ANCAP's Energy Transition Projects in Uruguay

13th of September 2024

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ANCAP

UruguayNatural

XX JORNADA
SLOM
Hotel Enjoy · Punta del Este · Uruguay
Septiembre 11, 12 y 13 de 2024

Content

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

Content

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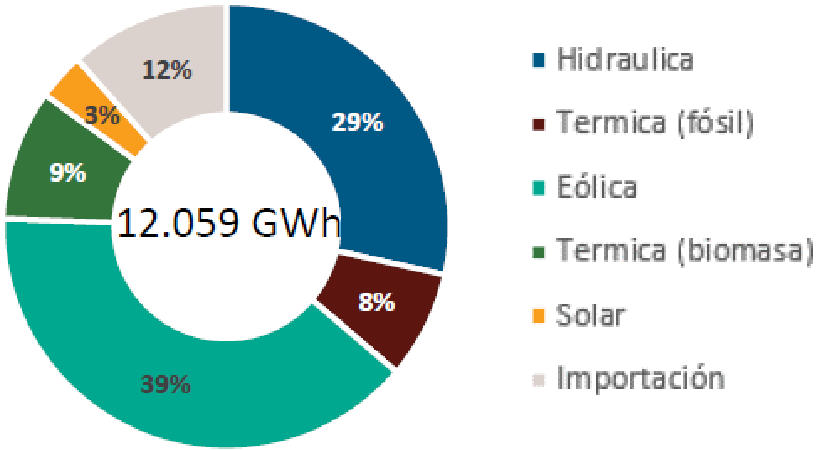
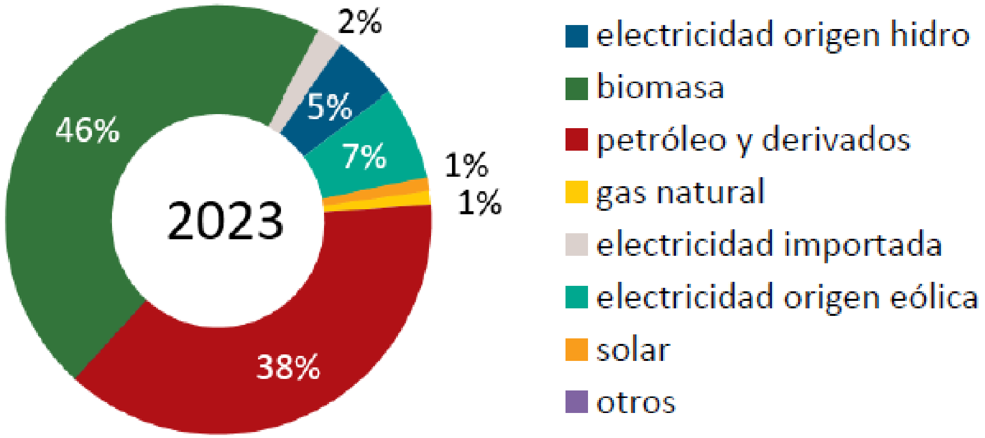
URUGUAY: First energy transition successfully completed

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

Electricity generation matrix 2023 (MIEM BEN 2023)



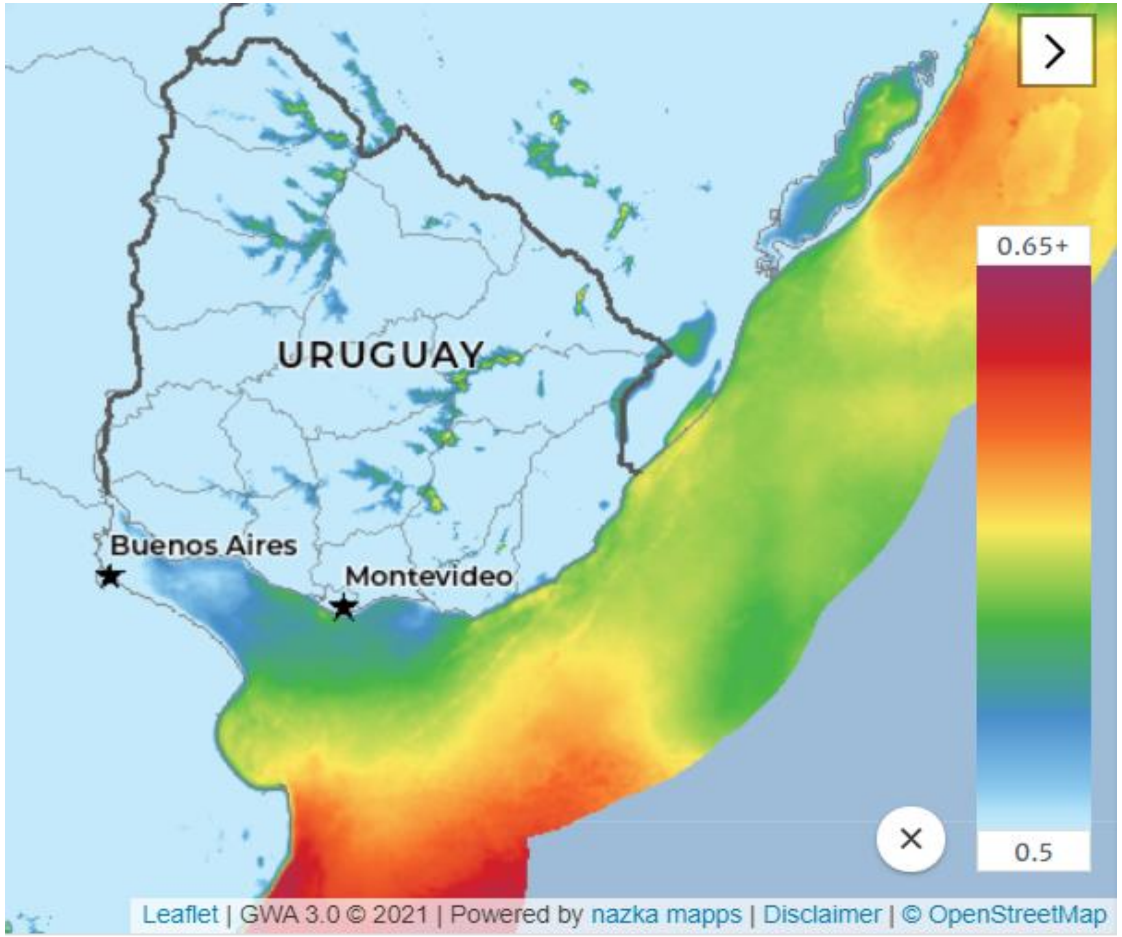
Primary matrix 2023 (MIEM BEN 2023)



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

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 CO_2**
- 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 RD) 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

