers. By 2030 it is expected that annual removals of native forests with their own efforts are located in the order of 1300 Gg CO2 and reach Gg 2500 with additional means of implementation.

Also, between 1990 and 2010 the country afforested 689,000 hectares plantations effective, which means an increase of 430% of the total planted area in that period. Levels of carbon sequestration in plantations and native forest growth have Uruguay determined that, at the beginning of this century, behaved as a net sink CO2. From 2010 to 2030, with its own resources, Uruguay plans to contribute an additional increase of forest plantation area estimated at 300,000 hectares.

CO2 emissions - Energy (92% of CO2 emissions in 2010)

In the framework of the "National Energy Policy 2005-2030" Uruguay has made great efforts to achieve a clean energy matrix: 50% of global primary energy mix today is renewable, percentage reaches 85% for total of the energy consumed by the industrial sector and reaching 95% for electricity generation. In transport, is 7% biodiesel and bioethanol 10% of the entire fleet, both with entirely domestic production. While there has been progress in recent years, there is still significant potential for action in this sector.

As a result, total emissions from the energy sector in relation to its GDP, are very low: in 2014, the emissions intensity of the energy sector was 111 Uruguayan gCO2 / USD, the third of the world's intensity (global CO2 emissions from the energy sector aggregate GDP vs. global) and even well below the average of OECD countries. However, there is still significant potential for action, especially in the transport sector (see below list of Additional mitigation measures) that the country is ready to implement if they are counted on means of implementation.

Uruguay will continue its development while maintaining the low emission intensity energy, even decreasing the intensity by 25% by 2030 compared to values 1990 with its own resources and may reach 40% reduction with additional means of implementation.

Electricity generation

Thanks to the ongoing structural transformation of the electricity generation matrix, Uruguay in 2017 will reach 88% reduction in absolute emissions in this subsector in relation to the annual average of the period 2005-2009, with increased consumption. In 2017, emissions from power generation system of national reach to 17 gCO2 / kWh, equivalent to 3% of the world average. This will be achieved with 40% (mainly wind, but also photovoltaic and by using biomass wastes) non-conventional energy, plus 55% of hydraulic source (assuming a half year of rainfall).

While this number would increase in the coming decades by the limit of wind-hydraulic complementation been reached, could remain close to 2017 values if there were storage systems to be incorporated through additional means of implementation (see forward list of additional mitigation measures). will represent annual removals 11200 Gg in 2030.

In addition, in the context of REDD + actions, Uruguay may help removing and avoiding carbon emissions can be estimated primarily on other 2100 Gg.

The integrated forestry removals with means result is at 12500 Gg in 2030 and may reach 15,800 Gg with additional means of implementation.

On the other hand, Uruguay has a very significant potential for carbon sequestration in soils under degraded pastures and eroded farmland. In the case of degraded grassland it is estimated to reach 2030 removals 600 Gg with own efforts and reaching 3300 Gg with external media implementation. In the case of carbon in farmland soils, Uruguay extensively and recently introduced zero tillage, in mandatory terms, it has implemented conservation policies that reduce erosion and promote an increase in the contribution of biomass to the soil; also it is promoting the use of irrigation. The net impact of these activities is estimated preliminarily at least 100 Gg of CO2 captured in 2030.

For carbon sequestration in soils, then Uruguay would remove 700 Gg annually in 2030 with means, reaching 3400 Gg with additional means of implementation.

CO2 emissions - Industrial processes (8% of CO2 emissions in 2010)

Uruguay produces CO2 in essentially linked to the production of cement industrial processes. Emissions are low, even compared to small emissions from the energy sector. With means possible to maintain the intensity of emissions in 1990 close to those values, but it would be possible to reduce it by up to 50% with media implementation.

net CO2 emissions

Thanks to the increased catch by LULUCF and low emissions in the energy sector, in 2030 Uruguay is a net remover of CO2. CH4 emissions - Production of beef (78% CH4 emissions in 2010)

The peculiarity of the biological origin of these emissions, coupled with the fact that the country can not mitigate climate change at the expense of food production, makes the challenge to focus on reducing the intensity of emissions per unit of product or of food produced.

