# ANCAP's Energy Transition Projects in Uruguay

7th November 2024
EAGE GET Rotterdam

M. Eng. Santiago Ferro
Energy Transition Manager

ANCAP

# Content

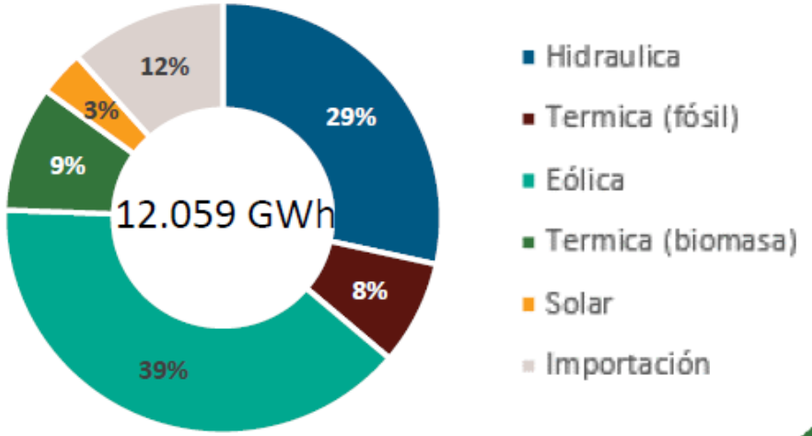
- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- $H_2$
- Conclusions

# Content

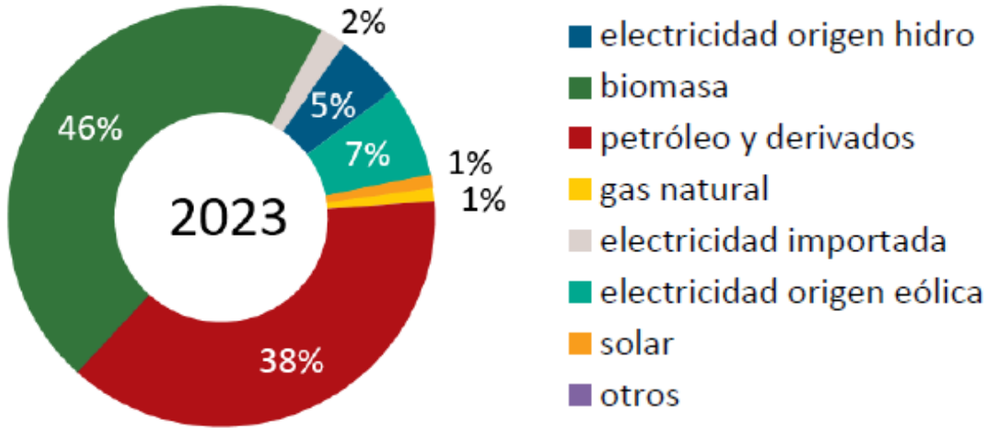
- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- $H_2$
- Conclusions

# Uruguay: First energy transition successfully completed

Electricity generation matrix 2023 (MIEM BEN 2023)




Primary matrix 2023 (MIEM BEN 2023)

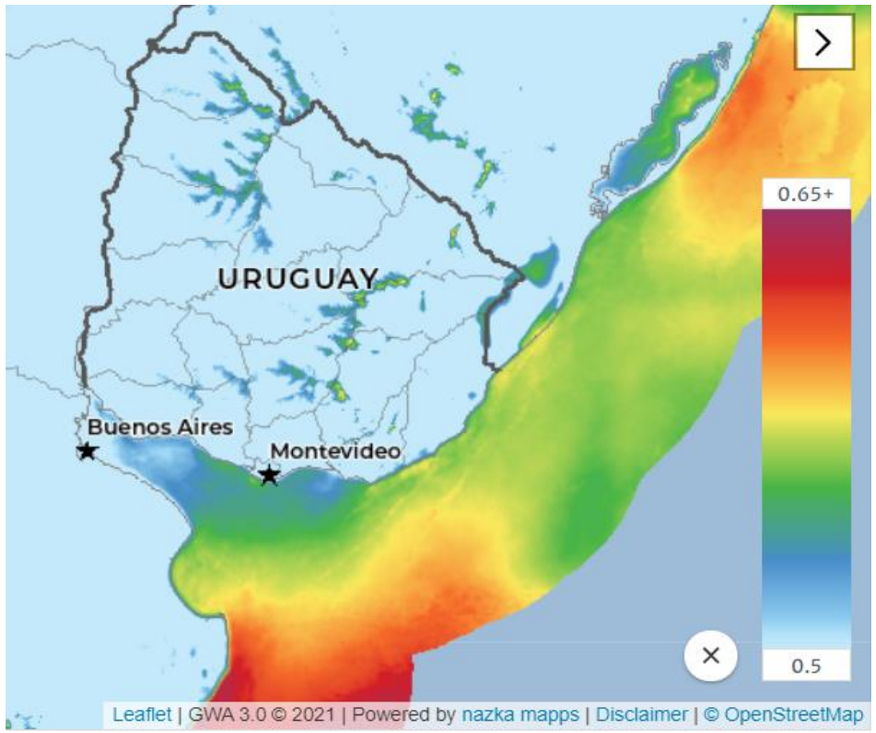



https://ben.miem.gub.uy/descargas/1balance/Presentaci%C3%B3n%20BEN2023.pdf


https://www.theguardian.com/global-development/2023/dec/27/uruguays-green-power-revolution-rapid-shift-to-wind-shows-the-world-how-its-done

# Excellent conditions for the second energy transition

- Ample renewable potential
  - On land: 30 GW of Tier I wind and 60 GW of Tier I solar, with high complementarity
  - Offshore: 275 GW of wind
- Competitive levelized cost of hydrogen (LCOH)
- Wide availability of biomass residues of forestry and agricultural origin as a source of biogenic CO2
- Wide availability of water resources
- Availability of feedstocks for biorefinery
- Focus on green hydrogen and e-fuels (e-methanol, e-SAF, e-gasoline) and modern bio-fuels (SAF or HVO) for export and local market




*[Data/information/map obtained from the] "Global Wind Atlas 3.0, a free, web-based application developed, owned and operated by the Technical University of Denmark (DTU). The Global Wind Atlas 3.0 is released in partnership with the World Bank Group, utilizing data provided by Vortex, using funding provided by the Energy Sector Management Assistance Program (ESMAP). For additional information: https://globalwindatlas.info"*

https://globalwindatlas.info/es

# ANCAP: enabling the 2nd phase of the Energy Transition

ANCAP Group: The largest industrial conglomerate in Uruguay
We have key assets to make energy transition projects viable