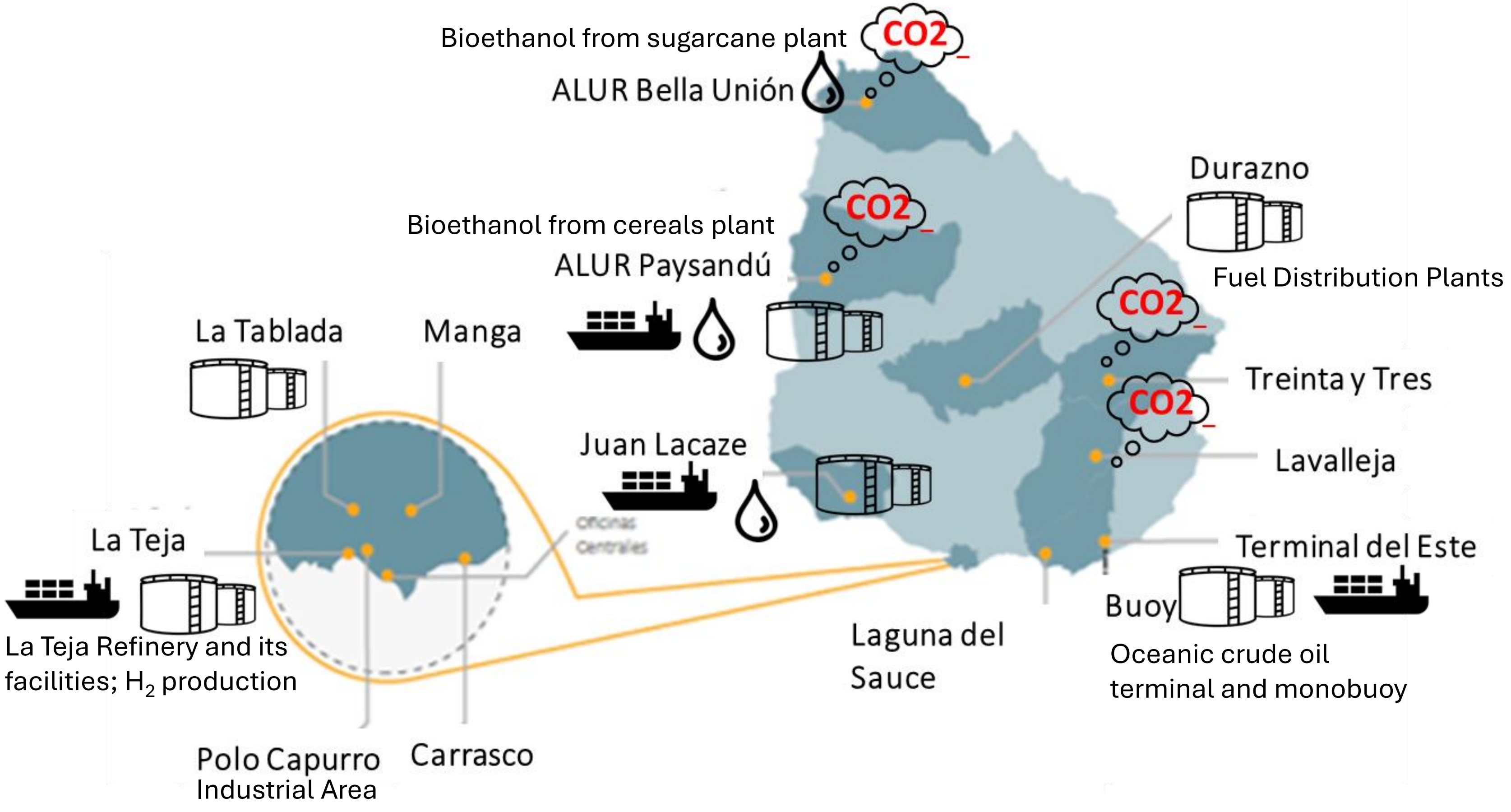
Production and sale of energetics

- **Fuel**
  50.00 barrels/day
- **Biofuel**
  185.000 m3 year
- **Lubricants**
  16.000 m3 year
- **Gas Stations**
  Network 285
- **Natural Gas**

18 industrial plants
285 Service Stations

Employees:
3300

2022 results:
Revenue: USD 3.6 billion



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

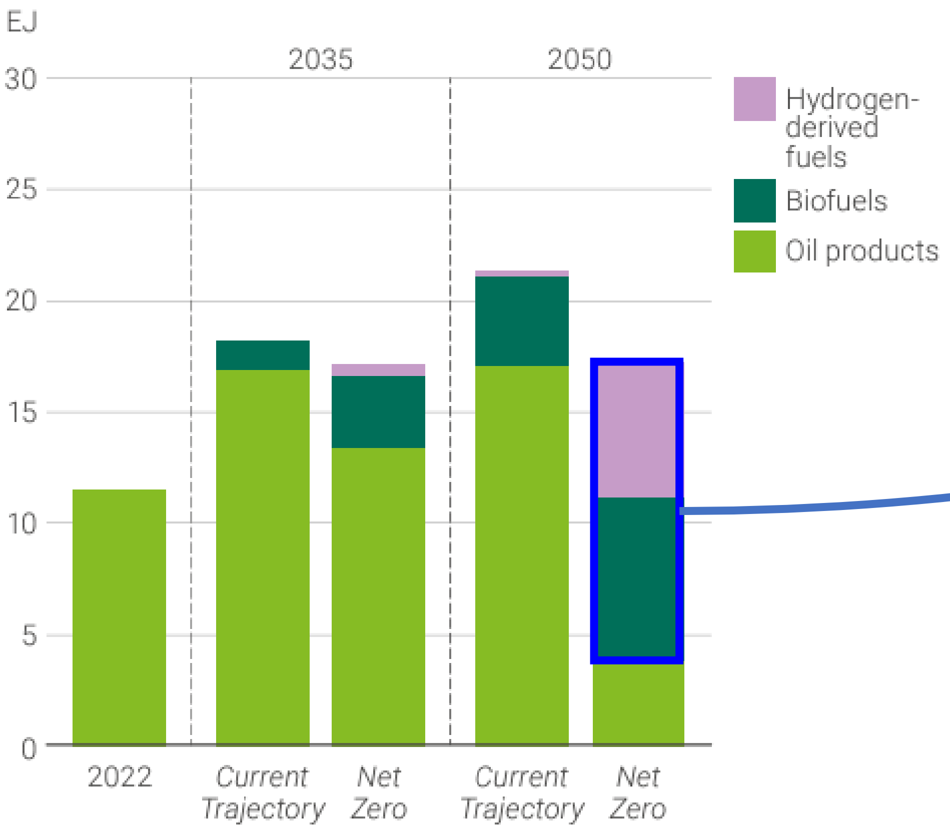
#ResponsibleTransition

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

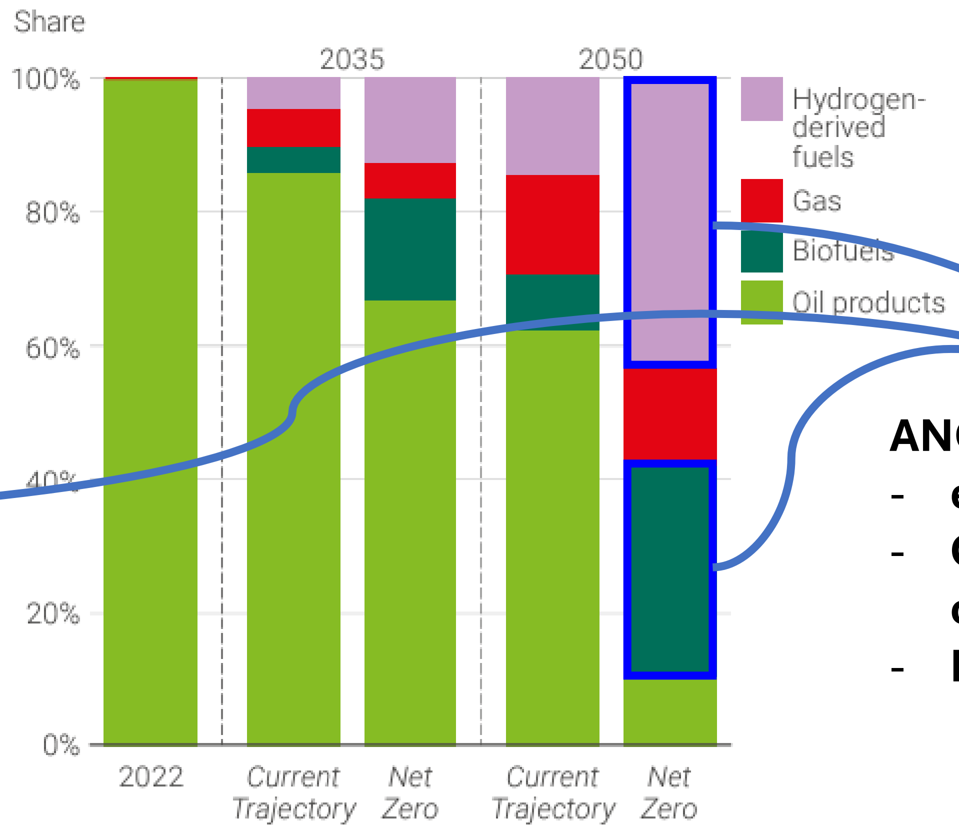
Sutainable molecules: biofuels and e-fuels