In the past 20 years, Uruguay has already begun to significantly reduce this emission intensity. In particular, from its Agricultural Policy 2010-Smart Climate, Uruguay has been and will continue efforts to build a more efficient beef cattle, resilient and low-

carbon, introducing new technologies and adapting successful experiences in other countries with productive characteristics like.

Based on these policies, in 2030 Uruguay expects to deepen its reduction of emission intensity in the production of beef, hoping to reduce their emissions intensity of CH4 per kilo of meat (live weight) at 33% relative to the value of 1990, with means, and reach 46% reduction if you have adequate means of external implementation

CH4 emissions - Waste (7% CH4 emissions in 2010)

In the waste sector, have implemented measures while capturing and burning methane in landfills (in some cases with power generation) and cogeneration from agro-industrial and forestry residues, there is an additional potential

mitigation. Continuing these policies will be possible to reduce the intensity of emissions from the sector in relation to GDP by 44% compared to 1990, with its own resources, reaching 68% with additional means (see below list of additional mitigation measures).

CH4 - Other sectors and activities (15% CH4 emissions in 2010) While the vast majority of CH4 emissions from the agricultural sector in Uruguay come from the production of beef, about 9% of national emissions CH4 is produced from other livestock and dairy production, 5% from production of rice and less than 1% originates in the energy sector. And activities in these sectors is possible to reduce aggregate emissions intensity in relation to GDP by 45% compared to 1990 with its own means and for up to 60% with means of implementation

N2O emissions - Production of beef (61% of N2O emissions in 2010) For the same reasons discussed above in relation to emissions of CH4 in the process of production of beef, for N2O emissions generated by this activity efforts have focused on reducing emissions intensity per kg of meat produced standing. Based on the actions developed and developing, in 2030 Uruguay expects to deepen its reduction of emission intensity in the production of beef, hoping to reduce the intensity of N2O emissions per kilo of meat stood at 31% in relation to the value of 1990 with means, and may reach 41% reduction if you

have adequate means of external implementation (see below list of additional mitigation measures).

N2O emissions - Other sectors and activities (39% of N2O emissions in 2010) While most of N2O emissions Uruguayan come from the cattle industry, an important part originates in other activities related to food production.

In these sectors it is possible to reduce aggregate emissions intensity relative to GDP at 40% compared to 1990 with its own means and by up to 55% with means of implementation

In short, Uruguay believes that the goals presented in this contribution are ambitious Preview Nationally Determined depending on their national circumstances, early mitigation efforts already made and the characteristics of its economy.

Additional mitigation measures

As seen from the above, to contribute to the implementation of a new model resilient and low-carbon development, Uruguay deployed in recent years a very ambitious set of early actions, especially in some key sectors.

This was made possible by a significant volume of public policies promoted by investments. For example, in the energy sector, sector transformation was made possible by a public-private investment accumulated over several years which reached on average 3% of GDP per year. The State also contributed to the reduction of emissions of its economy by giving tax to productive investments low carbon benefits, particularly for promoting afforestation, sector in which the subsidy amounted to half of the costs of planting for nearly 15 years. Also in the sector of beef cattle in dairy and rice production, public policies generated strong investment and technical change that allowed an increase in productivity and reduction of emission intensity.

Beyond the early actions already implemented and has resolved implement own, Uruguay maintains its vocation to develop and implement other innovative actions, especially in the sectors of transport, waste and agriculture, which will allow further progress towards an economy with lower carbon level. Without

But in parallel with this, the country must deal with an important set of actions to adapt to the strong impact of climate variability and change are it having on our territory, economy and its people, as described below. Therefore, in order to implement the set of actions identified additional mitigation, Uruguay requires means of implementation to be provided by external sources.

