

# GREEN HYDROGEN TECHNOLOGIES

*Initiatives at Universidad de Concepción,  
Chile.*

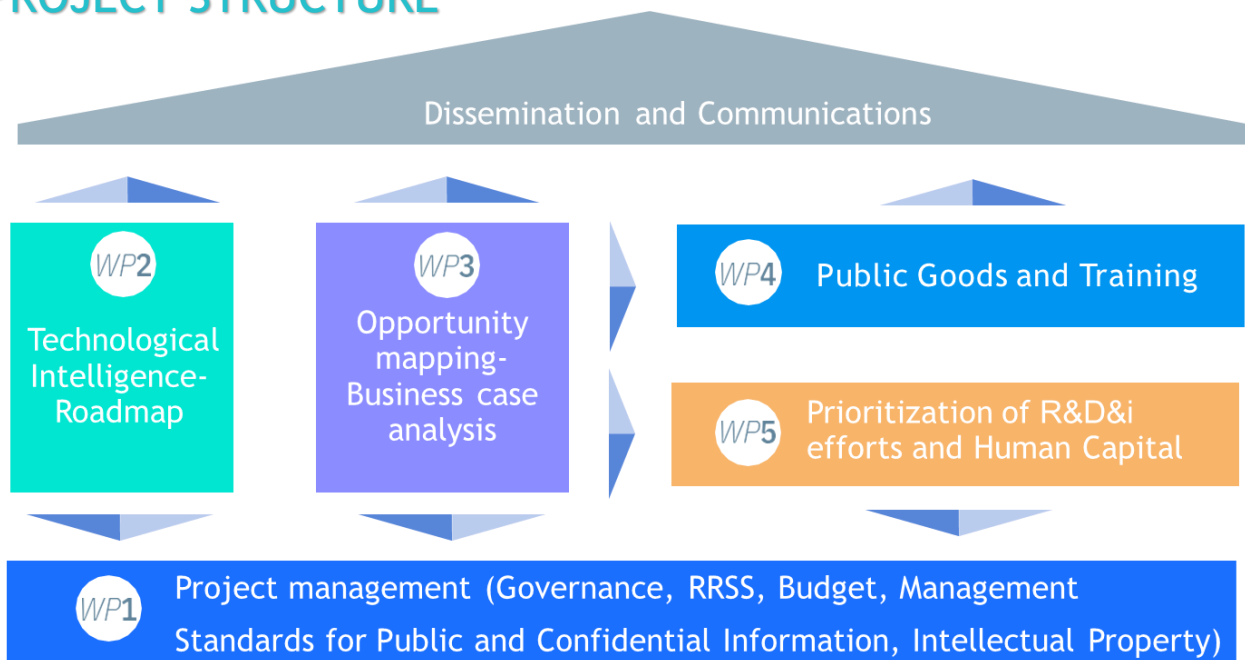
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# PROJECT TITLE: GREEN HYDROGEN ALLIANCE FOR THE BIOBIO REGION

## ABOUT THE PROJECT

University-industry technological alliance to contribute to competitiveness, energy efficiency and mitigation of CO2 emissions in the Biobío region, through the identification of opportunities and promotion of collaborative initiatives for research, innovation and strengthening of human capital that facilitate the investment in the green hydrogen value chain.