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

ANCAP

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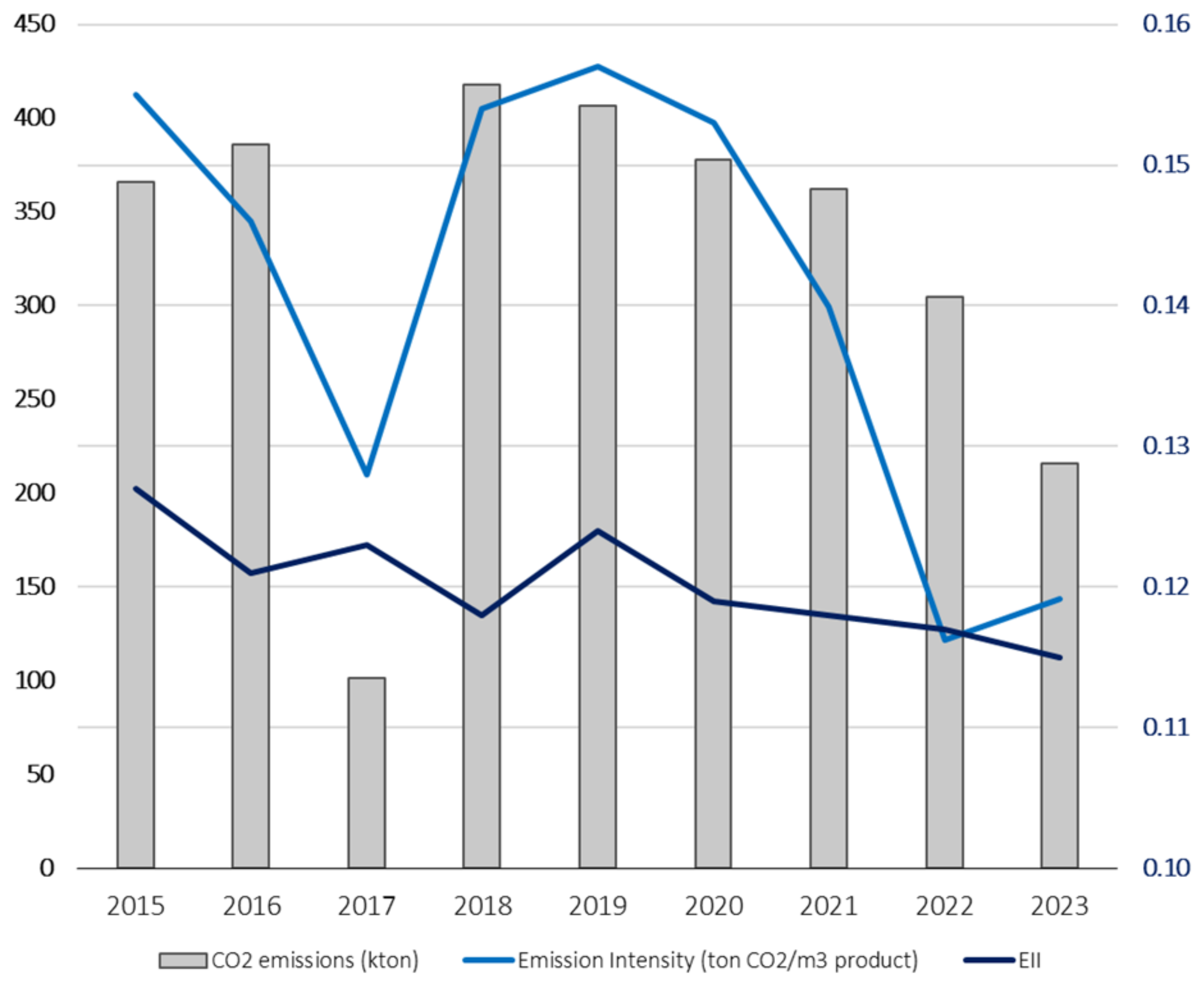
Reduction of CO_2 emissions – Energy Efficiency

Refinery

- 50.000 barrels/day (2,5 million tons/year) and medium complexity
- 16 million barrels of crude oil processed and 1 million barrels of imported products (LPG and diesel for power generation)
- Among the best in LATAM in energy efficiency, water usage, CO2 emissions and value creation

Main actions taken

- Energy integration
- Online heaters cleaning
- Optimization of used fuels (↑ Gas Natural)
- Water usage rationalization



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 (CO_2) 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

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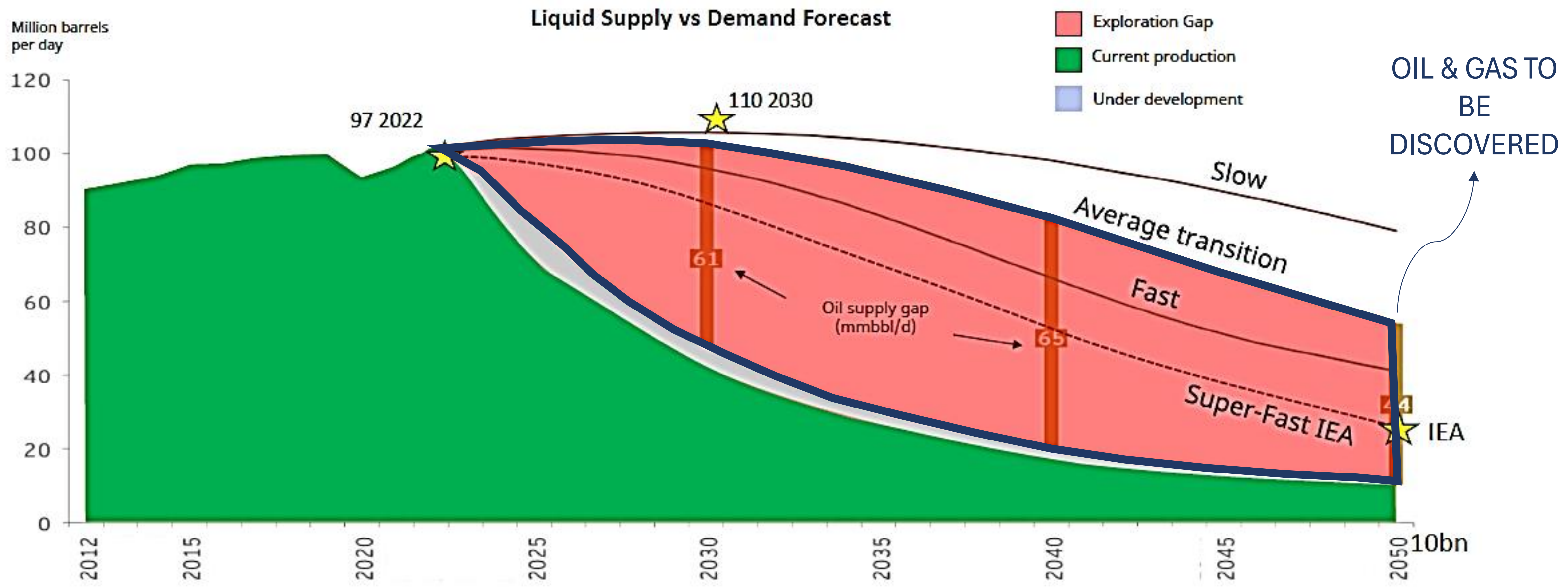
What is going on with E&P globally?

