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# ARPEL Leadership Program

3rd. edition  
Empowering the vision  
of the Regional Leaders  
from the Gas & Oil Industry

Module 1

**Global Factors and their Effect in  
the Upstream Sector in Latin America**

# Agenda

May 30-June 1, 2023



ASSOCIATION OF OIL, GAS AND  
RENEWABLE ENERGY COMPANIES  
OF LATIN AMERICA AND THE CARIBBEAN

**S&P Global**  
Commodity Insights

# Day 1

## Tuesday, May 30

### MORNING

8:30 - 9:00 am	Participants' Registration
9:00 - 9:30 am	<b>Introductions</b>
9:30 - 10:30 am	<b>Company strategies: What will the future of the energy business look like?</b> <p>The industry has been going through some fundamental changes: Integrated companies splitting up into upstream and downstream; NOC's going overseas and taking more operated roles as legacy blocks and fields expire, etc. The operating environment has also changed with more information and more ways to harness the information. Moreover, leadership skills to tackle today's problems have changed. What are the key global and regional models in Latin America and how successful have they been? How do we measure them? Participants will be able to see the results 2023 Q1 results and compare all the financial metrics for key regional Latin American companies before they start the breakout exercise session where we will review some of the investor's reports and business plans for those companies.</p>
10:30 - 10:45 am	Break
10:45 - 11:30 am	<b>Exercise 1: Company strategies</b>
11:30 am - 12:15 pm	<b>Low carbon strategies: What global and regional companies are doing to comply with NDC and low carbon targets?</b> <p>In this session, we will cover how the industry is allocating capital among share buybacks, dividends, low carbon investments, and traditional upstream CAPEX, while exploring how divergent approaches within the low-carbon domain point to strategic differentiation amongst industry leaders. A breakout exercise to develop a scorecard on companies' strategy narratives will be held after the presentations.</p>
12:15 - 1:00 pm	<b>Exercise 2: Scorecard</b>
1:00 - 2:00 pm	Lunch

### AFTERNOON

2:00 - 2:45 pm	<b>Portfolio view: How to analyze upstream companies' portfolios?</b> <p>The "new energy map" is forcing companies to redesign their strategies accounting for better energy security, decarbonization and increased energy access for all. Companies are reacting differently across the globe – a euro centric model, a US model, an NOC model, and a hybrid model. In this session we will address which questions should we consider when balancing or high-grading the portfolio such as:</p> <ul style="list-style-type: none"><li>· Concentration x diversification;</li><li>· Emissions x profitability x reserves trilemma</li></ul>
2:45 - 3:30 pm	<b>Investor view: What's driving equity market returns?</b> <p>Despite performance over 2022, the energy sector has remained undervalued across the rest of the market. What is causing this perception? In this session we will deep dive on the stocks markets to understand main drivers of shareholder returns and where investors are putting their money.</p> <p>What is the investment community perception? What are the capital allocation trends? What are the trends in dividend and share buyback? Session will finalize with a company analysis exercise.</p>
3:30 - 3:45 pm	Break
3:45 - 5:00 pm	<b>Exercise 3: Company analysis</b>
7:30 pm	<b>Dinner at Restaurant "Tavolo".</b> <p>Departure in bus from Hotel Dann Carlton</p>

## Day 2

# Wednesday, May 31

### MORNING: LOCATION

9:00 - 10:00 am	<b>Global and Latin American Trends: Location matters</b> The global picture and key exploration trends that are driving the industry. Should we expect a supply crunch? We will look into our 5 scenarios of liquids' demand in light of the energy transition versus exploration activity. In this session, we will also cover and how these global factors will influence markets in Latin America and the Caribbean
10:00 - 11:00 am	<b>Advantaged Barrels and Basins of the future: Portfolio resilience</b> Correlating top five basins based on profits, remaining resources, and emissions. Will this trinity trigger another round of portfolio rationalization? For the Basins of the future, we will take a deep dive in Colombia energy market; what's the power generation mix, gas supply and demand, emissions, and see how Llanos Basin may look like in the future years. Participants will be tasked to fill a scorecard exercise at the end of the session.
11:00 - 11:15 am	Break
11:15 am - 12:15 pm	<b>Exercise 4: Scorecard</b>
12:30- 1:30 pm	Lunch