**Production and sale of energetics**

**Fuels**
50.000 barrels/day

**Biofuels**
140.000 m3/year

**Lubricants**
16.000 m3/year

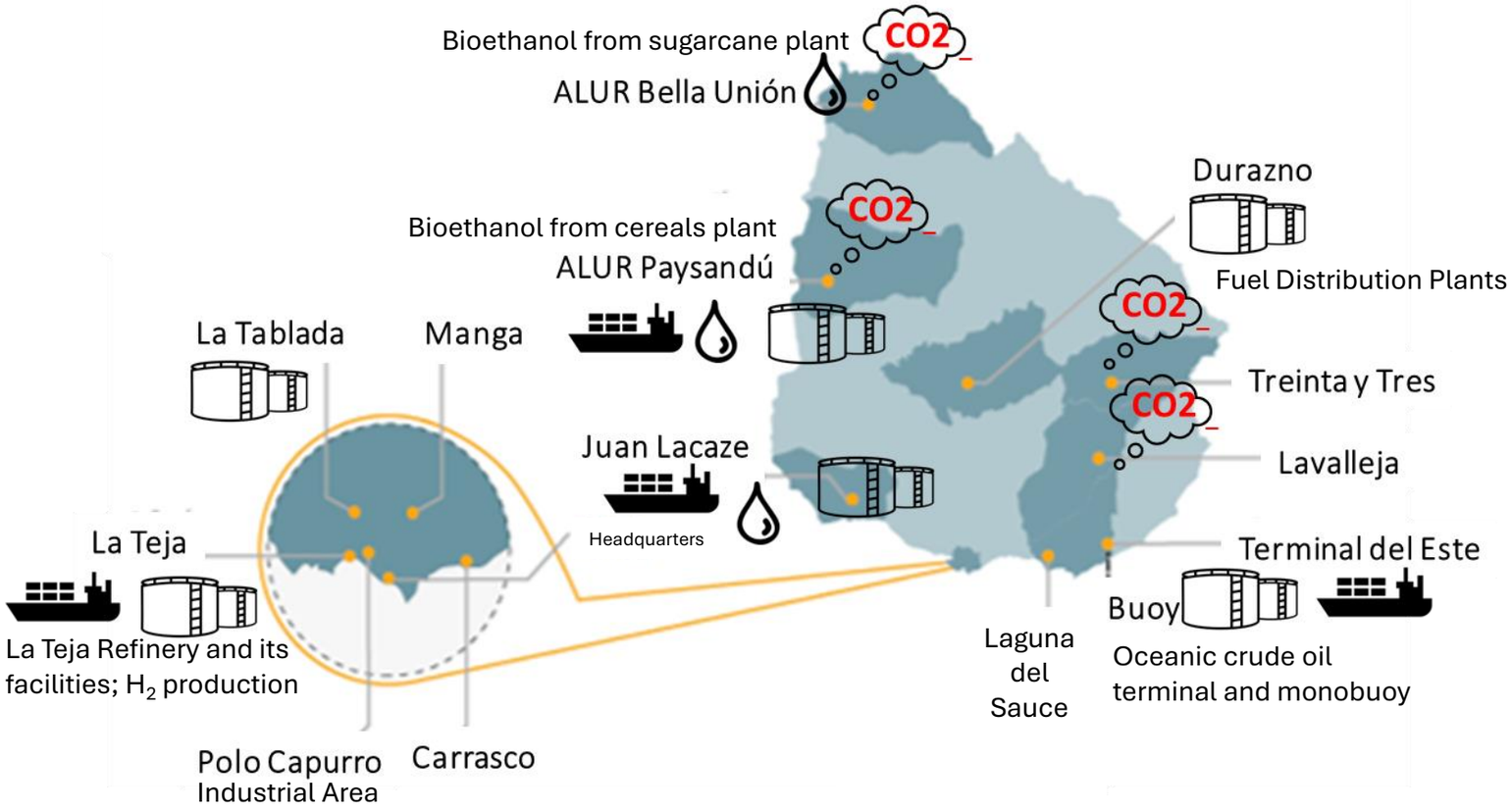
**Gas Station**
Network 285

**Natural Gas**
250.000 m3/day

**Industrial Plants**
18

**Employees**
3300

**2023 Results**
3296 MMUS$
Gross Income



# ANCAP: shifting towards an Integrated Sustainable Energy Company

Reduction of emissions of current operations (upstream & downstream)

Tender of offshore blocks for green $H_2$ production


Synthetic fuels (e-fuels / e-methanol) + biogenic $CO_2$ capture

2nd generation biofuels: HVO / SAF (HEFA route) Project at La Teja Refinery

$CO_2$ storage in saline aquifers

Assesment of potential for natural / geologic $H_2$


Ethanol to SAF (Jet) pilot plant

**#ResponsibleTransition**

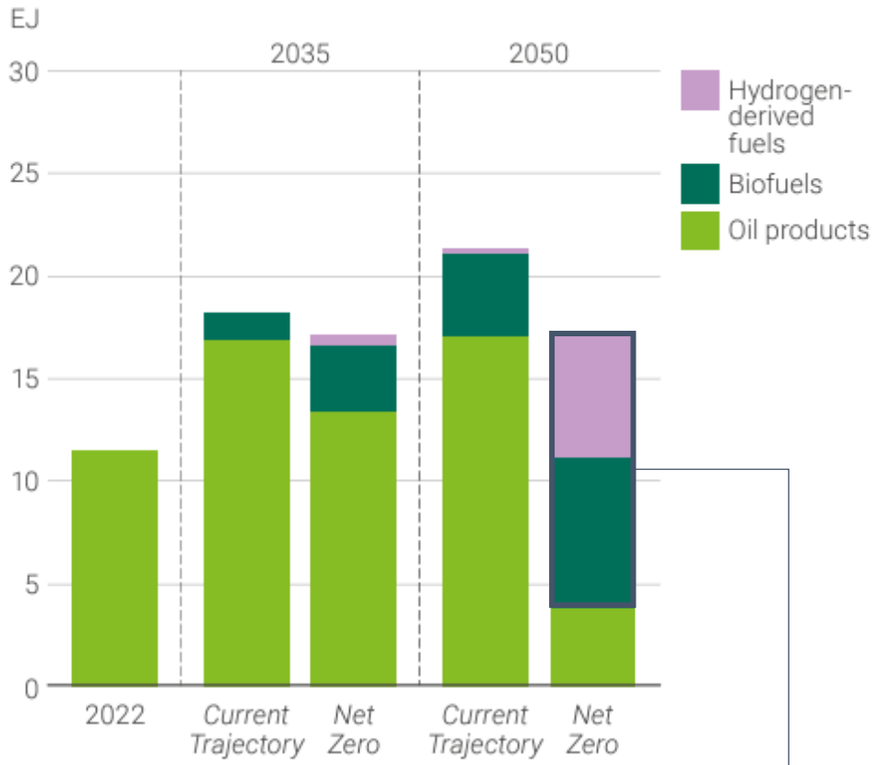
Low carbon operations + Biofuels + Key role of Green $H_2$ and derivatives

ANCAP

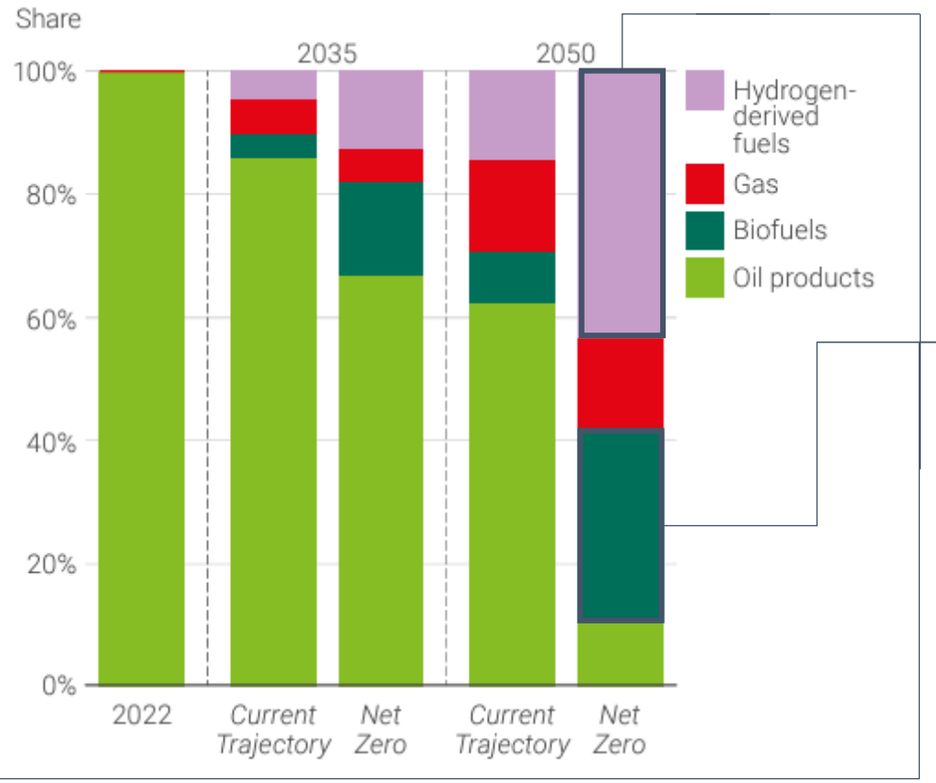
# Sustainable molecules: biofuels and e-fuels