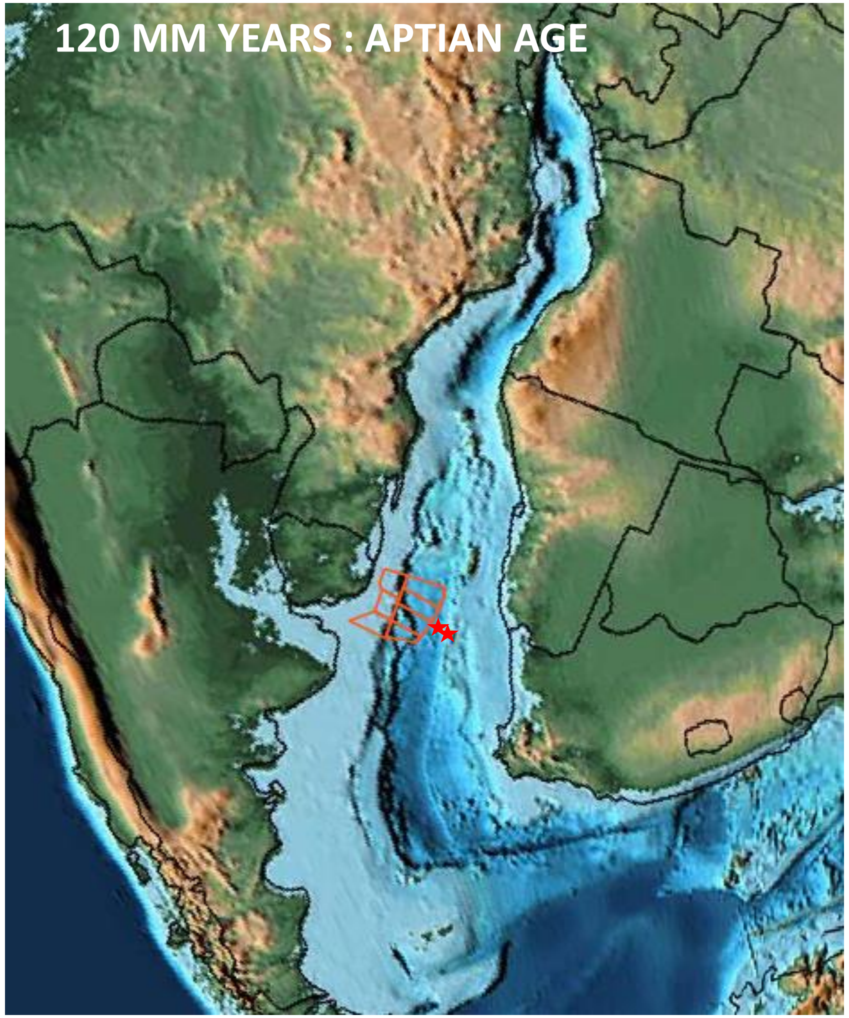
World needs more investments in oil production no matter the speed of energy transition – Rystad Energy

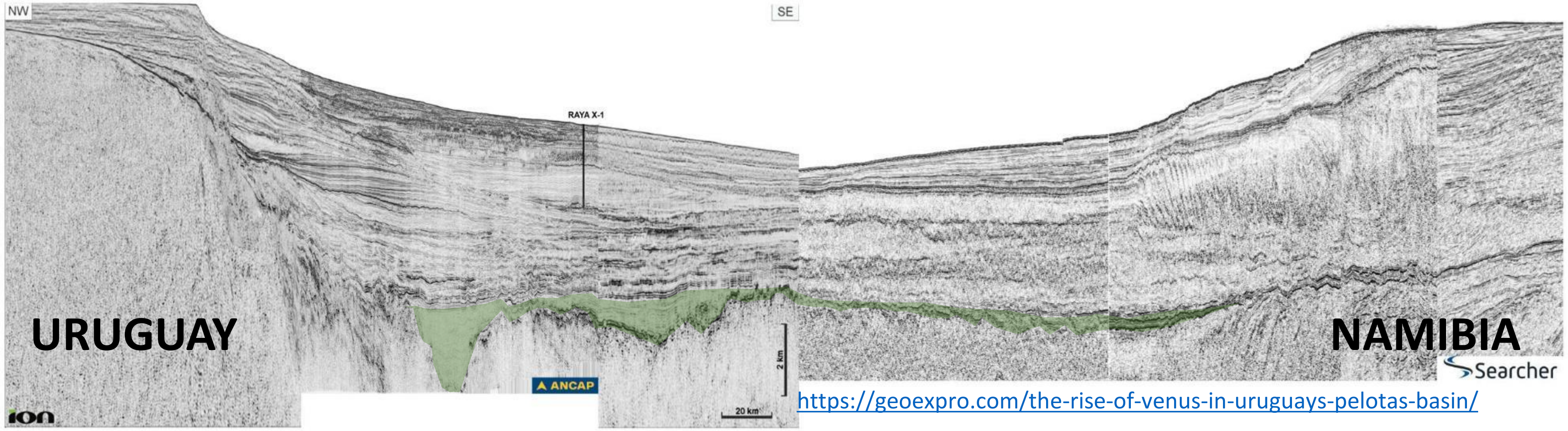


Source: Neil Hodgson; Searcher; World Energies Summit 2023; after Rystad Energy

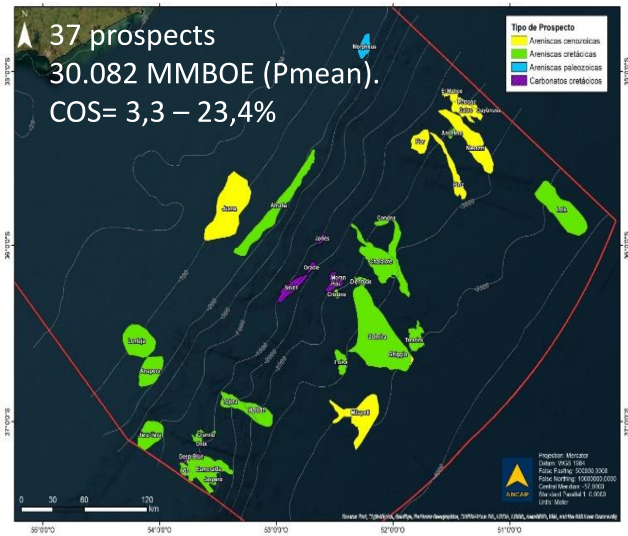
Renewed interest for exploration offshore Uruguay

