

Climate Risks and Adaptation: Challenges and Opportunities in the Oil and Gas Sector

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EVENT REPORT



ARPEL WORKSHOP

CLIMATE RISKS AND ADAPTATION: Challenges and Opportunities in the Oil and Gas Sector.

September 6-7, 2017, Buenos Aires, Argentina

SUMMARY OF KEY ASPECTS

Forty professionals from 11 companies in the sector representing Colombia, Uruguay, Argentina, Chile, Mexico, Ecuador and the United States participated in the workshop. The event was also attended by the following guest institutions: Ministry of Environment and Sustainable Development of Argentina, CEADS and IPIECA.

The workshop objective of sharing information and tools to support adaptation to climate change and management of climate risks in the oil and gas sector in the region was fully achieved.

The World Economic Forum (WEF) considers climate change as one of the five main risks for mankind in the next ten years; consequently, it is no longer a scientific or futuristic topic of discussion, but a tangible reality and its effects are being perceived nowadays.

Several changes have already occurred with respect to the pre-industrial era at the global level: Ocean temperature increase; decrease in the ice layer at the poles; decrease in the snow layer and the frequency of snowfalls; rise of 17 cm in the sea level, and an increase of 0.85 °C in the temperature of the earth's surface, among others.

As a main global response measure to climate change there is the Paris Agreement reached in 2015 and ratified in 2016, which aims to hold the increase in the global average temperature to well below 2 °C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5 °C. The Agreement considers that an increase below 2°C brings mankind sufficient time to implement adaptation and mitigation actions, and its effects on the planet would still be reversible, though with socio-environmental costs and impacts. On another hand, the 1.5 °C limit arises from the initiative of small insular states, which would completely disappear with an increase of 2 °C.



IN CENTRAL AND SOUTH AMERICA, THE EXPECTED IMPACTS OF A 2 °C INCREASE ARE:

