

GLOBAL

ENERGY WEEK 2024



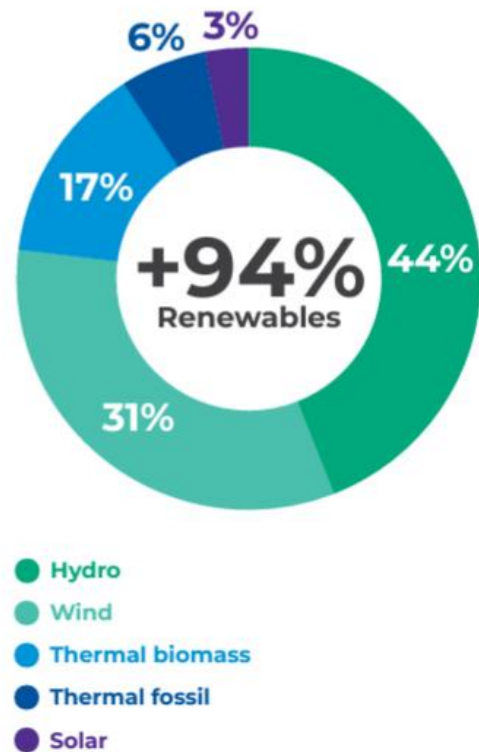
ANCAP's Hydrogen Roadmap and Investment Opportunities

M.Eng. Santiago Ferro
Energy Transition Manager



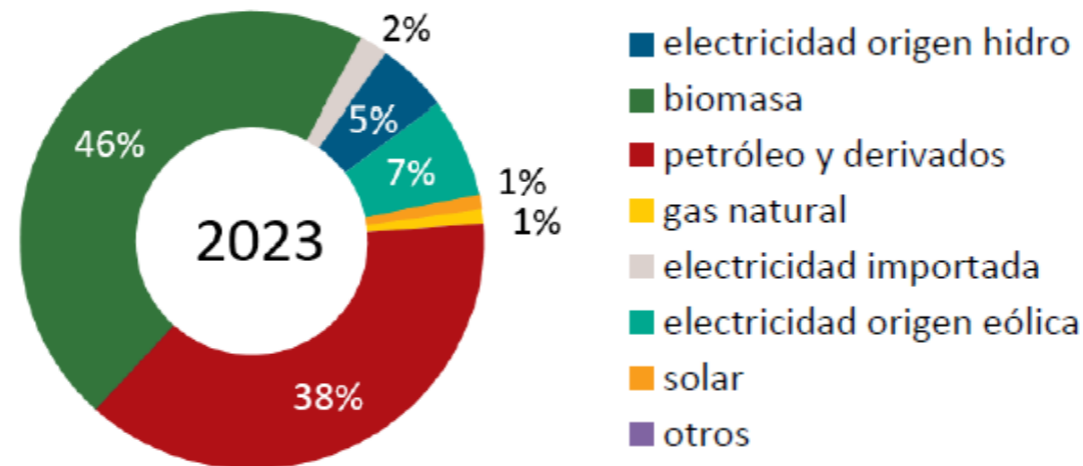
Uruguay: First energy transition successfully completed

Electricity generation in Uruguay – Average for 2016 to 2022. (MIEM BEN)



https://www.gub.uy/ministerio-industria-energia-mineria/sites/ministerio-industria-energia-mineria/files/documentos/noticias/H2_final-ingl%C3%A9s2020_0.pdf

Primary matrix 2023 (MIEM BEN 2023)