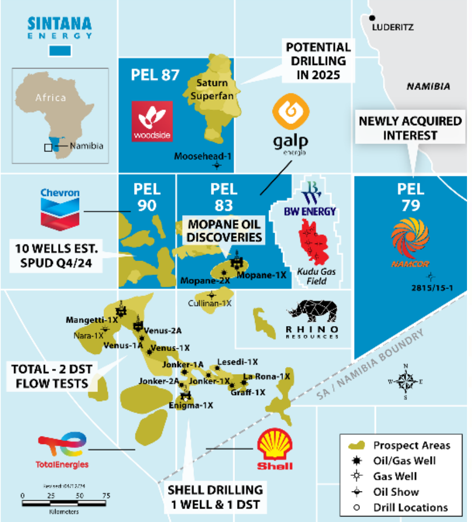
REMARKABLE ANALOGIES WITH NAMIBIA





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



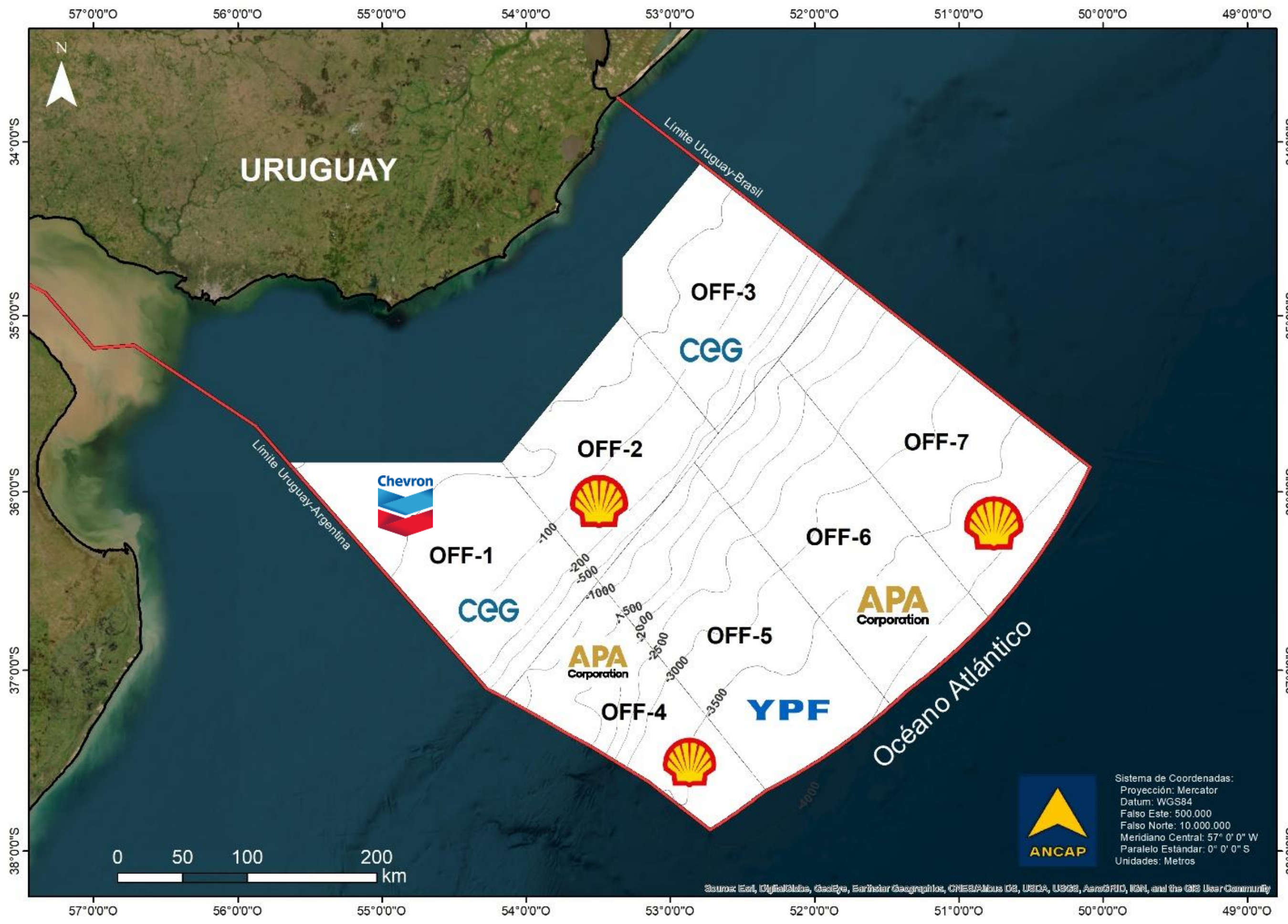


6 billion barrels? TotalEnergies starts drilling vital well that could double resources at golden block in Namibia

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

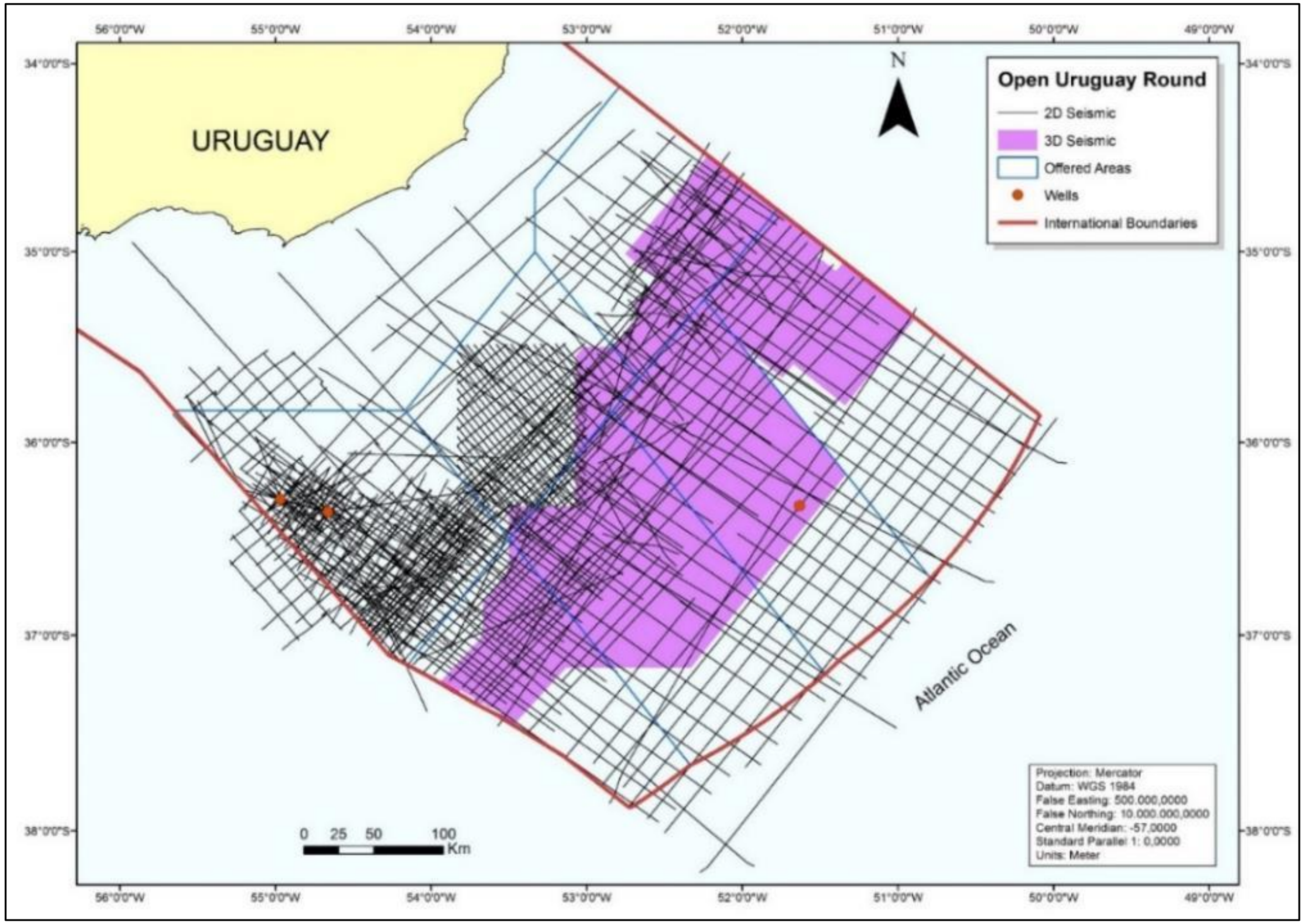
All offshore blocks with Contracts in force

- Blocks size aprox. 15.000 km^2
- Short term future: more companies entering via farm ins
- Nominal Investment Commitment: 129 MMUSD
- In case of Production, no routinary venting or flaring is allowed, therefore CO2 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

ALUR

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

ALUR, a company of ANCAP Group produces **biodiesel** and **bioethanol**

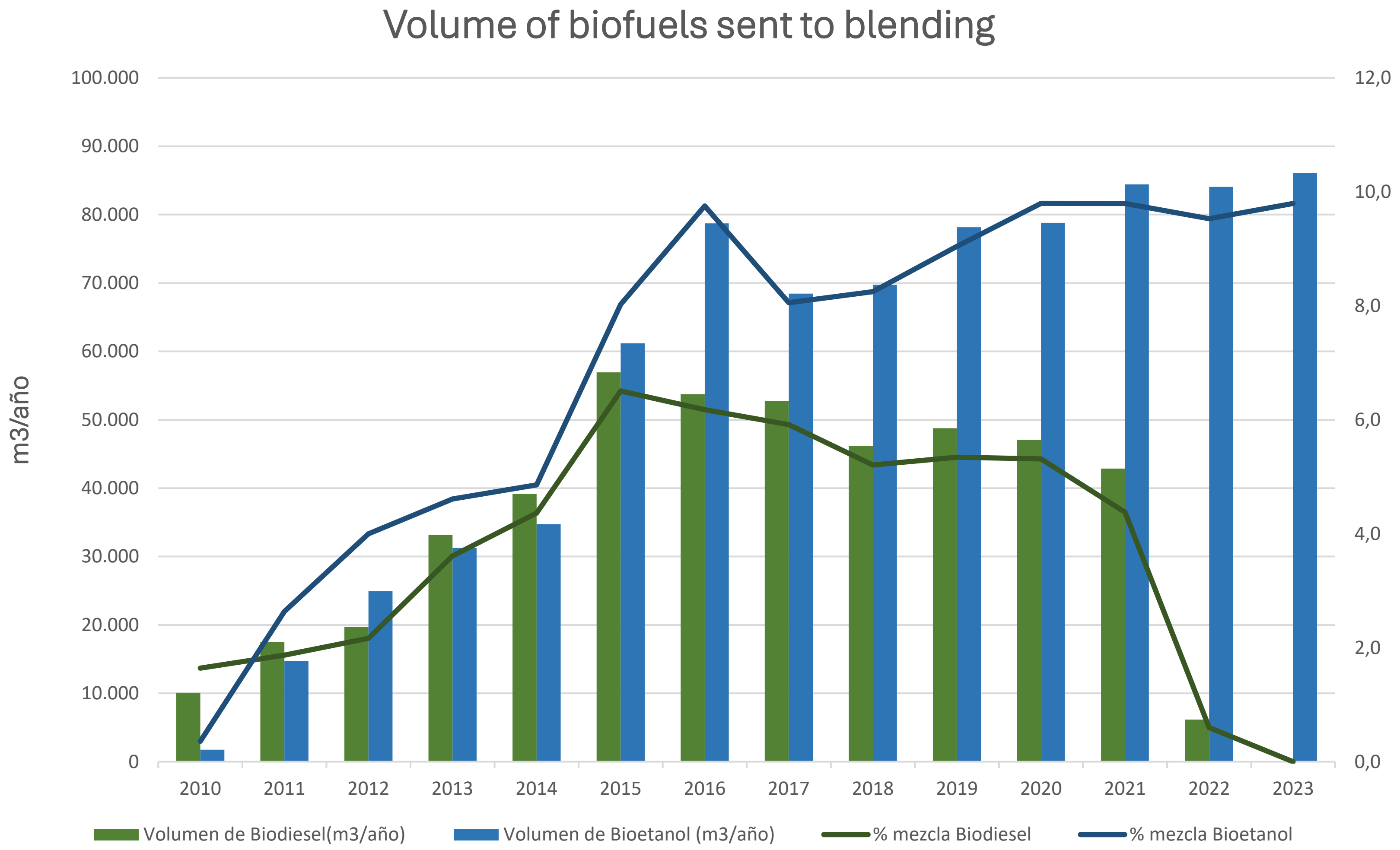
It has agro-industrial plants located in Montevideo, Paysandú and Artigas, using local feedstock such as cereals, oil seeds and sugar cane, UCO and tallow.