Some mitigation actions identified and that the country wants to implement are

following:

Reduction of emissions intensity by improving productivity and efficiency in vaccine production, rice milk and meat.

Reduction of emissions intensity of manure deposited in soils.

-Increase Area of forest plantations.

-Increase The surface of native forest and reduction degradation.

-Increase The stock of carbon in soils under natural grasslands.

-Increase The area under irrigation.

Reduction of methane emissions in rice production by managing the

flood and other practices.

-Using efficient nitrogen fertilizers.

-Incorporation Of energy storage systems for managing surplus

wind.

-Implementation Of BRT corridors metropolitan public transport.

-introduction Individual and public electric and hybrid vehicles.

-Increase The share of biofuels in gasoline and diesel mixtures.

-Entering Private and public vehicles that allow the use of higher percentages of biofuel mixture.

-Improved Vehicle fleet with higher standards of energy efficiency and lower

emissions.

-Improved Freight, by incorporating new multimodal systems, greater incorporation of rail and river transport.

-Introduction Of new technologies for reducing emissions in the process cement manufacture.

-Improved Systems of treatment and disposal of municipal solid waste.

-Improved Systems treatment of industrial wastewater and effluents intensive animal breeding establishments.

-Improved Management of industrial and agro-industrial solid waste.

Adaptation actions required

The National Response Plan to Climate Change in Uruguay in 2009, states that adaptation is a strategic priority for the country. This is essential to effectively respond to climate change and increased climate variability, particularly to reduce risks and damage to increasingly intense changes. Uruguay has high sensitivity to drought, low-lying coastal areas as well as prone to weather disasters such as flooding. The need for adaptation is particularly relevant to food production, central activity in the Uruguayan economy and presents a particular climate vulnerability.

In this context, through public policies Uruguay is addressing adaptation to climate variability and change and climate risk management in different sectors, both at national and sub-national governments, both own and external resources.

In sectors such as livestock, agriculture and energy has been made in the implementation of concrete adaptation measures, allowing start developing manufacturing processes of sectoral National Adaptation Plans (NAPs) to facilitate the identification of adaptation needs the medium and long term as well as develop and implement strategies and programs within the framework of the planning and development of these sectors.

They presented below the main actions undertaken adaptation:

Diversification of the energy matrix to reduce vulnerability and cost overruns electrical system to episodes of hydro generation deficit.

-Creating Weather index insurance and other financial instruments reduction risks in the electricity sector.

Design and implementation of adaptation measures in livestock production, including water sources, forage and management measures.

-Development Of use and management plans to reduce soil erosion and conserve organic matter in farmland.

-Relocation Of population living in urban areas prone to flooding and land management measures to reduce the risk of flooding.

-program Surveillance and eradication campaigns Aedes Aegypti mosquito, strengthen the National Immunization Program, related to disease

the transmission of sensitive to weather and other actions related information and communication vectors.

Creation and strengthening of the National System of Protected Areas contributing to the protection of biodiversity and vulnerable to climate variability and change ecosystems.

-Restoration And maintenance of coastal ecosystems that provide services and protection from extreme ecosystems that provide protection services events drinking water sources.

Retrofitting and maintenance of road infrastructure, particularly in coastal and / or flood-prone areas, considering the variability and climate change.

-Development Of programs and research networks and data collection on impacts and adaptation to climate variability and change.

Creation of information systems, climate services and systematic observation,

mainly for environmental, agricultural and weather emergencies sectors, and

development of early warning systems, to support decision-making.

Creation, strengthening and decentralization of the National Emergency System.

-Strengthening Of weather, climate and water services.

Design and implementation of the National Response Plan to Climate Change; Climate Plan of the Metropolitan Region; Project Development and Climate Change Adaptation in the agricultural sector; National Plan for Integrated Management of Water Resources in the context of climate variability and change; land use plans in

vulnerable territories and Stormwater plans; Protocol Emergency Response and Disaster Sudden; identification of adaptation measures in tourism and formulation of the National **Adaptation Plan for the coastal sector.**

Building on the experience and results of the actions already undertaken, and incorporating new elements, Uruguay expects 2030 have taken the following actions on adaptation, with support from external media implementation, which are

necessary to ensure compliance with mitigation goals:

-Formulation And implementation of national, sub-national and sectoral plans

participatory adaptation to climate variability and change, and incorporating monitoring and reporting systems of adaptation and loss and damage.