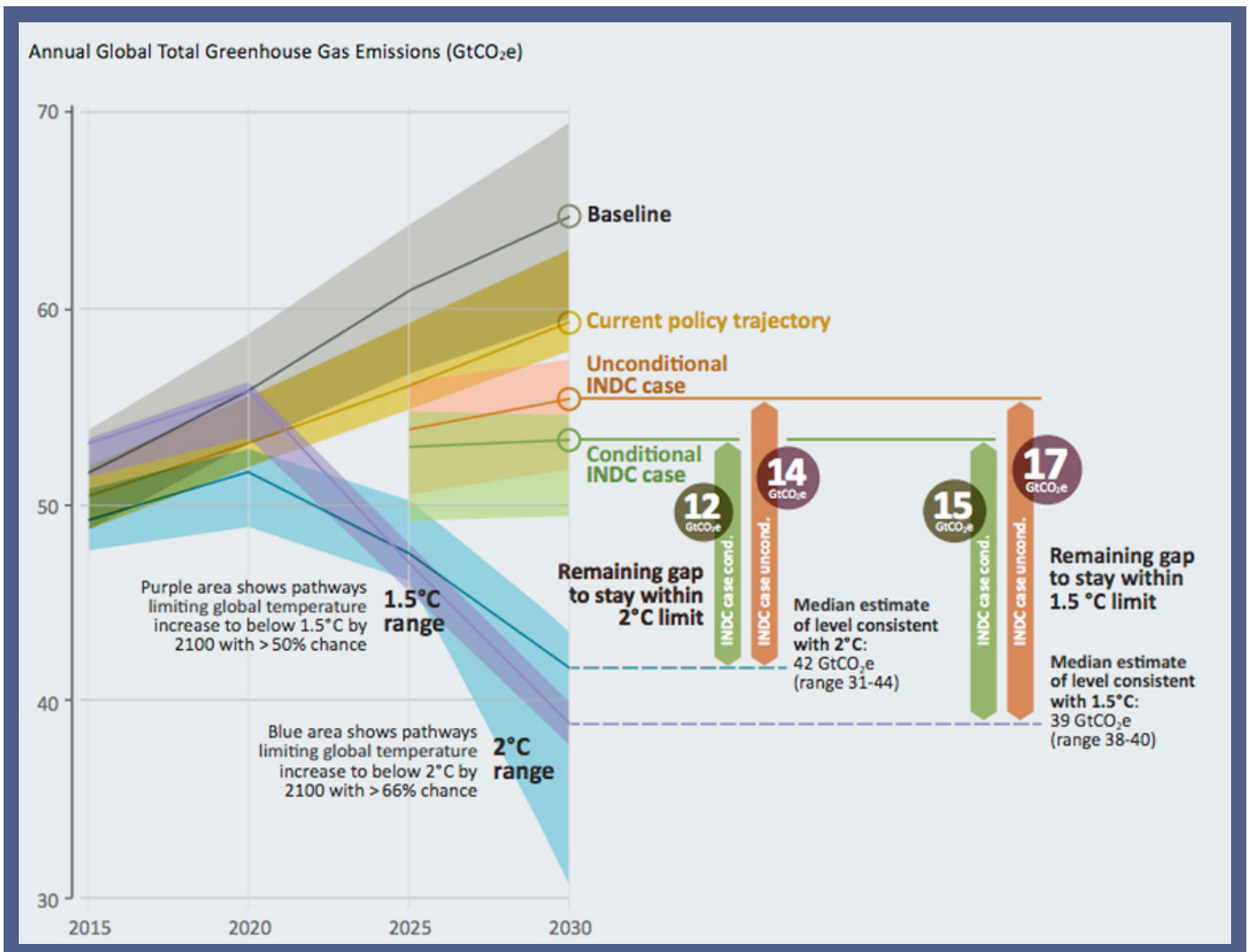
CENTRAL AND SOUTH AMERICA	
Snow & Ice, Rivers & Lakes, Floods & Drought	<ul style="list-style-type: none"> • Shrinkage of Andean glaciers (high confidence, mayor contribution from climate change) • Changes in extreme flows in Amazon River (medium confidence, major contribution from climate change) • Changing discharge patterns in rivers in the western Andes (medium confidence, major contribution from climate change) • Increased streamflow in sub-basins of the La Plata River, beyond increase due to land-use change (high confidence, major contribution from climate change) <p>[27.3, Tables 18-5, 18-6 and 27-3; WGI AR5 4.3]</p>
Terrestrial Ecosystems	<ul style="list-style-type: none"> • Increased tree mortality and forest fire in the Amazon (low confidence, minor contribution from climate change) • Rainforest degradation and recession in the Amazon, beyond reference trends in deforestation and land degradation (low confidence, minor contribution from climate change) <p>[4.3, 18.3, 27.2-3, Table 18-7]</p>
Coastal Erosion & Marine Ecosystems	<ul style="list-style-type: none"> • Increased coral bleaching in western Caribbean, beyond effects from pollution and physical disturbance (high confidence, major contribution from climate change) • Mangrove degradation on north coast of South America, beyond degradation due to pollution and land use (low confidence, minor contribution from climate change) <p>[27.3, Table 18-8]</p>
Food Production & Livelihoods	<ul style="list-style-type: none"> • Increase in agricultural yields and expansion of agricultural areas in southeastern South America, beyond increase due to improved technology (medium confidence, major contribution from climate change) <p>[13.1, 27.3, Table 18-9]</p>

Source: IPCC (5th Assessment Report)

Confidence level: it refers to the validity of a finding, based on the type, amount, quality, and consistency of evidence, and the degree of agreement. Confidence is expressed qualitatively.

In order not to exceed the 2 °C increase in temperature, mankind should reach a maximum level of GHG emissions by 2020, and by 2050, it should reach emissions at least a 50 % lower than in 2010, it should achieve climate neutrality in the second half of the century and compensate for excess emissions through reforestation and other means of absorption.

IT IS WORTH REMARKING THAT THE GAPS BETWEEN THE COMMITMENTS ALREADY UNDERTAKEN BY THE COUNTRIES, AND THE ACHIEVEMENT OF THE OBJECTIVE OF THE PARIS AGREEMENT ARE STILL VERY WIDE, AS SHOWN IN THE FOLLOWING CHART.



Note: Global greenhouse gas emissions under different scenarios and the emissions gap in 2030. INDCs are intended nationally determined contributions submitted by countries ahead of Paris. Some INDCs are conditional on receiving financial support. Source: UNEP Emissions Gap Report 2016.