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 m3 of Bioethanol and ≈ 475.000 m3 of Biodiesel



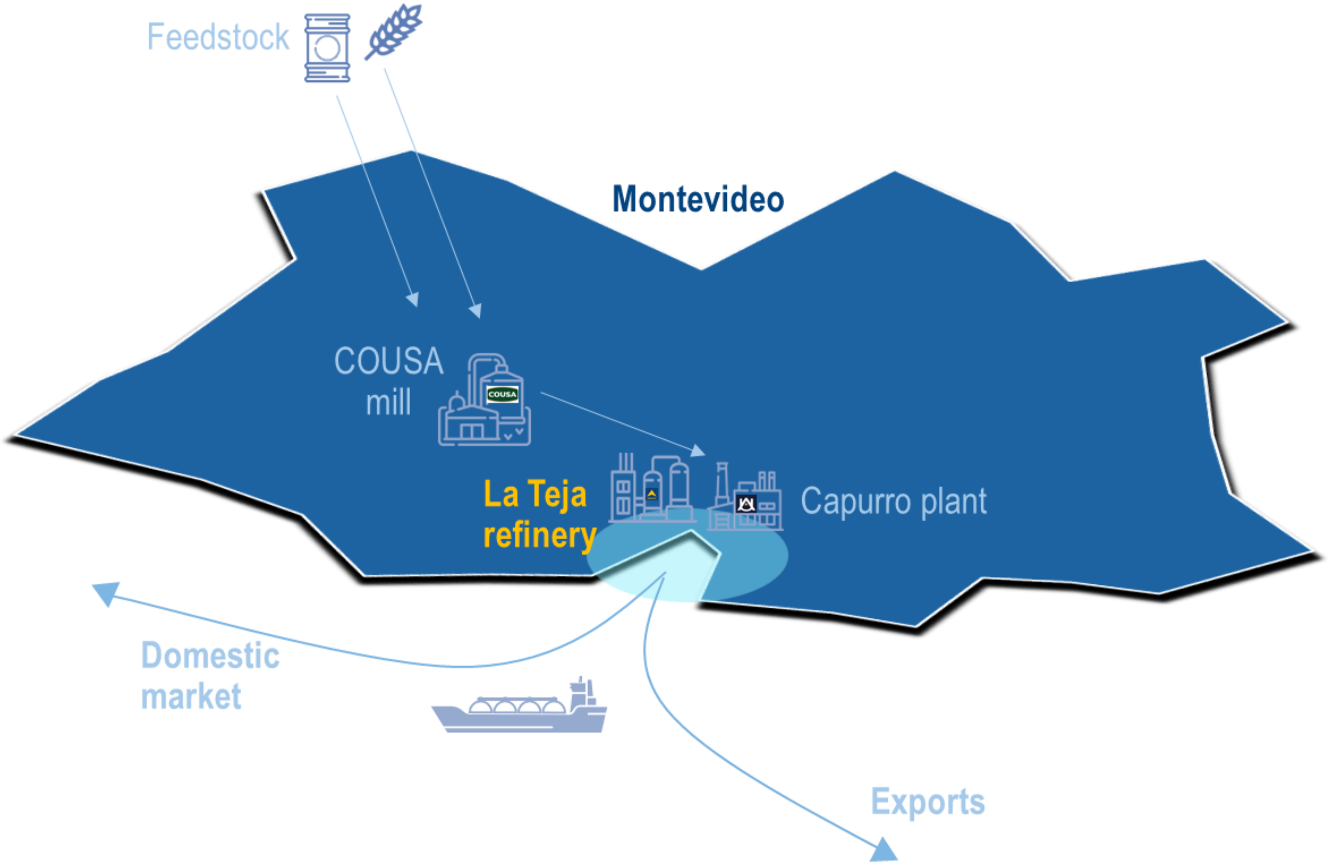
This production has represented a reduction of more than 2,3 MMTon of CO_2 emissions.

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

Project to produce HVO / SAF - ANCAP and ALUR

Main Features

- **H_2 available in La Teja refinery** for the HEFA route.
- **Certified feedstock** available
- Contract for **crushing capacity**
- **Logistic advantages**:
  - Main actors of the HEFA production process are close
  - Export logistics developed - access to port and piers
- **Selecting strategic partners** for the Project (feedstock supply and pretreatment, commercialization of products)



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

ALUR +Feedstock supplier

ALUR + Supplier of the service of crushing and / or pretreatment

ANCAP

Offtaker

Feedstock:

Crushing

Pretreatment

156,233 ton/year

Cousa and Capurro plants

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

La Teja Refinery

HVO

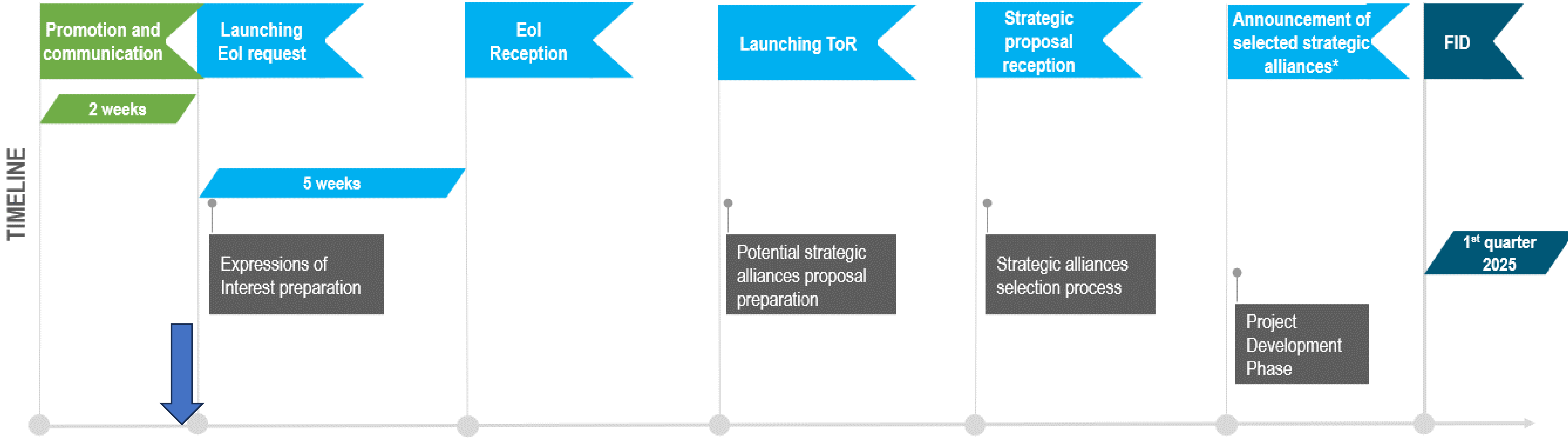
SAF

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.