Aviation and marine transportation are increasingly decarbonized through a combination of hydrogen-derived fuels and biofuels

## Aviation




## Marine Sector




ANCAP's Projects:
- e-fuels Paysandú
- Green $H_2$ offshore
- HVO / SAF

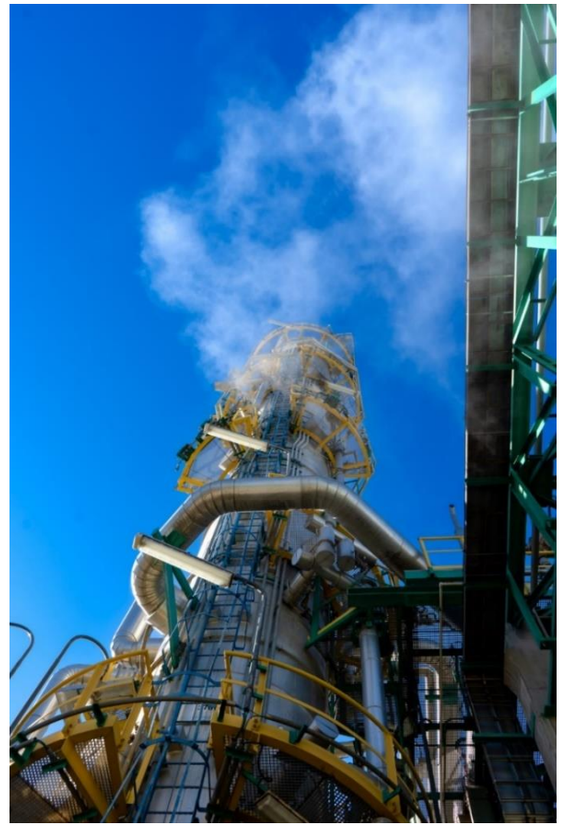
https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2024.pdf

# Content

- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- $H_2$
- Conclusions

# Decarbonizing La Teja refinery is equivalent to introducing 45,000 EV

In this last maintenance shut down of the La Teja refinery, ANCAP substituted completely the usage of fuel oil by natural gas for its furnaces and boilers, and this with this obtained a “reduction of carbon dioxide emissions (CO2) which equals to having introduced 45.000 electric vehicles in Uruguay”, said to El País the president of ANCAP, Alejandro Stipanicic.



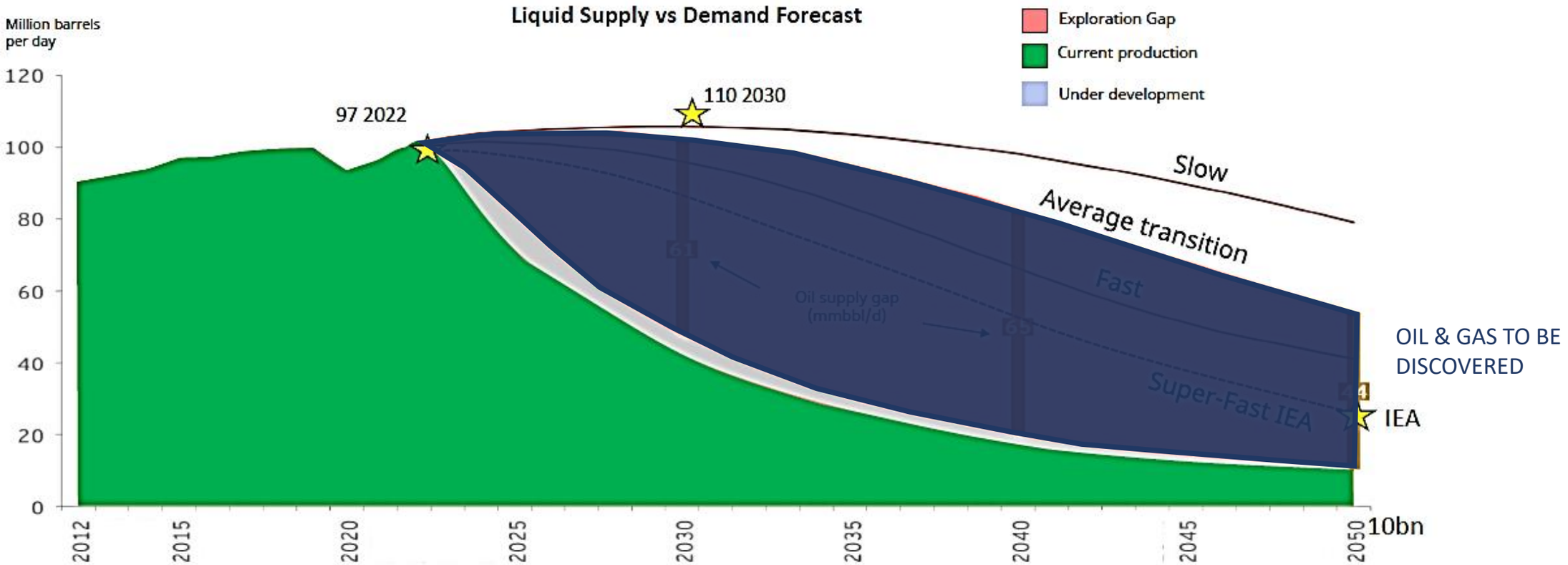
https://www.elpais.com.uy/sostenible/descarbonizacion-en-refineria-de-la-teja-equivale-a-introducir-45-000-autos-electricos-en-el-pais

# Content

- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- $H_2$
- Conclusions

# What is going on with E&P globally?

World needs more investments in oil production no matter the speed of energy transition – Rystad Energy