-Development Of new early warning systems and new hydrometeorological within the framework of actions to reduce disaster risk for the agricultural, coastal and health sector as well as for flood urban areas, infrastructure and other vulnerable areas safe.

- Deepen

Climate risk management to floods, by expanding relocation processes vulnerable population and inclusion of new regional planning measures. Also for drought management, identifying new water sources, promoting associative construction works, as multi property taxes dams, and improving efficiency in water use.

Improve the protection of surface and groundwater sources, such as groundwater recharge zones waters, by promoting good practices in building

perforations, control of point and nonpoint sources of pollution and the implementation of measures for the conservation and restoration of the coastal mountain.

-To Promote ecosystem-based adaptation, deepening strategies

conservation of ecosystems and biodiversity.

-Design, Adapt and maintain resilient infrastructure, considering the impact of the

variability and climate change.

Articulation and development of new information systems and integrated climate services for systematic observation, conducting risk mapping and evaluation of loss and damage

through strengthening monitoring and academic institutions such as the Uruguayan Institute of Meteorology and National Hydrological Service.

-generation Capacity for research, development and innovation to facilitate national response to climate variability and change.

Improve the display of adaptation activities to climate change within the national budget, developing a national system of indicators environmental.

-Implementation Of education, training and awareness that incorporate the requirements of climate change responses

Estimating total emissions and removals by gas by 2030

To facilitate the work of the Secretariat reported that, according to all the assumptions used for the design of this contribution Preview Nationally Determined, can

They inferred that the maximum emissions of Uruguay in 2030, including mitigation actions to develop own efforts, would be:

Gas (Gg)

10900 CO2 emissions

CO2 removals -13,200

-2300 net CO2 removals

840 CH4 emissions

N2O emissions 39

As shown, Uruguay expected to be a net sink of CO2. in 2030. In addition, according to the estimate is expected to maintain relatively stable levels of emission of non-CO2 gases by 2030 compared to current values, despite an expected economic growth of 60% in the period.

The above figures are presented as non-binding estimates, and should not be considered as part of the expected contribution of Uruguay. Only they presented with the to facilitate the Secretariat of the UNFCCC the preparation of the synthesis report on the aggregate effect of Domestically Certain expected contributions.

Wind power

In 2007, Uruguay began in early experience in wind power .In 2012 began to glimpse projects and 2013 is the year of the great logistical challenge and building parks. By 2016, if all projects are carried out, Uruguay is the country with the highest percentage of wind energy in its energy supply.

There are more than twenty private parks projects in approval stage or already in work, in addition to the projects in which participates UTE both parks themselves and through leasing with private operators. To this must be added the project announced months ago in conjunction with Eletrobras of Brazil, to be held in Cologne.

The project consists of 500 wind turbines distributed throughout the national territory, although with a strong prevalence of the south, where investment opportunities along with the wind characteristics, have been decisive.

The estimated total investment in the sector exceeds two billion dollars, according to coincide private operators and government representatives, backed figures unit costs to purchase, install and launch each wind turbine. While this activity is not very intensive generation of labor, except in the construction phase, an important aspect is that no less than 25% of that investment remains in the country, through logistics, transport, assembly and construction, among other activities.

This figure can be multiplied several times if the step of developing some parts of wind turbines in the country, business segment in which there are already several interested is given.

Die change

The matrix of energy supply for the Uruguayan economy has historically been characterized by a majority share of non-renewable energy through oil and its derivatives, which generally has a stake of between 50% and 60% of the total. In recent years, an increase in generation through renewable energy and the role of wind has become increasingly important is observed. This coincides with a decade of uninterrupted growth of the economy, which has had its counterpart in energy demand, both at domestic level since the productive sector. Energy demand grew at an average annual rate of over 6%

from 2004 to the present, and projections of the National Energy estimate a similar behavior for the coming years.