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

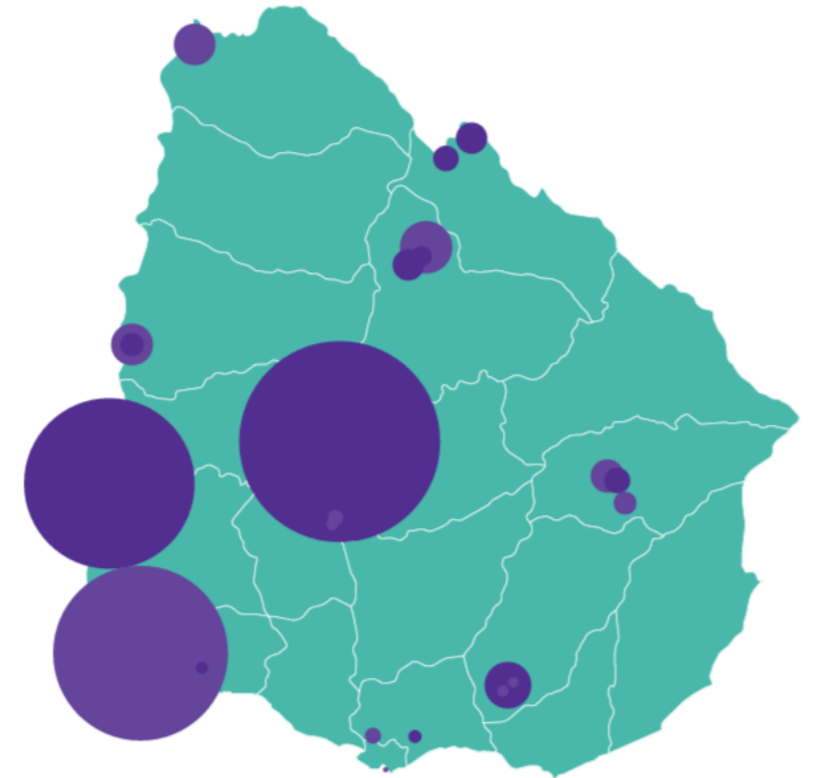


Uruguay's green power revolution: rapid shift to wind shows the world how it's done

<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




Nationwide availability of industrial biogenic CO₂ from different sources (biofuel plants, electricity generation, food, cellulose pulp, and cement plants).

https://www.gub.uy/ministerio-industria-energia-mineria/sites/ministerio-industria-energia-mineria/files/documentos/noticias/H2_final-ingl%C3%A9s2020_0.pdf