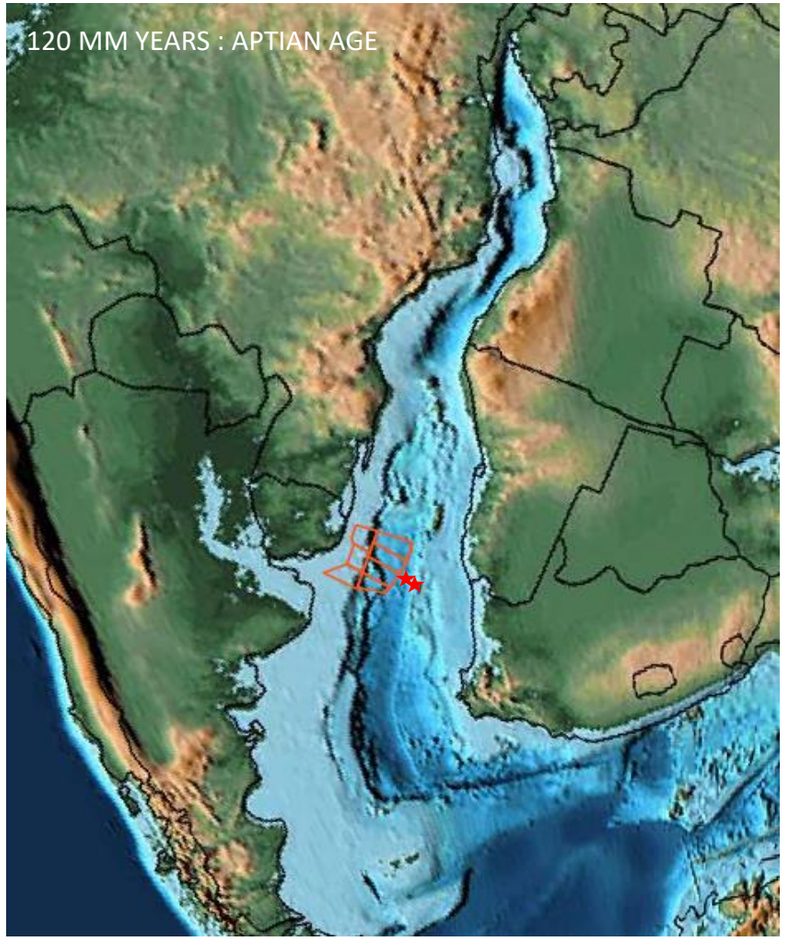


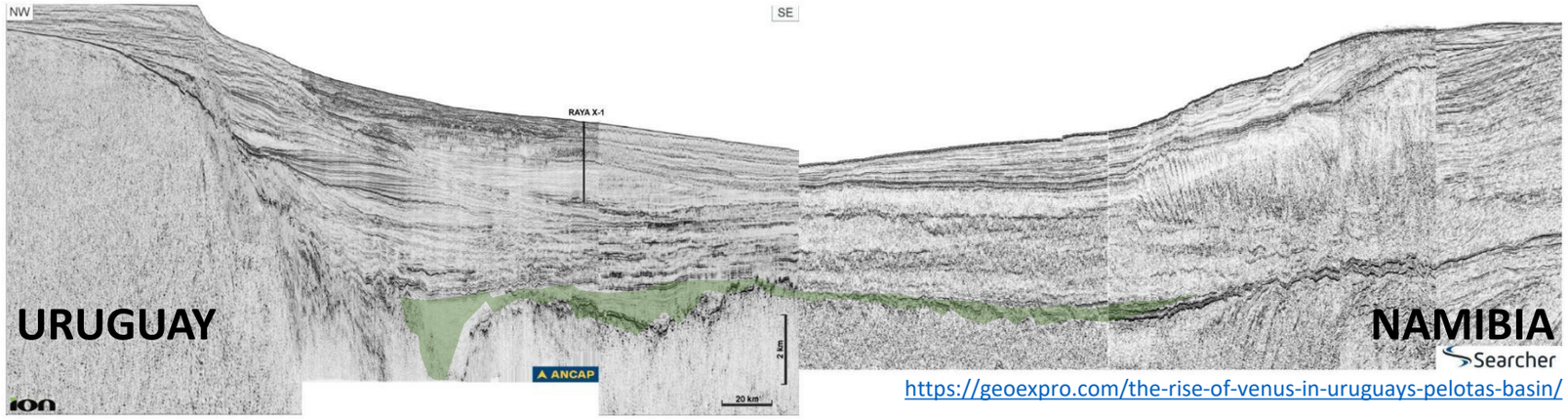

OIL & GAS TO BE DISCOVERED

Source: Neil Hodgson; Searcher; World Energies Summit 2023; after Rystad Energy

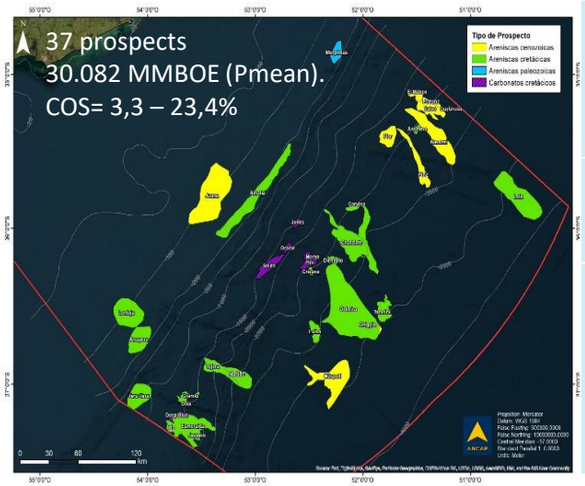
# Renewed interest for exploration offshore Uruguay