Strategic Partners

The selection process will start early October

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



STRATEGIC ALLIANCES SELECTION

SELECTED ALLIANCES WITH EXCLUSIVE RIGHTS FOR PROJECT PARTICIPATION

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.

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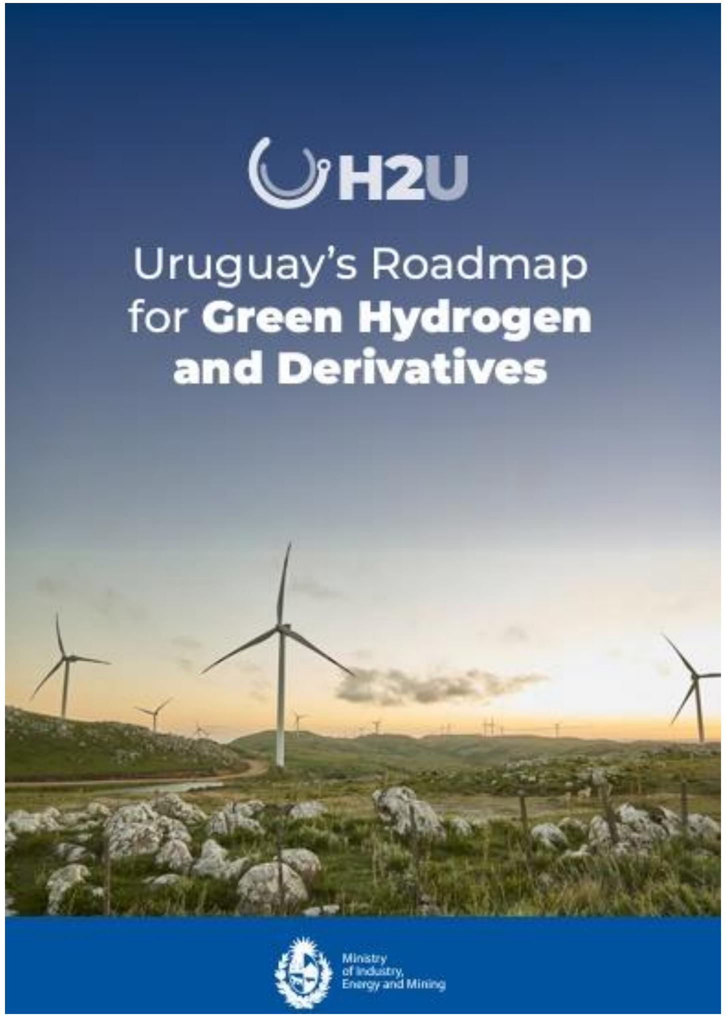
ANCAP is catalysts and leading the implementation of the Green Hydrogen Roadmap in Uruguay



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. · Aspectos vinculados al sistema eléctrico nacional. · 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. · Formación profesional y técnica. · Alianzas con la cooperación internacional para la generación de capacidades y aspectos de comunicación internacional.

$H_2$4U Pilot

E-fuels Paysandú

H2 URUGUAY Offshore

Production of e-fuels in Paysandú

HIF Paysandú eFuels Facility

HIF

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

https://hifglobal.com/region/hif-uruguay

ALUR

Option to participate in the project with up to 30%

Big Scale Energy Projects Offshore

H2 URUGUAY Offshore

¿Why ANCAP?


HYDROCARBONS

H2 + NATURAL GAS

H2


WIND / SUBSTATION

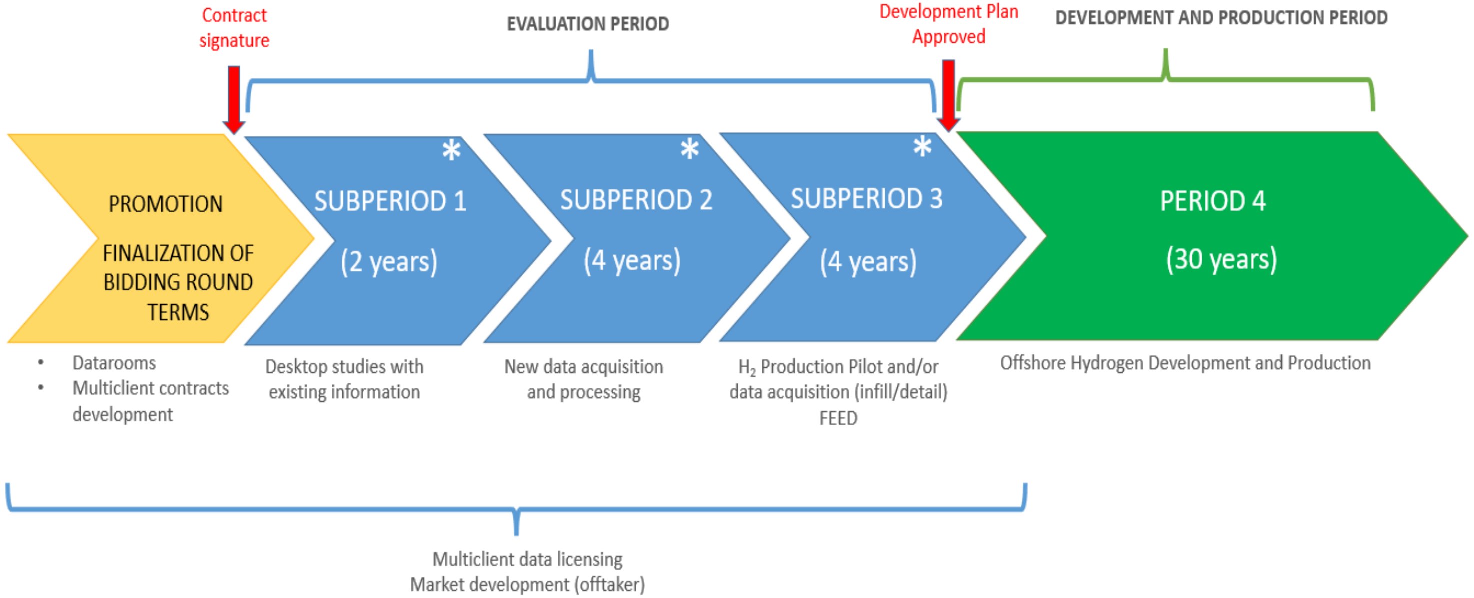
- Green H_2 now by Law one of ANCAP's tasks
- Products are molecules (H_2 and derivatives)
- Energy companies (oil companies → energy companies)
- Key assets to make viable H2 and derivative projects
- Highly trained and experienced Human Resources
- Similar Operations
- Industrial expertise, including H2 in the refinery
- Sinergy in Management
  - Rounds / Intense and Focused Promotion
  - Contracts
  - Managing Committees
  - Data Base
  - Data Rooms

H_2U 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 H2 from offshore renewable energy, at their own cost and risk entirely.