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

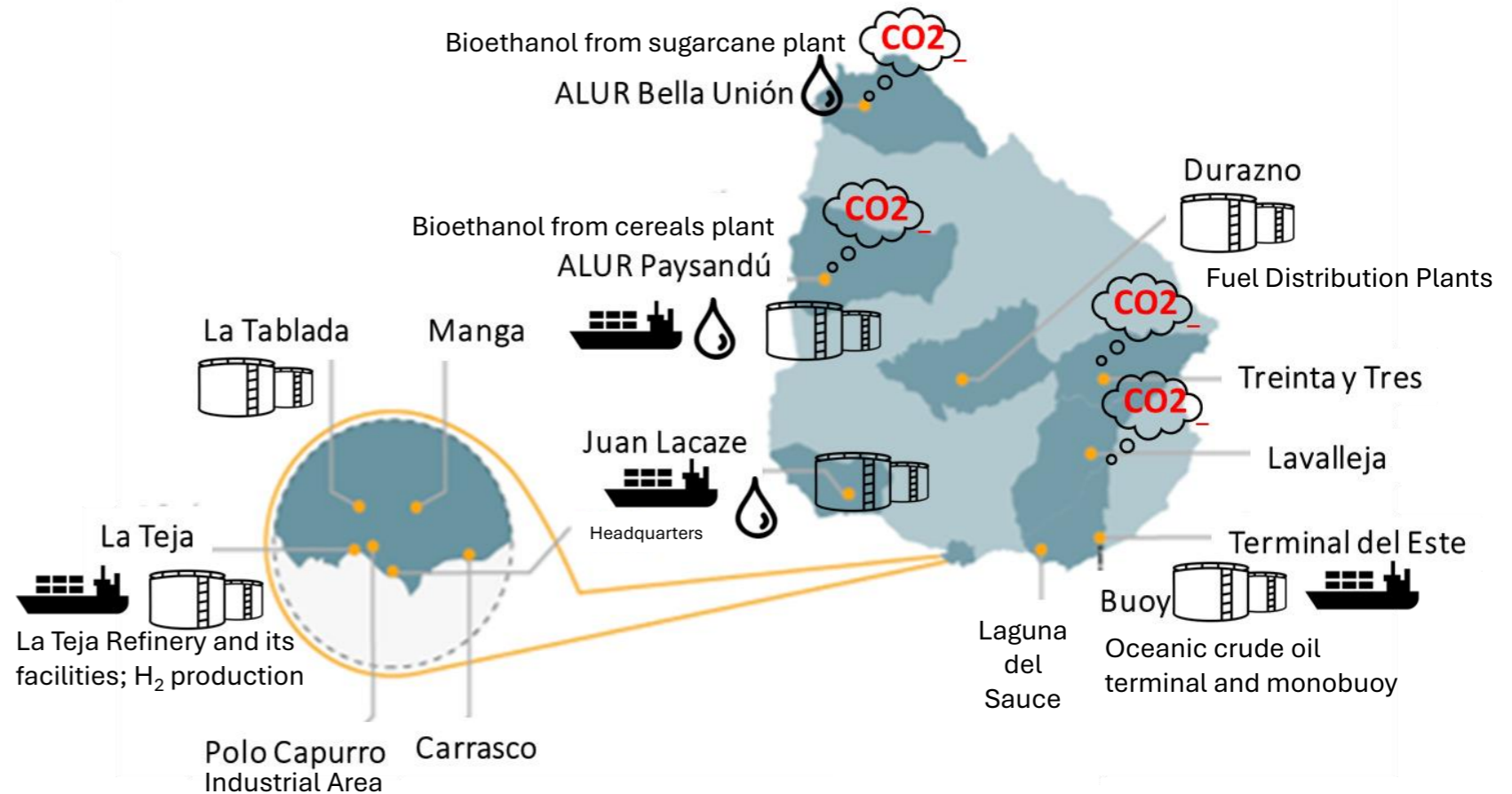
 **Gas Station**
Network 285

 **Natural Gas**
250.000 m³/day

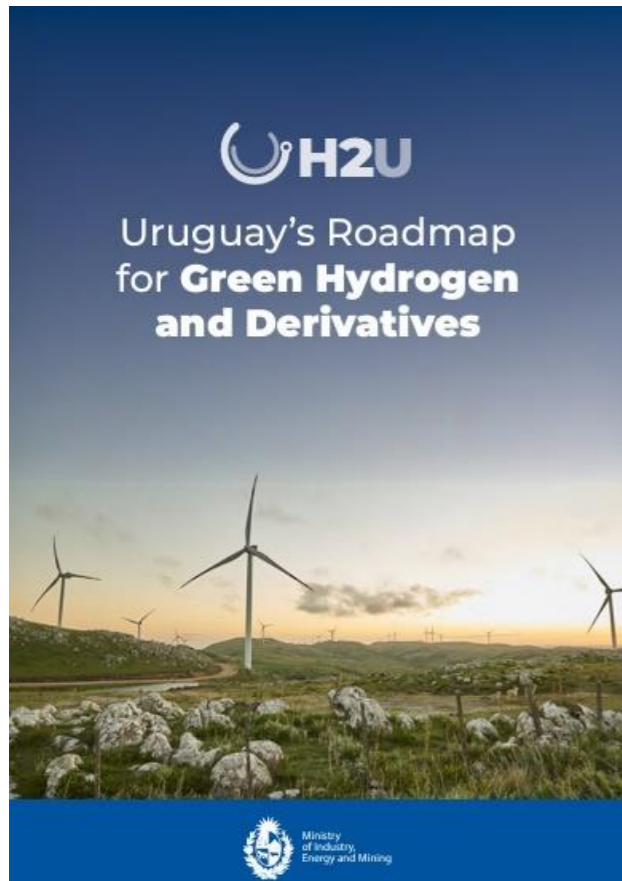
 **Industrial Plants**
18

 **Employees**
3300

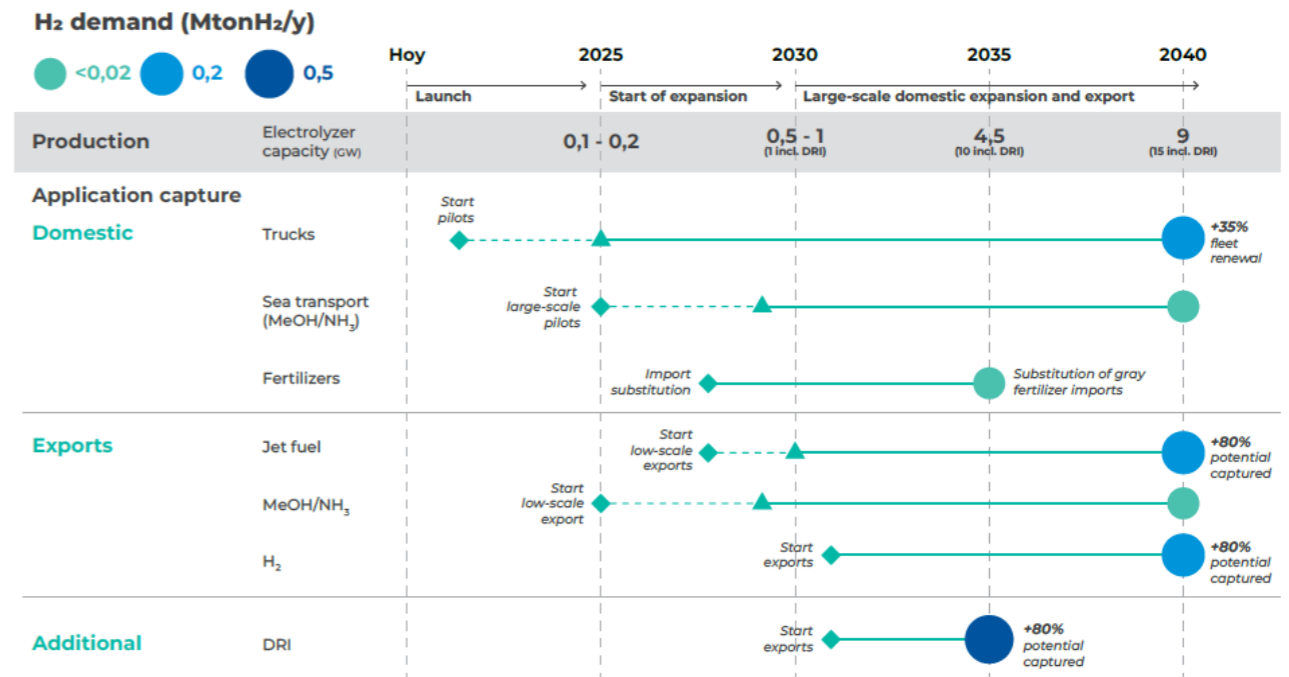
 **2023 Results**
3296 MMUS\$
Gross Income