## PROJECT STRUCTURE



## BASE TEAM



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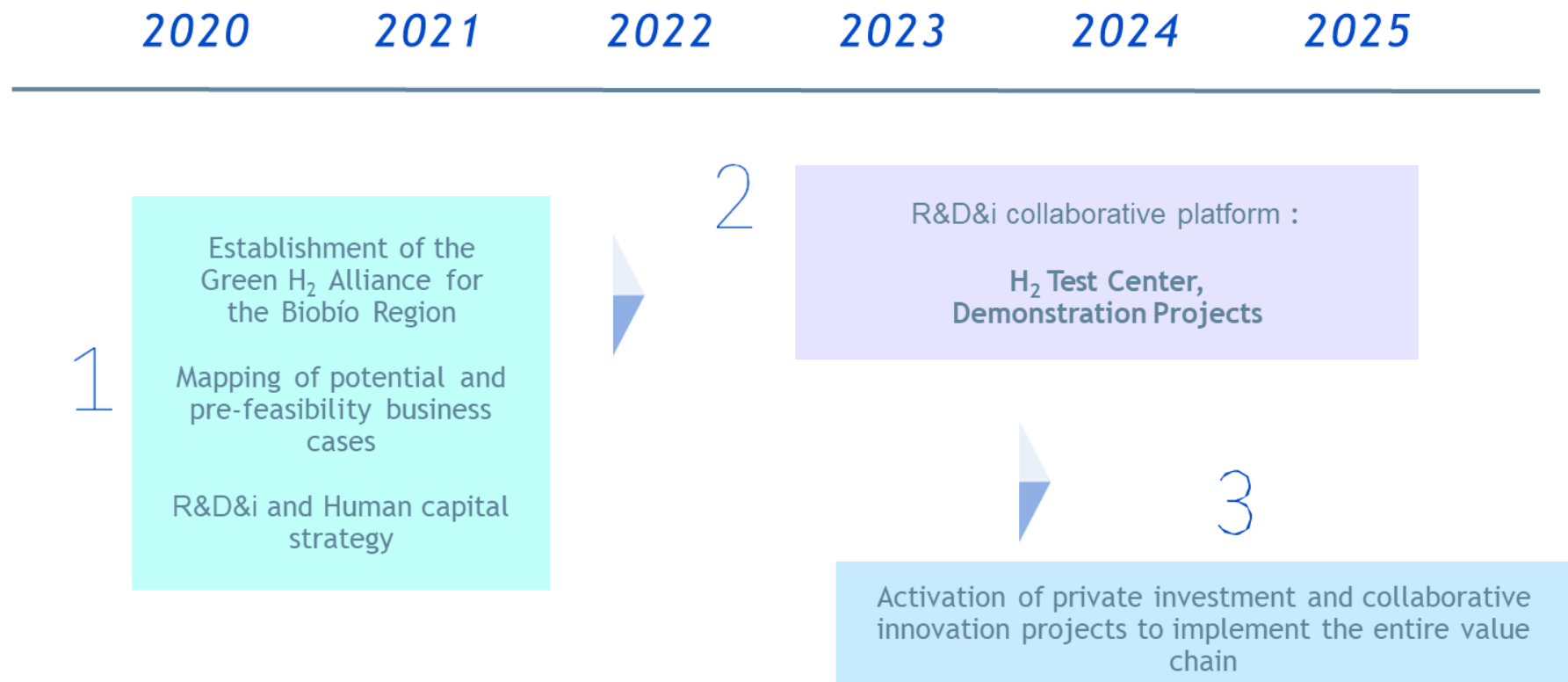
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*\*WP: Work Package*

# PROJECT TITLE: GREEN HYDROGEN ALLIANCE FOR THE BIOBIO REGION

## PROJECT TIMELINE



## EXECUTIVE ENTITIES



## IN ALLIANCE WITH



# PROJECT TITLE: GREEN HYDROGEN ALLIANCE FOR THE BIOBIO REGION

## ASSOCIATED ENTITIES

### COMPANIES



### HIGHER EDUCATION INSTITUTIONS



### CIVIL SOCIETY AND GUILD ASSOCIATIONS



### PUBLIC ENTITIES



# PROJECT TITLE: GREEN HYDROGEN ALLIANCE FOR THE BIOBIO REGION

## PROJECT PROGRESS



# PROJECT TITLE: GREEN HYDROGEN ALLIANCE FOR THE BIOBIO REGION

## CONTACT



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# PROJECT TITLE: ZERO EMISSION AND ZERO RESIDUE COPPER PROCESSING TECHNOLOGY USING GREEN HYDROGEN

FONDEF ID20I10190 (2021-2022)

## ABOUT THE PROJECT

- The new process is a **disruptive oxidation-reduction technology** that operates in solid / gas phase at 800-850C in closed reactors, avoiding the handling of molten phases of traditional copper smelting technology.
- **Captures over 99% of SO<sub>2</sub> and As.** It has a recovery over 99% of copper and over 80% of molybdenum.
- The process achieves a **complete use of the concentrate**, generating commercial by-products of iron and silica, with zero slags.
- It consumes **50% less energy and uses green hydrogen in the reduction stage.** It has a zero carbon footprint.