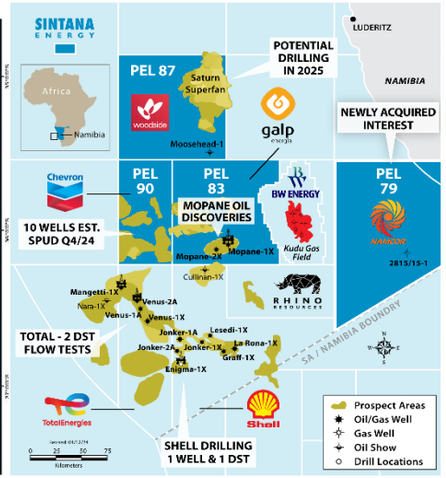
## Remarkable analogies with Namibia




https://geoexpro.com/the-rise-of-venus-in-uruguays-pelotas-basin/



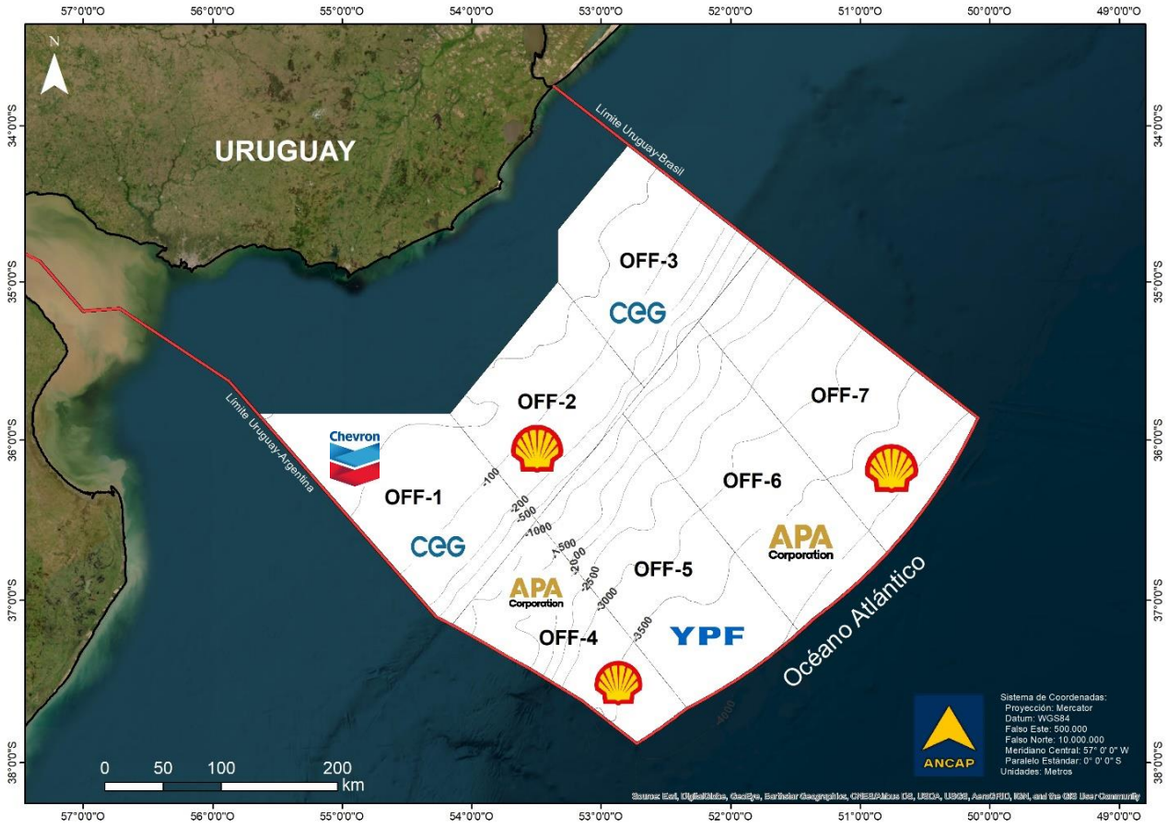




**6 billion barrels? TotalEnergies starts drilling vital well that could double resources at golden block in Namibia**

Nara-1X well targets huge structure west of supermajor Venus discovery

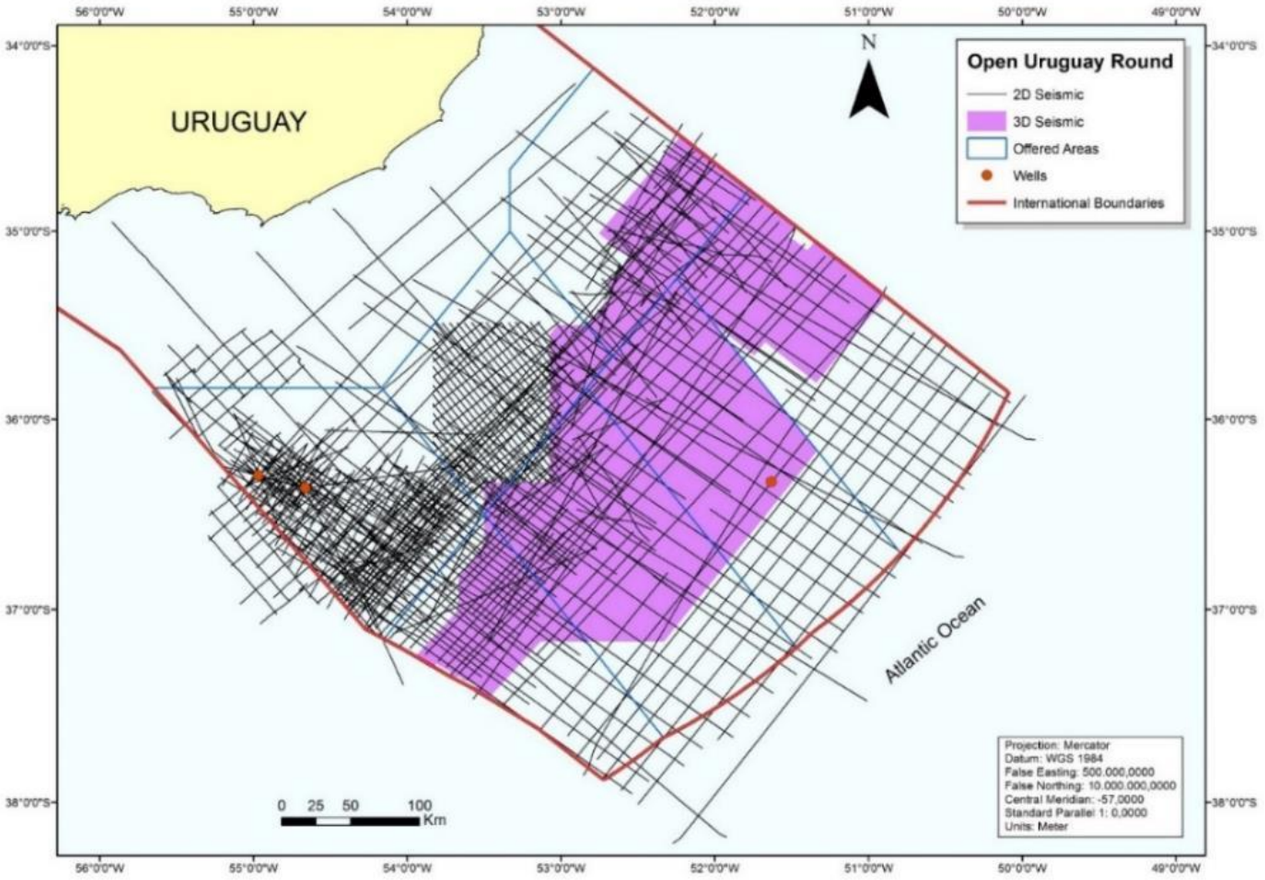
# All offshore blocks with Contracts in force

- Blocks size aprox. 15.000 $km^2$
- Short term future: more companies entering via farmins
- Nominal Investment Commitment: 129 MMUSD
- In case of Production, no routinary venting or flaring is allowed, therefore $CO_2$ intensity could be one of the lowest.



# Available Data and Future Exploration Activity

Existing data




3D seismic

1 exploratory well in Area OFF-6

# Content

- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- $H_2$
- Conclusions

# ALUR

## ANCAP in the 1st Energy Transition – 1st stage of production of sustainable molecules

ALUR, a company of ANCAP Group produces biodiesel and bioethanol

It has agro-industrial plants located in Montevideo, Paysandú and Artigas, using local feedstock such as cereals, oil seeds and sugar cane, UCO and tallow.

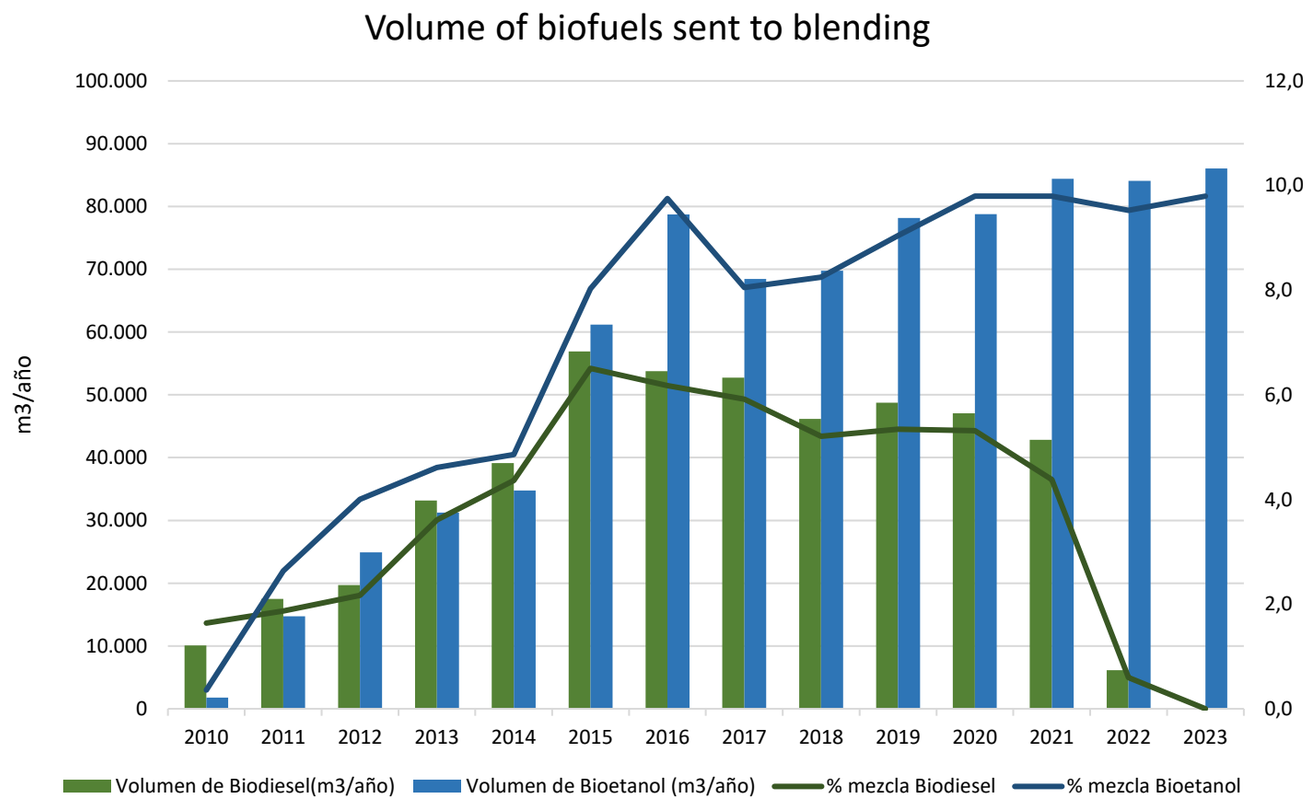
Today the production capacity is:

- 83 .000 $m^3$/year of biodiesel (Capurro plant)
- 100.000 $m^3$/year of bioethanol (Paysandú and Bella Unión plants).




# ¿What represents this production?

≈ 800.000 $m^3$ of Bioethanol and ≈ 475.000 $m^3$ of Biodiesel




This production has represented a reduction of more than 2,3MMTon of $CO_2$ emissions.