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

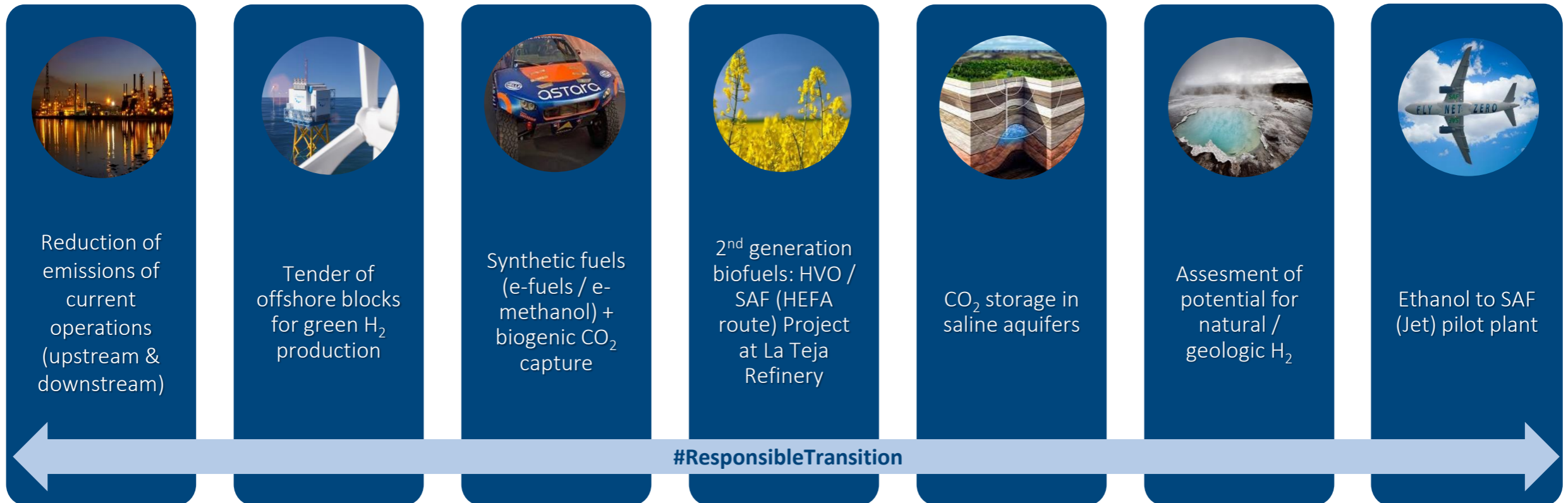


Componente	Responsables y posibles alianzas	Actividades
INNOVACIÓN	MIEM, ANII, LATU, sector académico, CONYCIT	- Fondo Sectorial de Hidrógeno, convocatoria a proyectos con apoyo del Estado y a proyectos de investigación e innovación.
INVERSIONES	MIEM, MEF, MA, MRREE, OPP, Uruguay XXI	- Incentivos fiscales, 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 H ₂ . - Formación profesional y técnica. - Alianzas con la cooperación internacional para la generación de capacidades y aspectos de comunicación internacional.