## ASSOCIATED ENTITIES



EXPORTACIÓN  
DE CONCENTRADO



## BASE TEAM



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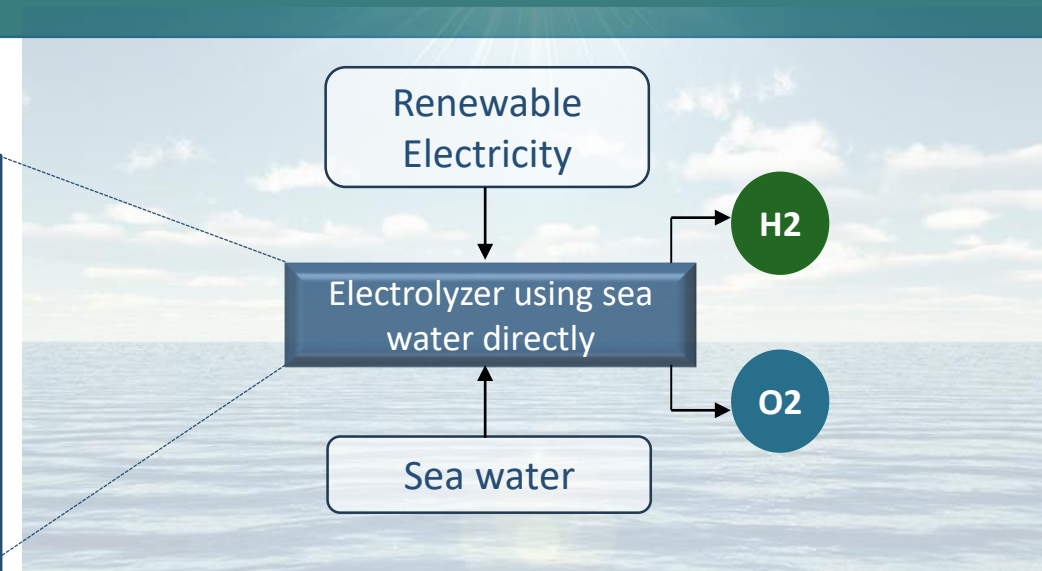
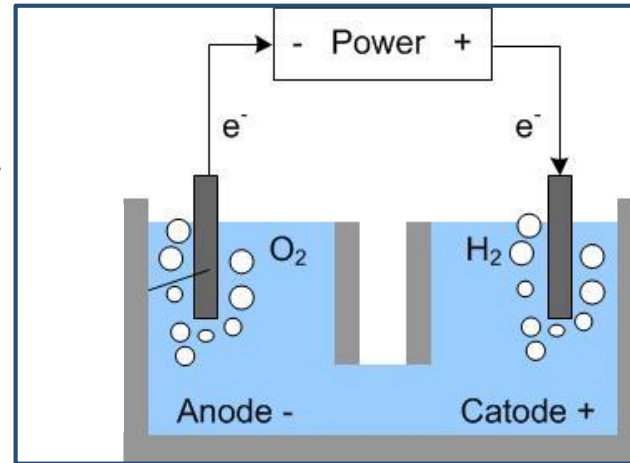


# PROJECT TITLE: DEVELOPMENT OF A STABLE CATALYST AND SELECTIVE ANODE FOR OER IN SEAWATER ELECTROLYSIS

FONDECYT REGULAR 1200672 (2020-2023)

## ABOUT THE PROJECT

- Development of an electrolyzer that directly uses seawater to produce hydrogen
- The electrodes of this electrolyzer will be specially designed to resist corrosion and selectively favor the limiting reactions of the electrolysis process
- To build the electrodes, Mn-Fe and Mn-Mo-Fe alloys will be used and the best performance will be evaluated.
- This project contributes to solving not only the energy crisis but also the water crisis, since it uses the electrolysis of seawater for the production of hydrogen.



## BASE TEAM



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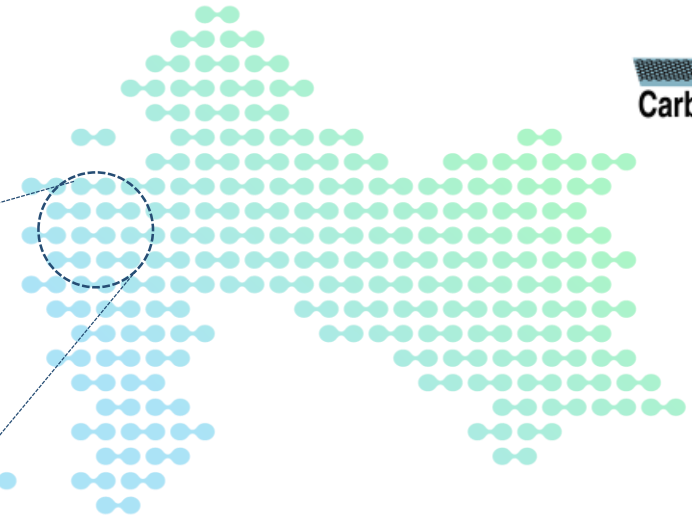
# PROJECT TITLE: DEVELOPMENT OF A CARBON ADSORBENT FOR HYDROGEN STORAGE, FROM MINERAL COAL

## ALMACENAMIENTO H<sub>2</sub> STORAGE, FROM MINERAL COAL

FONDEF 20I10008 (2021-2023)

### ABOUT THE PROJECT

- From mineral coal obtained from the Arauco area of the Biobío region, **an adsorbent material will be developed for the storage of H<sub>2</sub>**
- **This material will be able to satisfy the requirements for effective performance;** high surface area (> 2000 m<sup>2</sup> / g), concentrated pore size distribution in the range 0.5-1.0 nm and spacing between graphene layers close to 6 nm
- **The adsorbent developed, in addition to presenting a low cost, will present a promising adsorption capacity** with respect to the goals established by the DOE (~ 5%), at moderate temperatures and pressures.



### BASE TEAM



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**Thank you for your attention**