Which is equivalent to introducing 60,000 EV per year in Uruguay

ANCAP

# Project to produce HVO / SAF - ANCAP and ALUR

## Flexibility of feedstocks, products and markets

Value Chain of production of biofuels (SAF or HVO) through the HEFA route

+ Feedstock supplier

+ Supplier of the service of crushing and / or pretreatment

Offtaker

Feedstock:

**Crushing**

**Pretreatment**

156,233 ton/year

**HEFA Plant**

150,000 ton/year

$H_2$ from the refinery

The HEFA plant has the capacity to receive at least 150.000 ton/year of pretreated oil

HVO

SAF


The HEFA process is flexible, SAF and HVO can be produced. The target market will be subject to the type of feedstock and certifications obtained.

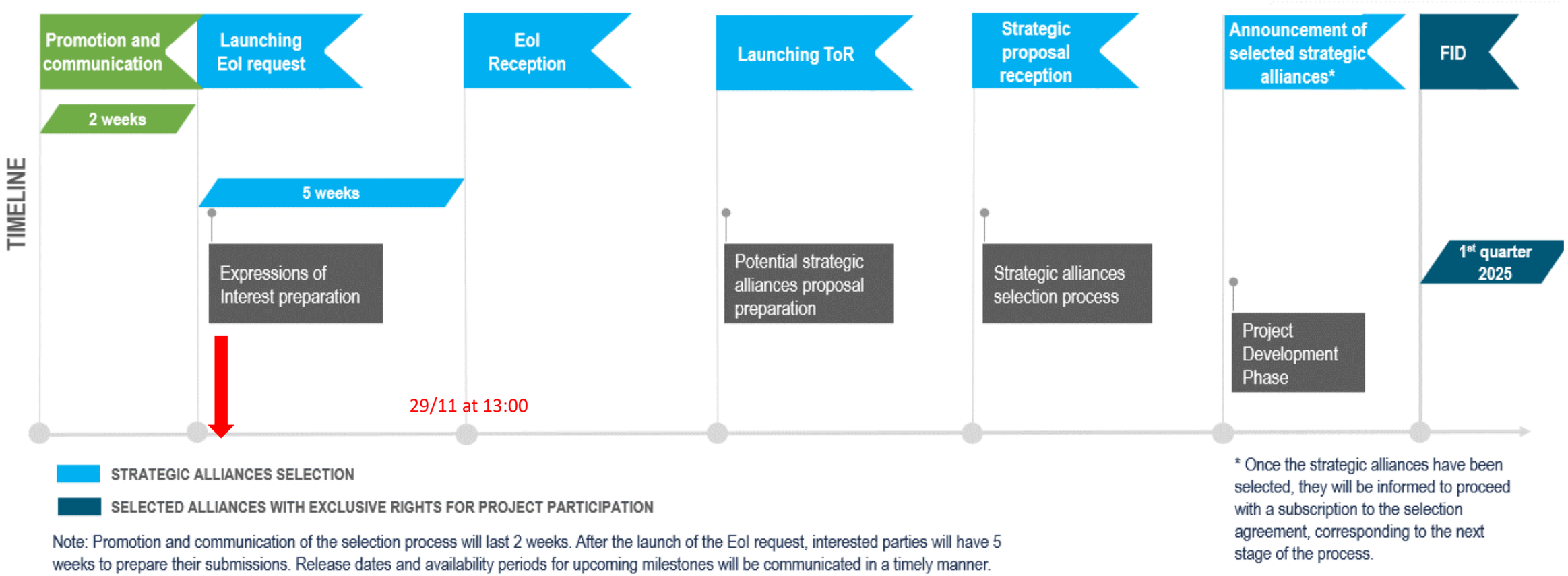
Cousa and Capurro plants

La Teja Refinery

Strategic Partners

# The selection process is currently ongoing

## The EoI will be launched two weeks after the promotion and communication have begun with the publication of this document



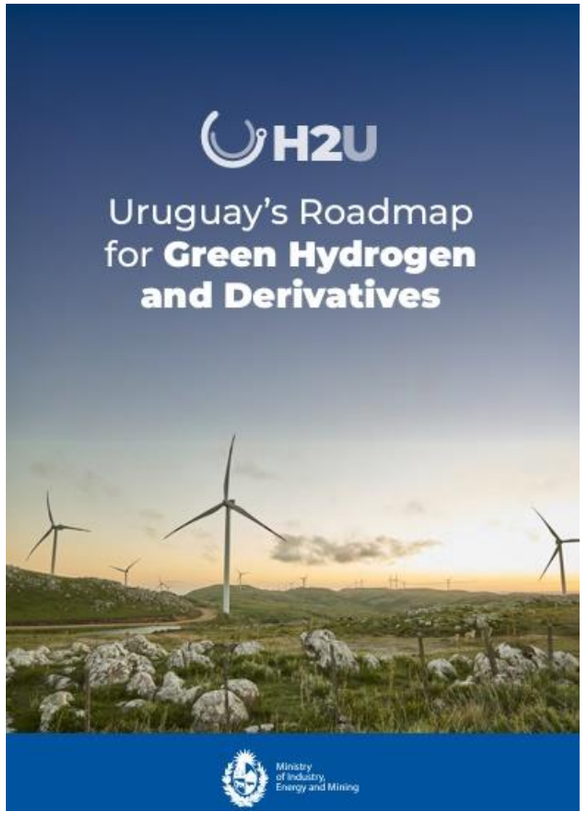

Note: Promotion and communication of the selection process will last 2 weeks. After the launch of the EoI request, interested parties will have 5 weeks to prepare their submissions. Release dates and availability periods for upcoming milestones will be communicated in a timely manner.

* Once the strategic alliances have been selected, they will be informed to proceed with a subscription to the selection agreement, corresponding to the next stage of the process.

# Content

- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- $H_2$
- Conclusions

# ANCAP is catalysts and leading the implementation of the Green Hydrogen Roadmap in Uruguay




MIEM Green Hydrogen: https://bit.ly/3iZnGDp

| Componente | Responsables y posibles alianzas | Actividades |
|---|---|---|
| INNOVACIÓN | MIEM, ANII, LATU, sector académico, CONYCIT | · Fondo Sectorial de Hidrógeno, convocatoria a proyectos con apoyo del Estado y a proyectos de investigación e innovación. |
| INVERSIONES | MIEM, MEF, MA, MRREE, OPP, Uruguay XXI | · Incentivos fiscales, apoyo en la gestión de permisos y posicionamiento a nivel internacional. |
| INFRAESTRUCTURA | MIEM, MTOP, ANP, ANCAP, UTE | · Aspectos portuarios, redes de transmisión eléctrica, gasoductos, uso de vía férrea. |
| REGULACIÓN | MIEM, URSEA, MVOT, MTOP, MA | · Regulaciones de calidad y almacenamiento. Aspectos de seguridad.<br>· Aspectos vinculados al sistema eléctrico nacional.<br>· Directrices para uso de suelo y servidumbre para gasoductos y transmisión eléctrica. |
| OFFSHORE | MIEM, ANCAP | · Proceso competitivo para la prospección y evaluación de producción de hidrógeno verde para eventual desarrollo futuro. |
| COMUNICACIÓN Y GENERACIÓN DE CAPACIDADES | MIEM, academia nacional: universidades, UTU, CONYCIT, entre otros. MRREE y AUCI. Sociedad civil. | · Diseño e implementación de un plan nacional de comunicación de aspectos de descarbonización y H2.<br>· Formación profesional y técnica.<br>· Alianzas con la cooperación internacional para la generación de capacidades y aspectos de comunicación internacional. |

$H_2$4U Pilot

E-fuels Paysandú

$H_2$ URUGUAY Offshore

ANCAP

# Production of e-fuels in Paysandú

## HIF Paysandú eFuels Facility

The HIF Paysandú eFuels facility will be our first project in Uruguay. It expects to produce approximately 250,000 tons per year of carbon neutral eGasoline, with the potential to decarbonize over 150,000 vehicles. It will provide over 3,000 jobs during construction and 300 during operations.