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

ANCAP: shifting towards an Integrated Sustainable Energy Company



Low carbon operations + Biofuels + Key role of Green H₂ and derivatives

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



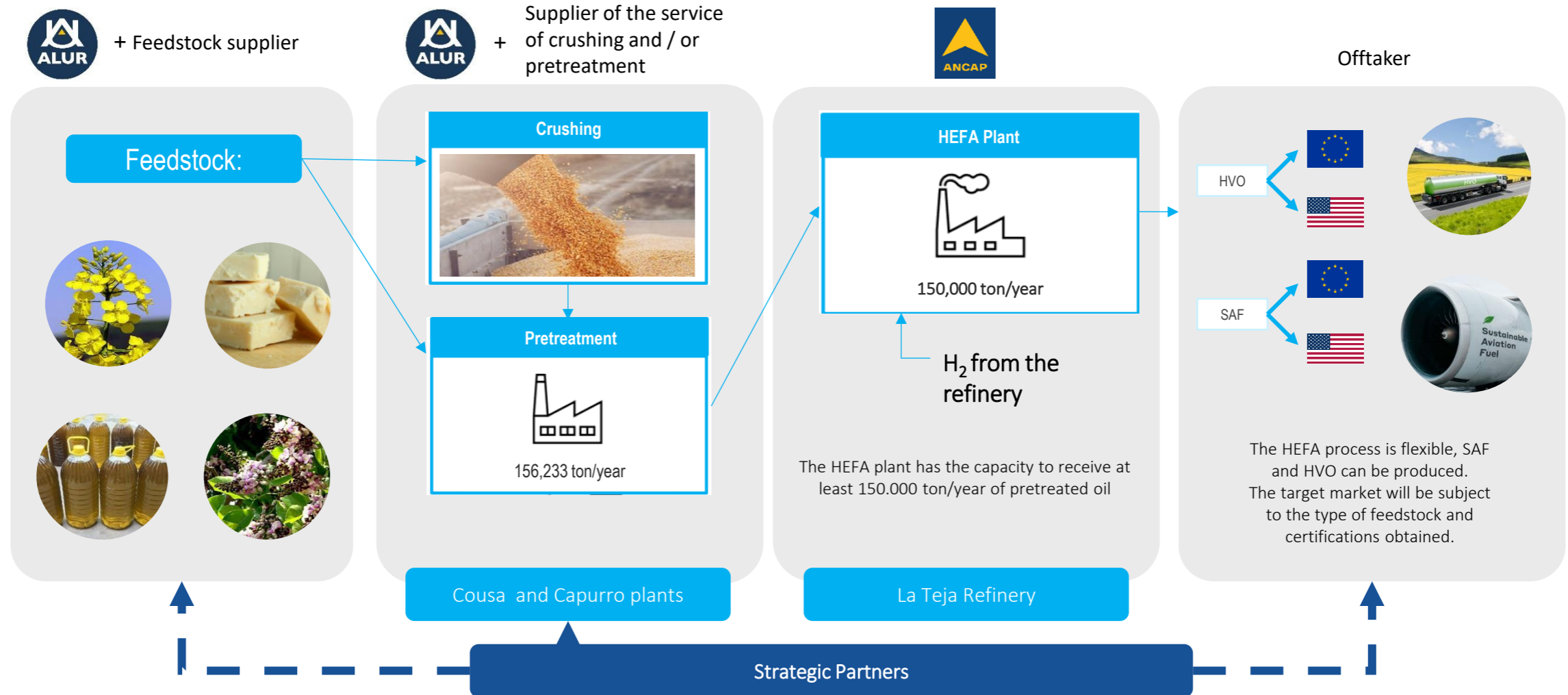
Option to participate in the project with up to 30%



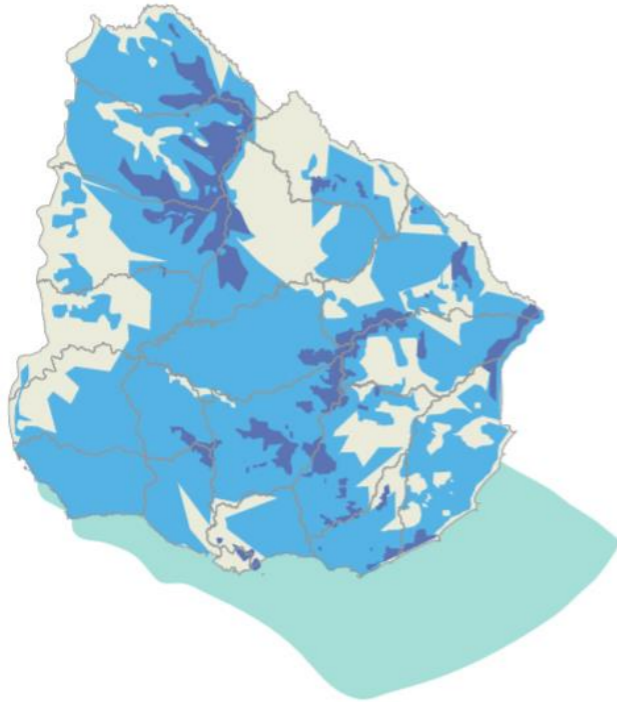
Project to produce HVO / SAF - ANCAP and ALUR