The facilitative dialogue will take place in 2018, when the governments will gather to analyze additional actions that need to be taken to achieve the objective of the Agreement and to bridge these gaps.

The actions taken before 2030 will be key to achieving the Agreement, since after 2030, it is considered that there will be no possibility to revert the pattern of GHG emissions to achieve the goal on time. Moreover, the 2°C imply a budget of the total amount of carbon that can be emitted to the atmosphere (carbon budget). Given that approximately two thirds of said budget has already been spent, it is expected that restrictions in GHG emissions gradually increase, as well as the obligation to implement more efficient emissions reduction technologies.

The energy sector plays a strategic role in relation to climate change, both in terms of reduction and prevention of GHG emissions and in terms of their impacts. Some of these impacts are already occurring: Fluctuations in the availability of water, fluctuations in the demand for fuels caused by temperature variations, interruption of the supply of fuels by extreme weather events, damage to coastal infrastructure, blockage of roads of access to facilities, among others.

The Workshop also served for the purpose of exchanging some specific examples of the main impacts affecting the sector in the countries of the region. One of them are flooding of facilities caused by extreme rainfall; that generate interruption in operations and in the supply chain, restriction in the

access to the site with the consequent impossibility to change shifts, damages to the environment and to the property, and power and communications cuts, among others. Extreme rainfalls have also caused scour of right-of-ways, violating pipelines integrity and forcing to develop works for the containment and mitigation of damages caused. Another relevant impact in some regions in Latin America are strong winds, which cause interruption in the supply chain, and damages to the environment and to the property.

In this scenario, companies in the regional sector are gradually incorporating climate risks in their assessment matrices, taking preventive measures and climate emergency preparedness measures, such as insuring their facilities against these risks, among others. However, there are still many challenges that the sector must face as regards adaptation to climate change. Joint public-private partnerships, access to funding sources and incorporation of climate change into the processes of corporate strategic planning were identified as priority areas.

With regard to risk analysis and climate vulnerability tools, although there is no specific tool available for the oil and gas sector, two tools that are being used by Equion (Colombia) and YPF (Argentina) were presented and tested, simulating various scenarios during interactive working sessions. The conclusion was that both tools are complementary, and based on both, ARPEL could generate a specific tool for the sector in the region, combining the main advantages of each one. Also identified was the opportunity for ARPEL to develop a regional map of climate risks in partnership with national institutions.

TOPICS ADDRESSED AND SPEAKERS

- Climate change vulnerability and adaptation. Climate risk maps and vulnerability areas: examples in Argentina - Lucas Di Pietro Paolo (Director of Climate Change Adaptation, Ministry of Environment and Sustainable Development in Argentina)

- Scientific advances and future scenarios. Risks and opportunities for the adaptation of climate change in the business sector. - Virginia Vilariño (Lead Author at the Intergovernmental Panel on Climate Change and Energy and Climate Coordinator, Argentinean Business Council for Sustainable Development)

- Detecting vulnerability and actions for adaptation to climate change in the global oil and gas sector - Lorena Perez-Bajo (Climate Change Manager, IPIECA)

- Climate risks analysis and prioritization tools, and other complementary tools - specific cases: Eric Tolcach (Environmental Technical Management Chief, YPF); Federico Paloma (Environmental Coordinator, YPF); Felipe Noreña (Specialist on Environmental Compliance, Monitoring and Control, Equion); Evora del Estal Campo (Climate Change Group Member, IPIECA)





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REGIONAL ASSOCIATION OF
OIL, GAS AND BIOFUELS SECTOR COMPANIES
IN LATIN AMERICA AND THE CARIBBEAN

ARPEL is a non-profit association gathering oil, gas and biofuels sector companies and institutions in Latin America and the Caribbean. Founded in 1965 as a vehicle of cooperation and reciprocal assistance among sector companies, its main purpose is to actively contribute to industry integration and competitive growth, and to sustainable energy development in the region. Its membership currently represents over 90% of the upstream and downstream activities in the region and includes national, international and independent operating companies, providers of technology, goods and services for the value chain, and national and international sector institutions.



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