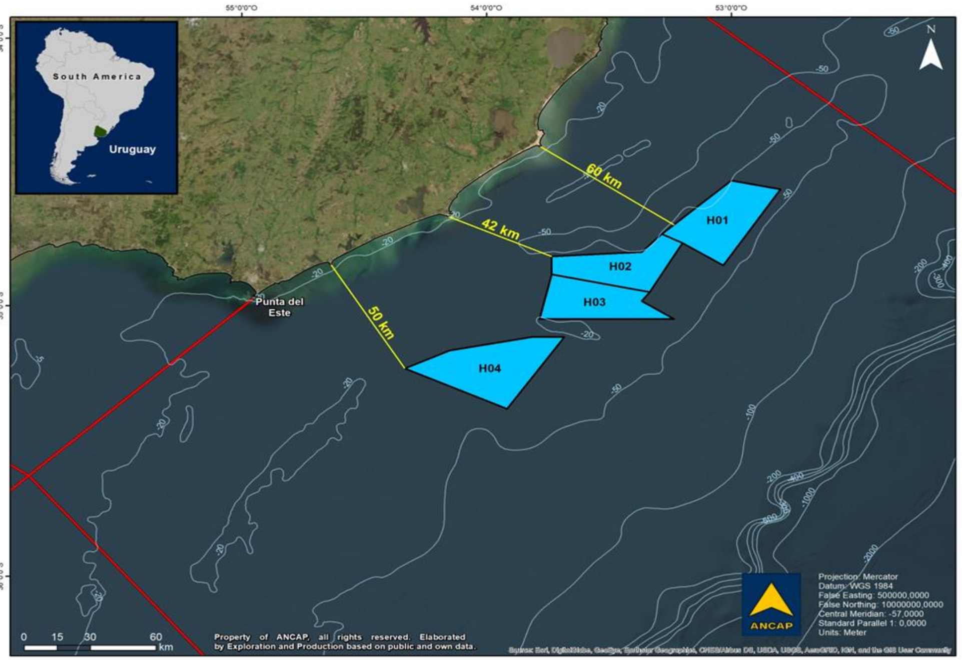
CONTRACT TERMS



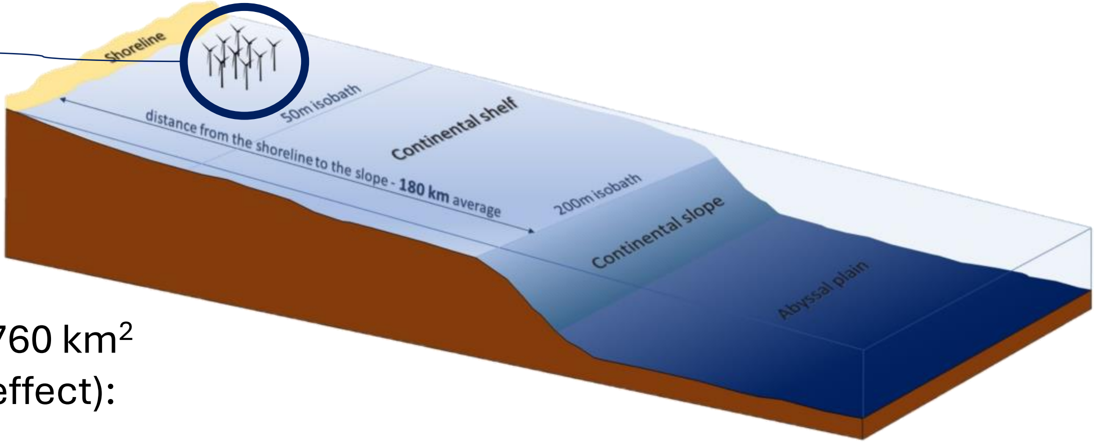
CONTRACT ECONOMY

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

H_2U Offshore



Bottom Fixed Wind Turbines

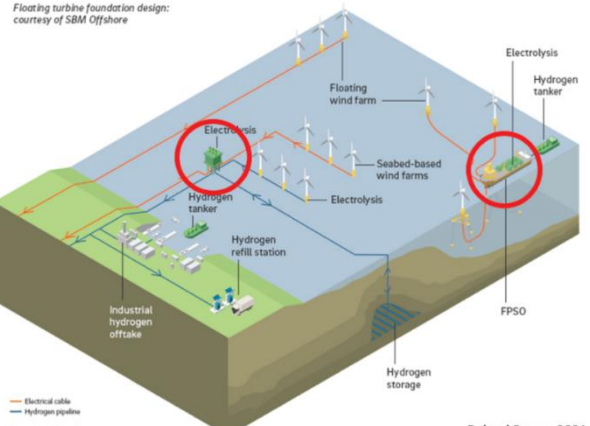


Estimated Potential for 760 km^2 (500 km^2 to avoid wake effect):

- Minimum 3,2 GW
- Production of ≈ 200.000 $TonH_2$/year
- Minimum interference with other economic activities

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



Roland Berger 2021

FLEXIBILITY for the contractor to propose development concept including:

- Offshore / Onshore Electrolysis
- Project scale (phases)
- Type or H_2 Carrier (NH_3, LH_2, etc)
- Market/Off-taker
- Development committed only after 10 years of evaluation period

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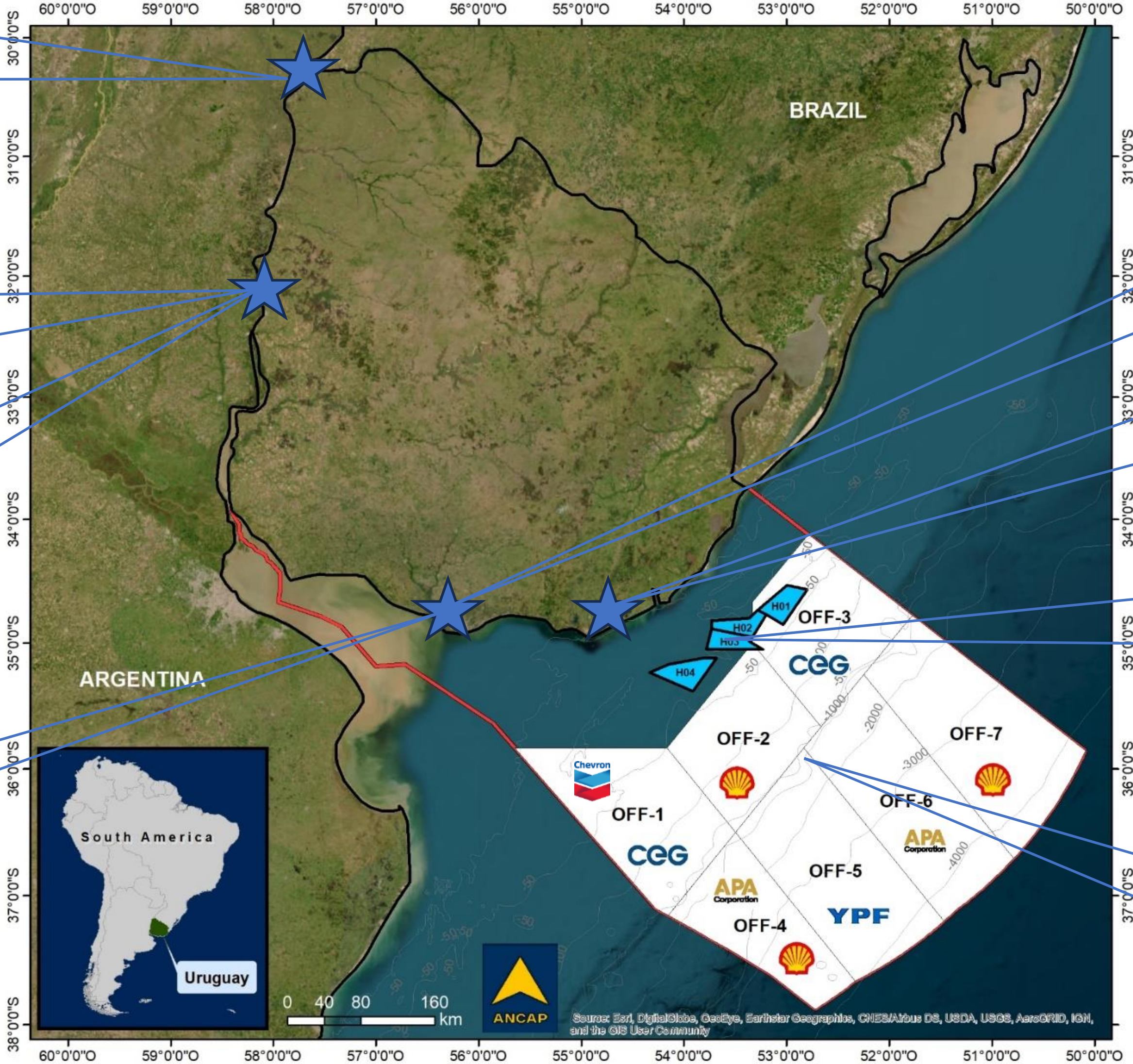
ANCAP’s Energy Projects and Investments Footprint

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

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

H2 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 for your attention

ANCAP