Flexibility of feedstocks, products and markets

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



The importance of the offshore



Onshore and offshore wind capacity

- **Level I >8m/s 30 GW**
Assuming 15% of the potential area
- **Level II >7m/s 50 GW**
Assuming 5% of the potential area
- **Offshore 275 GW >9m/s**

https://www.gub.uy/ministerio-industria-energia-mineria/sites/ministerio-industria-energia-mineria/files/documentos/noticias/H2_final-ingl%C3%A9s2020_0.pdf



Kamil Kobyliński: There's no hydrogen without offshore, TotalEnergies is ready to invest in Polish offshore and hydrogen

"There is no transformation of our economy without large-scale RES"

<https://balticwind.eu/kamil-kobyliński-theres-no-hydrogen-without-offshore-totalenergies-is-ready-to-invest-in-polish-offshore-and-hydrogen/>

Big Scale Energy Projects Offshore

¿Why ANCAP?



- Green H₂ now by Law one of ANCAP's tasks
- Products are molecules (H₂ 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

H₂U Offshore

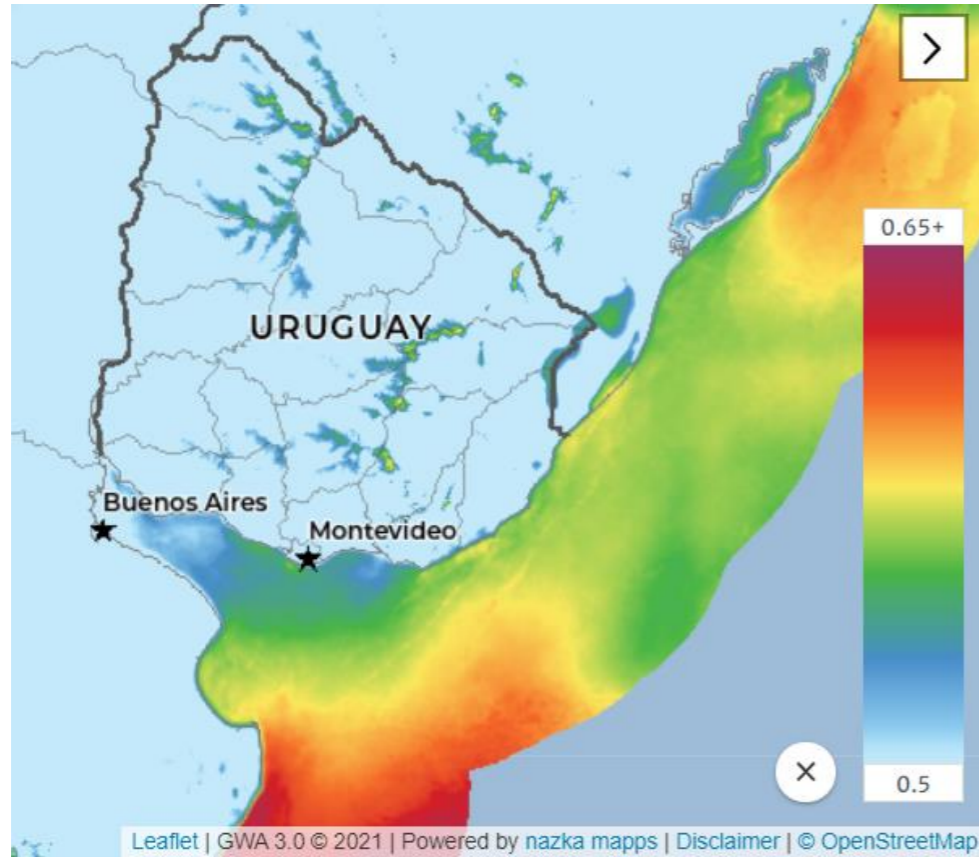


ANCAP is launching a tender for offshore areas for energy companies to carry out feasibility studies and potential installation of infrastructure for the production of H₂ and/or derivatives from offshore renewable energy, at their own cost and risk entirely.