### Quick Facts

- $US 4 billion investment
- 700,000 tons/year of eMethanol
- 900,000 tons of CO2 captured/year
- 2025 construction date

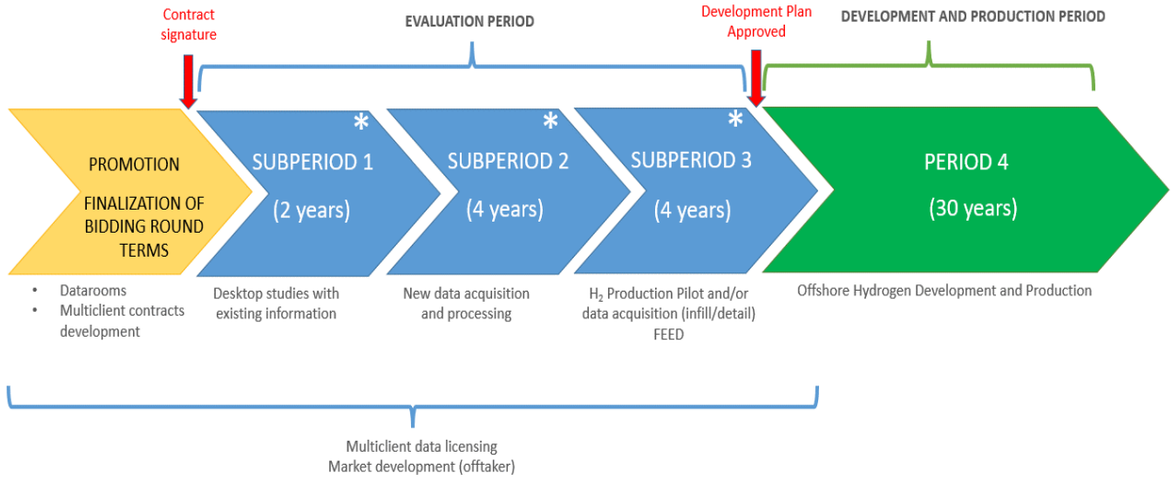
ALUR Option to participate in the project with up to 30%

# $H_2$U Offshore


Source: https://tractebel-engie.com/en/news/2019/400-mw-offshore-hydrogen-production-takes-system-to-new-levels

ANCAP is tendering offshore areas for energy companies to carry out feasibility studies and potential installation of infrastructure for the production of $H_2$ from offshore renewable energy, at their own cost and risk entirely.

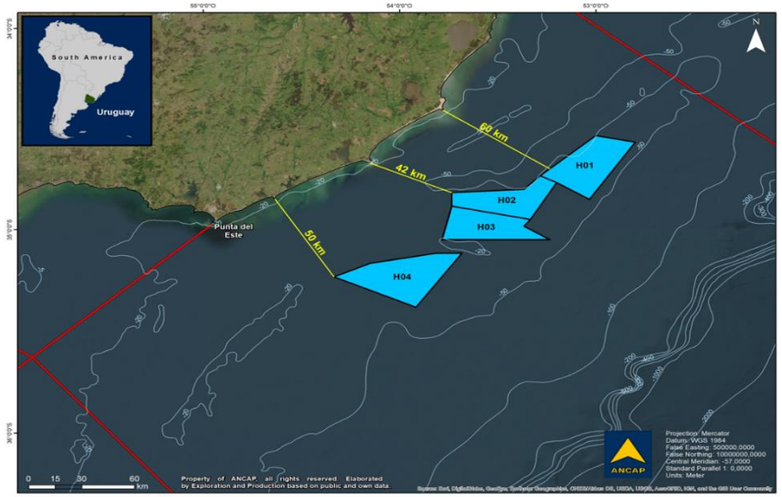
## CONTRACT TERMS




## CONTRACT ECONOMY

- Private Investment
- Cost Recovery (CAPEX y OPEX)
- Profit sharing
- ANCAP may associate in case of a committed development

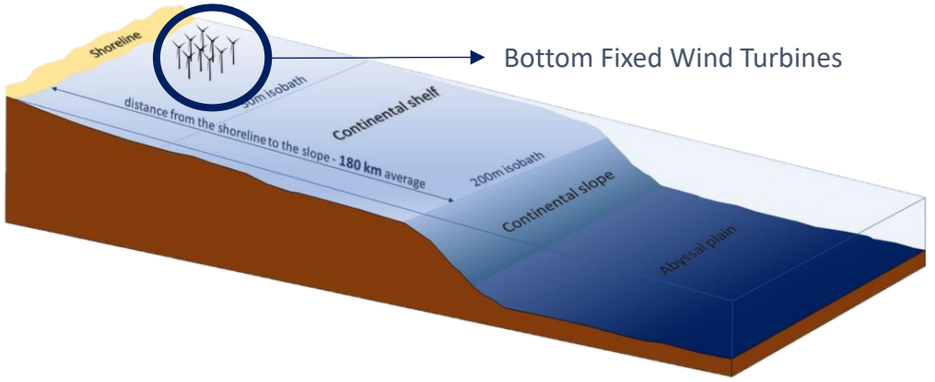
# $H_2$U Offshore




Excellent Wind Conditions:

- Large Technical Potential (275 GW)
- High load factors (> 55%)
- Wind speed 9,5 m/s in annual avg (at 100m)
- Slight increase towards south
- Much better quantity, quality, and uniformity than onshore

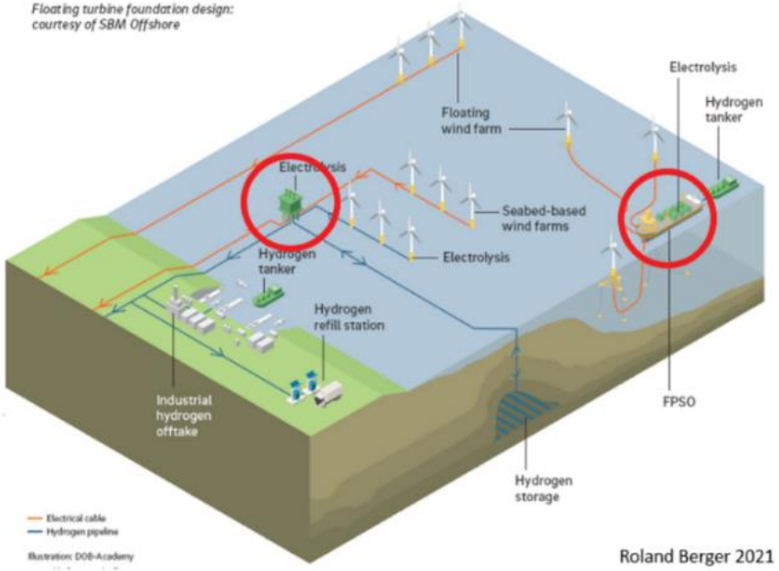
- Estimated Potential for 760 km2
- (500 km2 to avoid wake effect):
- Minimum 3,2 GW
- Production of ≈ 200.000 TonH2/year
- Minimum interference with other economic activities




FLEXIBILITY for the contractor to propose development concept including:

- Offshore / Onshore Electrolysis
- Project scale (phases)
- Type or H2 Carrier (NH3, LH2, etc)
- Market/Off-taker
- Development committed only after 10 years of evaluation period