### AFTERNOON: DECARBONIZATION

1:30- 2:00 pm	<b>Decarbonization: Pathways to decarbonize upstream operations</b> Carbon management technologies are an important strategic tool in strong mitigation scenarios. The scale of CCUS deployment required in the net-zero scenario is impracticable between now and 2030. This session will cover: Global Energy Transition pressures Strategies to decarbonize upstream operations CCUS solutions Challenges for the Latin American deployment
2:00 - 2:45	<b>Global uncertainties and implications for Latin America: Volatility and geopolitical risks</b> Upstream key uncertainties such as geopolitics and market volatility leading to energy security take over, fossil fuels resilience, production scarcity, license to operate, investor confidence. What are the big questions and opportunities in Latin America and how do they relate to the global themes. Latin American economic outlook and political trends.  Final exercise to imagine and build your own company of the future
2:45- 3:30	<b>Latin America</b>
3:30- 3:45 pm	Break
3:45-5:00 pm	<b>Exercise 5: Build your own company of the future</b> <b>Wrap up</b>
7:30 pm	<b>Dinner at Restaurant "Puerta del Sol"</b> Departure in bus from Hotel Dann Carlton

# Day 3

## Thursday, June 1

### FIELD TRIP TO ICP, INNOVATION AND TECHNOLOGY CENTER

#### GROUP 1

Agenda	Start	Finish	Duration
<b>Arrival to ICP HSE briefing</b>	7:45	8:00	0:15
<b>General Context</b>	8:00	8:45	0:45
<b>Technological visit to ICP</b>	8:45	12:00	3:15
<b>Transfer to lithotheque</b>	8:45	8:50	0:05
<b>1. Lithotheque</b>	8:50	9:15	0:25
<p>*Preservation / management of geological samples (rocks and subsoil and surface collections) for ECOPETROL Upstream and its business group</p> <p>*Supply of lithological material to develop experimental studies focused on CCUS and Geothermal (high and low enthalpy)</p>			
<b>2. Recovery (CO<sub>2</sub>): Polymers - Geothermal</b>	9:15	9:35	0:20
<p>*Experimental studies of water injection for production optimization.</p> <p>* Evaluation of chemical technologies (polymers, surfactants, nanohybrids, smart water), which refine predictive models for improved recovery.</p> <p>*Studies to determine behaviors of CO<sub>2</sub>-Crude-Water, to evaluate percentages of recovery by injection of CO<sub>2</sub> and carbonated water.</p> <p>*Evaluations of the effect of the injection of CO<sub>2</sub> and carbonated water on the properties of the reservoir (core flooding) and determination of recovery factors.</p> <p>*CCS</p>			
<b>Transfer to Building 9</b>	9:35	9:40	0:05
<b>3. Petroleomics (optional)</b>	9:40	9:55	0:15
<p>*Molecular characterization of crudes and fractions for refining and upstream processes (changes in wettability due to adsorption on rock and aggregation, improved recovery).</p> <p>*Monitoring of ionic species in water for disposal, use or recovery, through Capillary Electrophoresis, for CCUS.</p> <p>*Quantification of organic matter in disposal, or use, or recovery water with UPLC and FT-ICR MS to leverage the CCUS strategy.</p>			
<b>Break – Building 5 Square</b>	9:55	10:15	0:20
<b>Transfer to former Heliport</b>	10:15	10:20	0:05
<b>4. Natural Sinks: Eddy Covariance Tower</b>	10:20	10:40	0:20
<p>As part of the SosTECnibilidad Strategy, in the study of natural sinks of the ICP we develop and adapt technologies and innovations in Nature Based Solutions that accelerate decarbonization, generate benefits for communities and enable resilient territories; enabling the management of compliance, investment and reputational risks, and expanding new opportunities to enhance carbon capture.</p>			
<b>Transfer to Air Injection Laboratory</b>	10:40	10:45	0:05
<b>5. Air Injection</b>	10:45	11:05	0:20
<p>*Experimental feasibility studies for the implementation of "in situ" combustion technology and air injection, for tertiary recovery in heavy and extra-heavy crude assets.</p> <p>*Air and CO<sub>2</sub> coinjection studies, such as hybrid technology for CO<sub>2</sub> storage and improvement of the recovery factor in heavy crude oil assets.</p> <p>*Preliminary studies to implement the production of H<sub>2</sub> from combustion gases in "in situ" combustion injection processes.</p>			