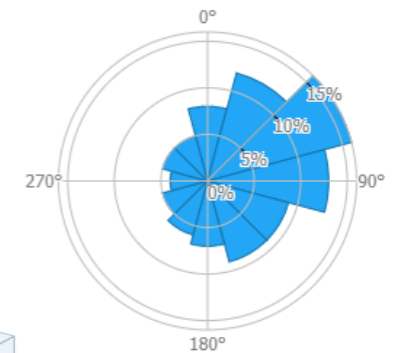
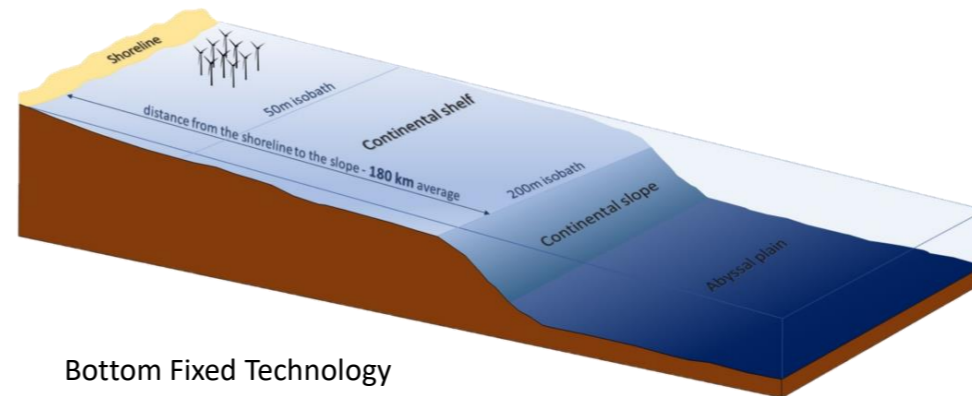
<https://tractebel-engie.com/en/news/2019/400-mw-offshore-hydrogen-production-takes-system-to-new-levels>

Offshore Uruguay wind resource potential



[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>"

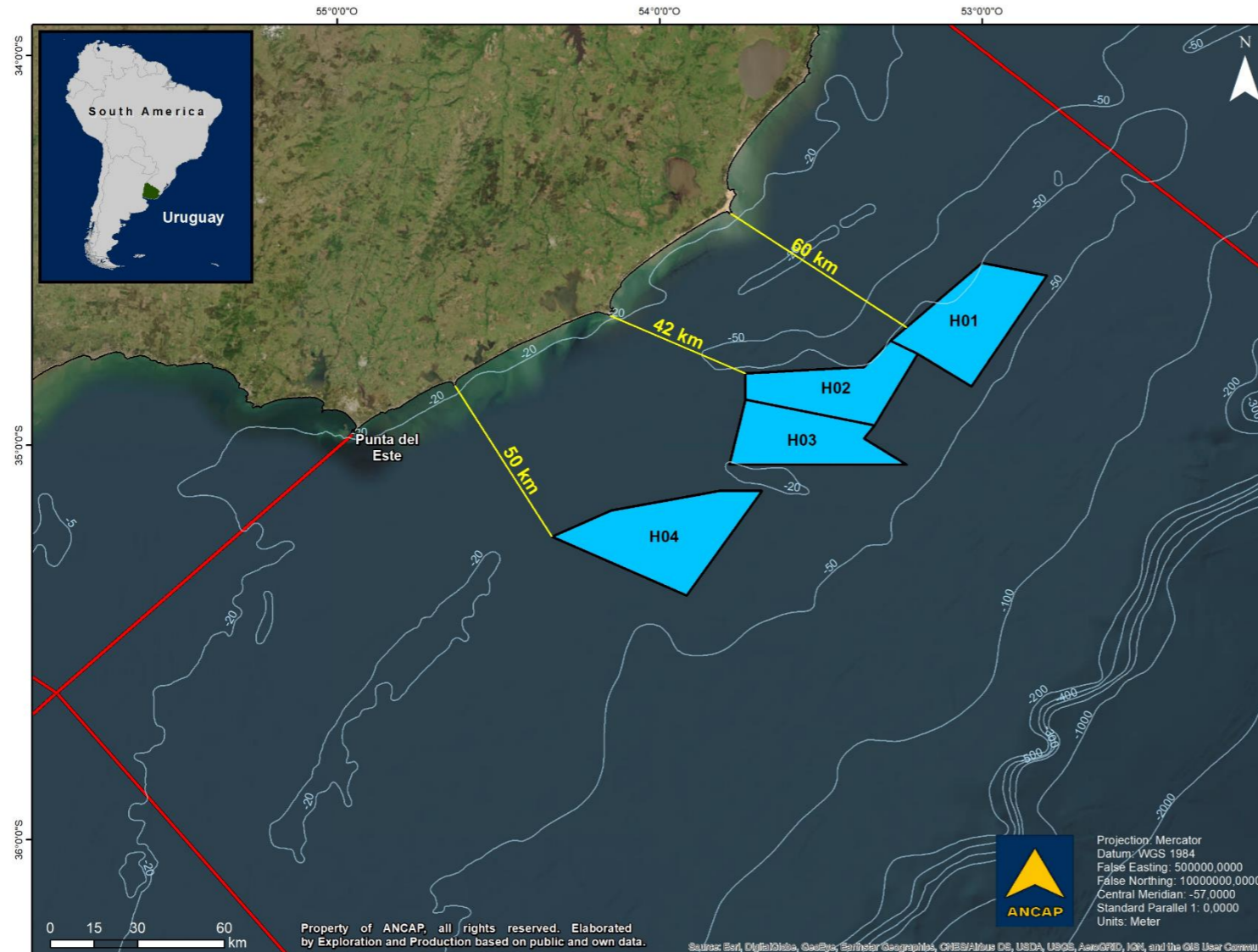
- Mean wind speed (exceeding 8,7 m/s at 100 m hub height) ⁽¹⁾
- Capacity factors (higher than 51% for IEC Class I) ⁽¹⁾
- ESMAP assessed a technical potential in Uruguay of 275GW including 190GW for fixed and 85GW for floating technologies ⁽²⁾
- Main direction: NE -> SW ⁽¹⁾