*Floating turbine foundation design: courtesy of SBM Offshore*




Roland Berger 2021

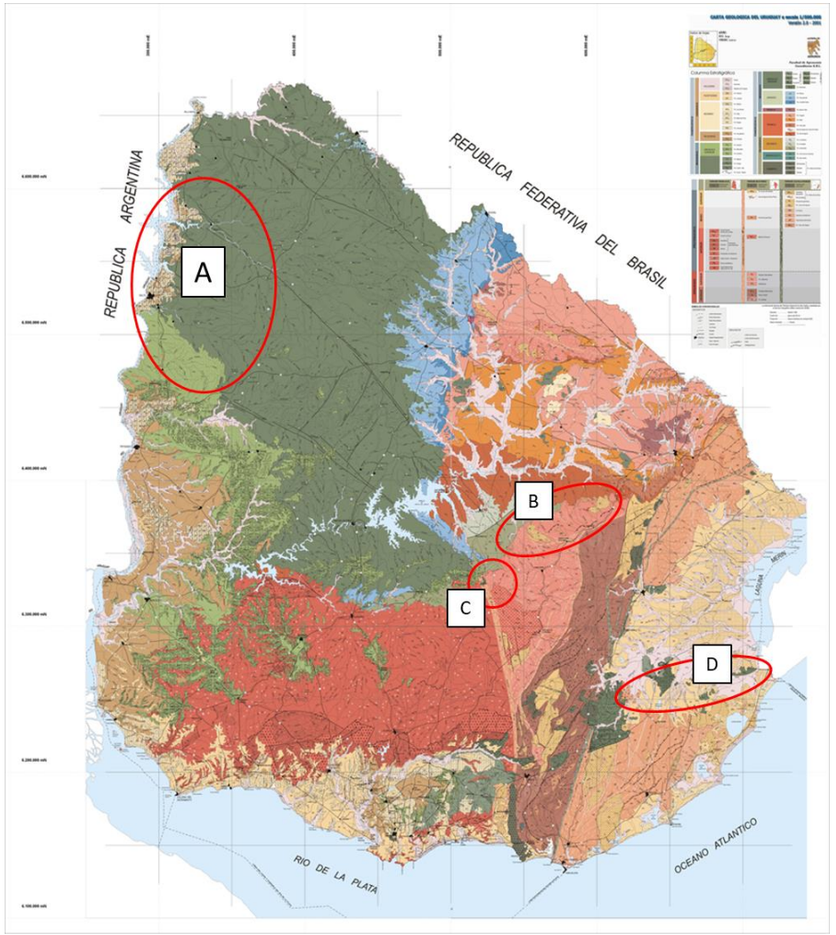
# Natural or Geologic Hydrogen

## ANCAP's plan to develop this resource

- **Year 2024**
- Understanding H Nat Business
- Training
- Networking
- Research Agreements

- **Year 2025**
- Bidding Round Terms and Contract Model – Send for approval of MIEM
- Multiclient Agreements
- Launching H Nat Bidding Round

- **Year 2026**
- Submission of bids in the H Nat Bidding Round
- Signature of H Nat E&P Contracts




Areas of interest where blocks will be defined

ANCAP

# Content

- Introduction
- Decarbonization of Current Operations
- E&P
- Biorefinery
- H2
- Conclusions

# ANCAP’s Energy Projects and Investments Footprint

## E-METHANOL

ALUR

ENERTRAG

## E-FUELS

ALUR

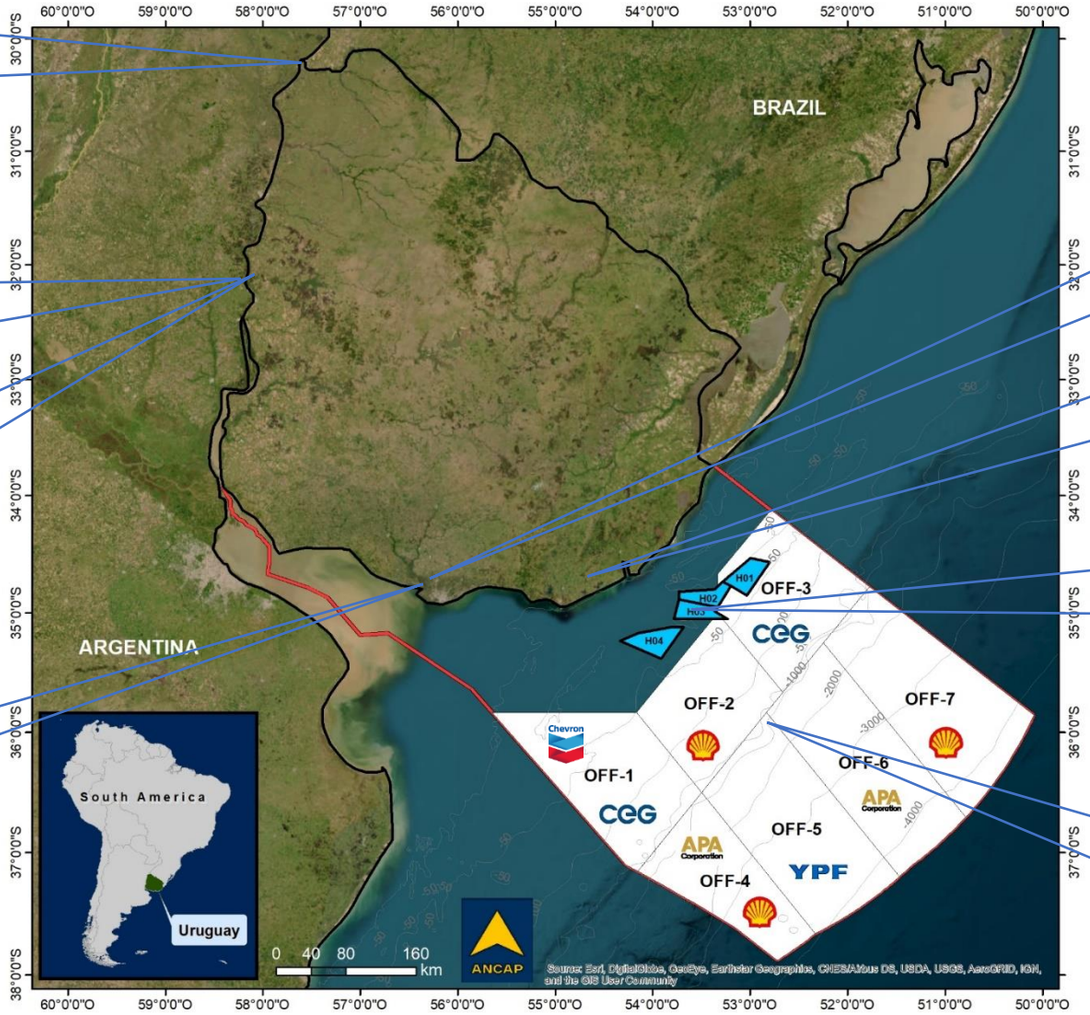
HIF

## BERTH IN PAYSANDU

ANCAP

## DECARBONIZATION OF REFINERY

ANCAP




## SAF / HVO PROJECT

ALUR

ANCAP


## TERMINAL DEL ESTE

ANCAP

## H2U OFFSHORE

ANCAP


## E&P OF HC

ANCAP

ANCAP

Reliable supply for the Uruguayan market, at the required quality and quantity, in an affordable and sustainable way

ANCAP

## Decarbonization of current operations

We are committed to the reduction of the carbon emissions from our traditional operations and in all our industrial plants.

## Hydrocarbons Exploration & Production

First time in Uruguayan history that all the offshore blocks are awarded with E&P contracts.

Take responsibility for the energy transition in Uruguay, leading the development of sustainable molecules that will be increasingly consumed in the coming decades

## BioRefinery

ANCAP and ALUR are working to develop HVOs (Hydrotreated Vegetable Oils), which are fuels from vegetable oils, animal fats and used cooking oils (UCOs).

The raw materials will be processed at ALUR's facilities and the HVO produced at ANCAP's La Teja Refinery, through catalytic hydrogenation.

## e-fuels

Biogenic $CO_2$ of ALUR's bioethanol plant in Paysandú will be used for the first e-fuels production project in Uruguay.

## H2U Offshore

URUGUAY Offshore

ANCAP is planning to tender offshore areas for energy companies to carry out feasibility studies and potential installation of infrastructure for the production of $H_2$ from offshore renewable energy, at their own cost and risk entirely.

Thank you very much for your attention

ANCAP