Agenda	Start	Finish	Duration
<b>Transfer to Biotechnology Building</b>	11:05	11:10	0:05
<b>6. Biomass Production (optional)</b>	11:10	11:30	0:20
The objective of the study is the sequestration or capture of CO <sub>2</sub> by photosynthetic use of microalgae, generating value-added biomass and incorporating concepts of recircularity and reuse of resources such as industrial water.			
<b>Transfer to Building 7</b>	11:30	11:35	0:05
<b>7. Integral water management</b>	11:35	12:00	0:25
At Ecopetrol we are committed to generating solutions to the most pressing challenges for the world and for the social welfare of our country. Water management is one of them, many industries use this resource in their production processes and have the challenge of optimizing it. With this objective, our Integral Water Management Technological Suite was born, a flexible and adaptable solution that seeks to solve, in principle, the challenges of the oil and gas industry, with the potential to be scaled to others. The suite includes technological products developed by the ICP.			
We are in the development of the feasibility and construction phase of the business model of this suite. The Water Suite has technologies that seek to reduce water at the source (bottom and wellhead), guarantee production and industrial water polishing to leverage its reuse and reuse, incorporates the concept of irrigation with water enriched with nanofertilizers that can improve productivity in agroindustrial and agroforestry crops, additionally includes treatment of domestic wastewater for industrial reuse and online meters of quality monitoring parameters.			
The development of the suite seeks to ensure productive activities in accordance with the protection of nature and in harmony with cultural practices, community organizational processes based on autonomy and environmental governance of the territory.			
<b>Finish</b>	12:00		

\*\* areas marked as optional will be visited depending on the evolution of the agenda

## FIELD TRIP TO ICP, INNOVATION AND TECHNOLOGY CENTER

### GROUP 2

Agenda	Start	Finish	Duration
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## Bob Fryklund

Vice President and Chief  
Strategist Upstream Energy

Bob Fryklund is the Chief Upstream Strategist at S&P Global Commodity Insights. Bob has 43 years experience working for majors, independents, and consultancies, with more than half of that in executive leadership roles. He focuses on advising companies, boards and leadership teams on areas that lead to high impact value creation – portfolio's , IPO's, restructuring, M&A.

He is globally recognized expert on Upstream and won the AAPG Presidents award for his Thought Leadership. A frequent keynote speaker for both public and private events, he is also a well known moderator and media source.

Bob gives back to the industry via mentoring women leaders and he also sits on multiple industry boards- ARPEL, AAPG CAB, AAPG Trustee Associate. He holds an AB in Geology from Hamilton College and resides in Houston, Texas.



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## Rodrigo Vaz

Director Upstream Research

Rodrigo is currently Director of Latin America in the S&P Global Commodity Insights Upstream Research business. He has 22+ years of experience in the Energy Industry.

Prior to joining S&P Global (f.k.a IHS Markit) in 2011, Rodrigo was Manager at Accenture Management Consulting responsible for BD and project management at the O&G business line for 8 years. Prior to Accenture, he worked on the Brazilian Nuclear Quality Institute (IBQN) for 4 years, responsible for consulting projects and quality auditing at Nuclear Energy sector in Brazil.

Rodrigo holds a graduation degree in Civil / Industrial Engineering from the PUC-RJ University, an MBA in Management from FGV-RJ University and a Post-Graduation in Energy Industry Economics from COPPEAD/UFRJ University. His background also includes international certifications from PMI and APICS institutes

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