Bottom Fixed Technology

(1) Global Wind Atlas 2022
(2) ESMAP 2020

Offered Areas



- Areas defined considering relevant ecological settings, minimized interference with human activities (maritime transit and operations, fisheries, submarine cables) and the **input from the industry and experts.**

- Average Surface Area: 700km²

- Estimated Potential:

- 3 GW → 200 kTonH₂/year*

*A: 500km²; D: 6 MW/km²; F: 46%; E: 60 kWh/kg

Bidding Round Terms and Contract Model

QUALIFICATION OF COMPANIES

Legal, financial and technical qualification of companies to have the right to submit offers

COMPARISON OF OFFERS

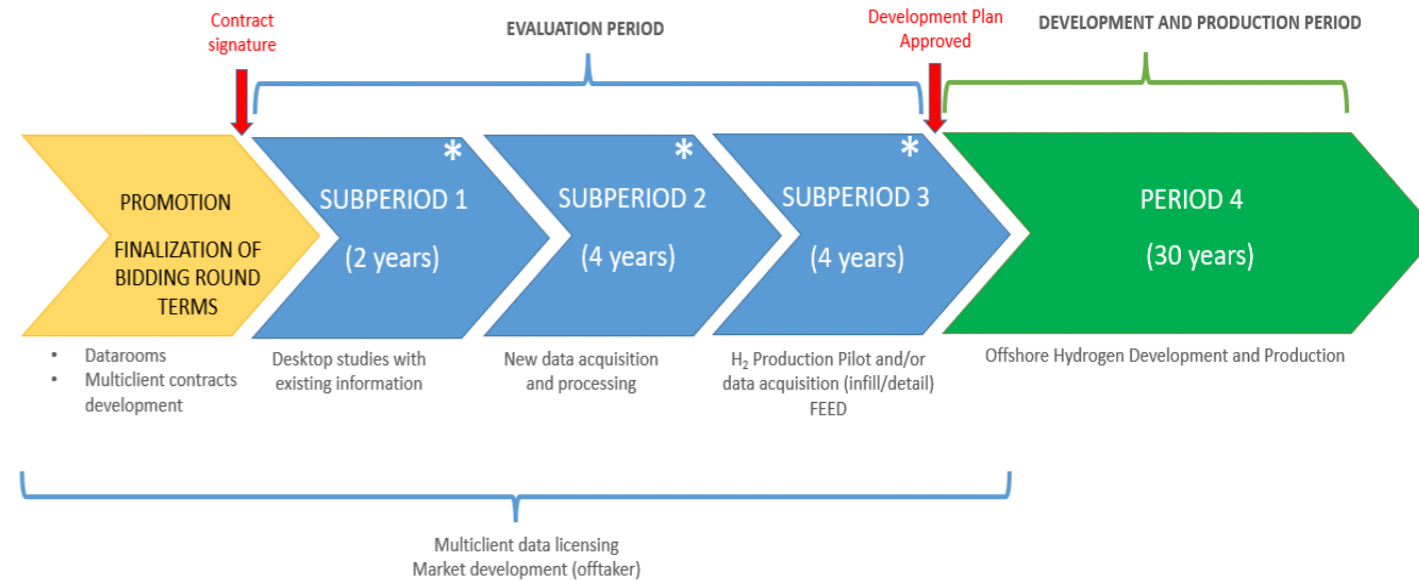
Award criteria based on objective and simple parameters to be offered by energy companies:

- Work program (WU)
- Share of profit for ANCAP (P)
- ANCAP's participation (A)

Comparison of offers based on equation:

$$\text{Score} = 20\% * (WU/WU_{\max}) + 40\% * (A/A_{\max}) + 40\% * (P/P_{\max})$$

CONTRACT TERMS



CONTRACT ECONOMY

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

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