Since 2009 is in effect a decree viable specific tax incentives for the renewable energy sector, which have been duly exploited by local agents and foreign investors. The existence of a very attractive tax regime for wind generation, found that almost 80% of projects promoted by the Committee on the Application of the Investment Law last year, applicable to this sector. In turn, invested capital from abroad have been mainly due to the magnitude of the projects that are beyond the possibility of being funded, usually in the local market. Those with national capitals are mostly consortium with foreign companies.

According to the latest seasonal programming approved in early May by ADME (Electricity Market Administration), a non-state public figure where are represented the government, large consumers and private generators, the first of January 2015 there will be 718.6 megawatts (MW) from wind power installed, according to the scheduled departure of each of the projects. The first of June 2015 is estimated to reach 1,039 MW; in January 2016, according to projections, will be 1,346 MW connected to the grid of UTE.

Given that Uruguay consumes an average of 1,100 MW and projections indicate that average will be located on 1,200 MW by 2016, we can say that if at any time were all the parks in operation, could meet the total demand of the country energy from the wind. "In some windy summer morning, nearly 100% of what is consumed can be covered by wind," says the National Director of Energy. In an instance like this, "we would be reserving all water from dams and maintaining all machines (thermal) off, not because we would point".

Beyond this, it is expected that on average can cover 30% of needs with wind power each year, which would put Uruguay as the country with greater use of wind power generation. It is worth remembering that at present, the most developed countries in the use of this energy, which are Denmark, Spain and Germany respectively satisfy 20%, 14% and 12% of its total needs with that source.

current generation

In eleven parts of the country they are beginning to mount wind turbines. Meanwhile, another ten awaiting environmental clearance. One more awaits authorization generation.

Already active and contributing to the national grid, projects in the Bulgheroni Group Rocha Argentina (Agroland and Nuevo Manantial). "Agroland" was the first to enter operations in March 2007, but with a contribution of only 0.5 MW. In June 2008, "New Spring" was connected to the network with an input of 13 MW. In December 2008, near San Carlos, in Maldonado, the first park UTE "Caracoles I" joined and became operational in June 2010 "Caracoles II", which together generate 20 MW from 10 turbines. In addition, in April 2011, the "Magdalena" of Kentilux 9 wind turbines together generate 17.2 MW in the Cologne area Wilson in San Jose, the project was connected to the network in a domestic capital investment associated with the multinational Ventus sector. The last to enter the wind turbine operation was mounted by the company lanera Engraw in Fray Marcos, Florida, which provides 1.8 MW.

Thus, they reach 52 MW this date are installed and connected to the national grid, with more than 40 "mills" added to the local landscape.

Official expectations for rapid progress of projects, accompanied by contractual conditions of the last awards that determine that everyone wants to start building as soon as possible.

In January 2011 it became the first award of importance-there were two calls of low volume in 2007 and 2008 with the intention of "knowing" the market-, when Eurnekian group projects (Fingano), IMPSA (Libertador) were in the race and Teyma (Palmatir). On that occasion, the price at which UTE undertook to acquire that energy was $ 84 per MW.

In the second call, in August 2011, it was awarded to a much lower price of $ 63.5 MW. There he joined a project of the Otegui Group (Luz de Mar), one of Sowitec (Minas I) and other New Energy (agualeguas).

Add value and labor to energy projects

An incipient industrial implementation in Uruguay linked to wind energy can be seen through the manufacture of wind turbine towers. This is the case agualeguas in Peralta,

where the towers will be assembled on site in concrete. In good weather, a concrete tower of over 100 meters can be erected in less than a week.

From -Manufacturer German Enercon and park owner in the firm New Energy, along with Uruguay SEG Engineering it ensures that the concrete towers allow to reach a height of 108 meters, higher than the steel towers used primarily in the sector. "This production system will avoid the complexity and costs of transportation," says Juan Ruiz-Jarabo, CEO of Enercon Uruguay. The location of the production plant concrete towers, which is expected to be ready for September, will be on the same site of the park and will feature 5,000 square meters and a total staff of 145 people, preferably in the area, as well as the suppliers.

"The concrete towers are planned in principle for parks Peralta, as to establish a long-term production is necessary to have several wind farms in the same area over the years, along with clear incentives for the creation a wind industrial fabric, "says Ruiz-Jarabo. Once this stage, it is likely that the plant moves to Brazil for mounting other parks, as new opportunities appear not here.

From the Department of Industry the possibility of further stimulating presence in the country of other industrial initiatives linked to wind complex in the metallurgical or mechanical area is evaluated, but so far there is no specific project.

The huge pieces that make up each wind turbine and entering the Port of Montevideo, have tested the combined logistics operations, demanding maximum efficiency of public administration, customs and transport operators.

A study by the expert James Mullin for a presentation at the Uruguayan Wind Energy Association, projected that in February 2012 should be moved via port and roads, about 5,500 "packages" referring to parts of wind turbines, in the course two and a half years. That represented 09.08 bags per working day throughout the period.

In Montecon, from 2008 to date they have been developed unloading operations 8 wind projects, totaling 103 towers which come in sections 40 meters long in addition to the blades, the gondolas, where the aspas- are inserted and the machines.

Normative

The current legal framework is composed of a set of laws and decrees, some of them are general for electric power generators, and others are specific for wind generators, and / or other renewable sources, in different areas of activity.

Industrial wind

The Decree 158/012 approved on May 17, 2012, establishes the possibility that industrial consumers that generate electricity from wind power, can make purchase contracts with UTE. Generation on the property itself, generation and generation farm outside in partnership, each with the conditions described: Under the decree three possible modalities for recruitment are recognized. Additionally, it passed Decree 433/012 where the price of energy demand to the system and method of calculation and update provides, among other aspects.

Conclusion

The "Paris Agreement" is considered a historic landmark, although the final document has been criticized by society. Criticisms revolve around an agreement which comes into force in 2020, and that there is a binding agreement. Scientists clearly stated that you had to produce an ambitious, bold, fair, binding and immediately applicable agreement, to prevent the temperature to rise beyond 2 ° C.

The document acknowledges that the estimated levels of emissions of greenhouse gases in 2025 and 2030 resulting from INDC presented are not compatible with scenarios 2 ° C but lead to a projected 55 gigatons in 2030 level and also notes that for keep the increase in global average temperature below 2 ° C above pre-industrial levels by reducing emissions to 40 gigatonnes, or below 1.5 ° C above pre-industrial levels will require a effort to reduce the emissions much higher than anticipated contributions represent.

Ban Ki-moon, Secretary General of the UN said respect "The markets already have a clear signal" after Saturday Paris Agreement was adopted, the following Monday renewable energy companies give up their trading bags.

The International Renewable Energy Agency (IRENA) estimates that to meet the mandate of Paris, will need to duplicate the installation of clean sources in the next 15 years and an annual investment of 900,000 million in 2030.

It is worth noting that the Paris Agreement does not include emissions from air and sea transport and does not encourage disinvestment in fossil fuels. Nor slows the rise of fracking and tar sands.

The Paris Agreement, gives few years ahead to work toward a cleaner production, especially in the supply of renewable energy, for which it will be necessary to venture into energy efficiency.

The conference will try to establish an international carbon price, but remained outside the Paris Agreement.

The Paris Agreement has laid the foundation of commitments for the first time in bulk, the signatory countries have the challenge of "Adaptation" in order to protect people,

livelihoods and ecosystems. Countries should increase their efforts to identify new opportunities to reduce emissions and cooperate voluntarily to be implemented

COP 21 sent a message to the world and businesses: it is necessary to turn to renewable energies.

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