

# HIDROGENO VERDE

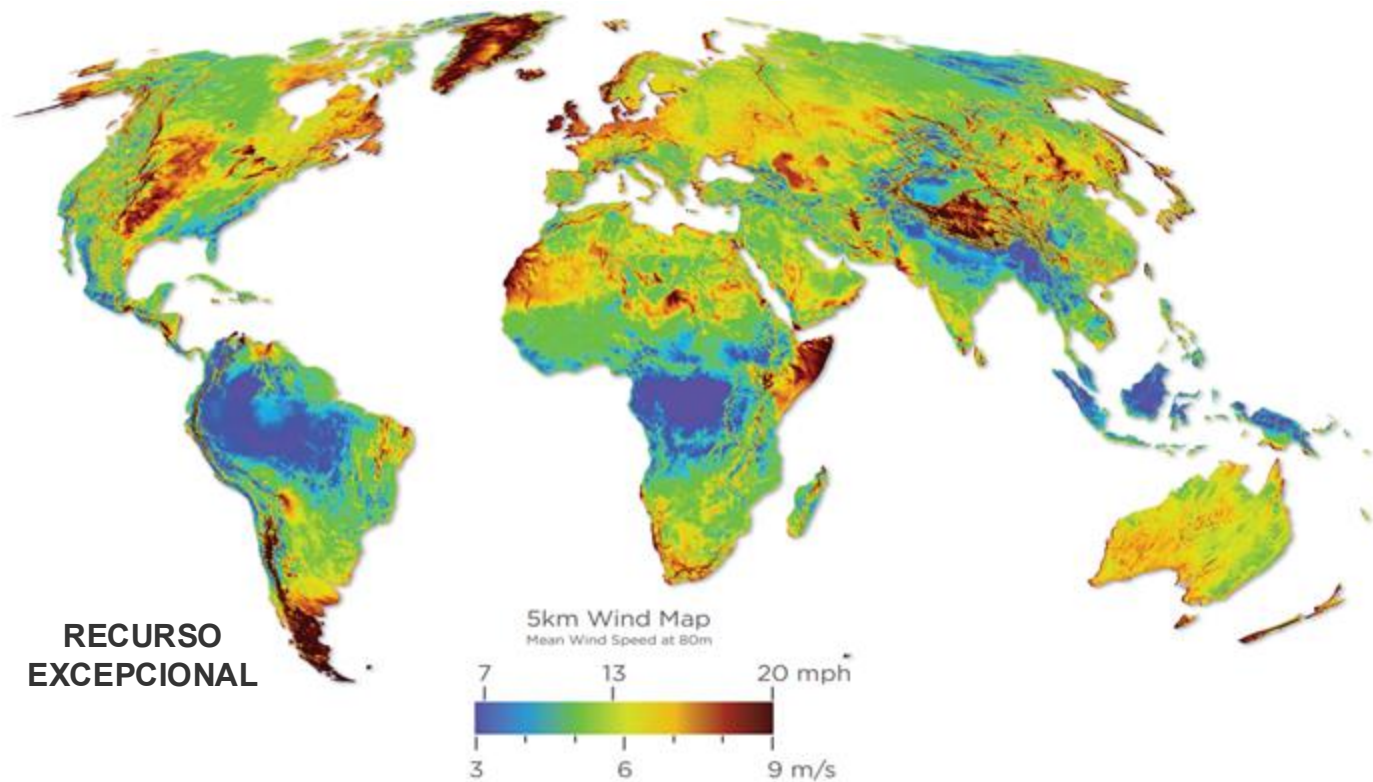
## OPORTUNIDADES Y DESAFIOS PARA MIEMBROS SCL

- Involucramiento activo en proyectos de ingeniería y construcción
  - Desarrollo de oportunidades de negocio
  - Resolución de controversias
- ROL CLAVE: búsqueda de sinergias y soluciones creativas



¿Por qué  
hablamos de H2  
verde en Chile y  
Argentina?

**RECURSO  
EXCEPCIONAL**



## Estado actual: oportunidades de desarrollo regional.

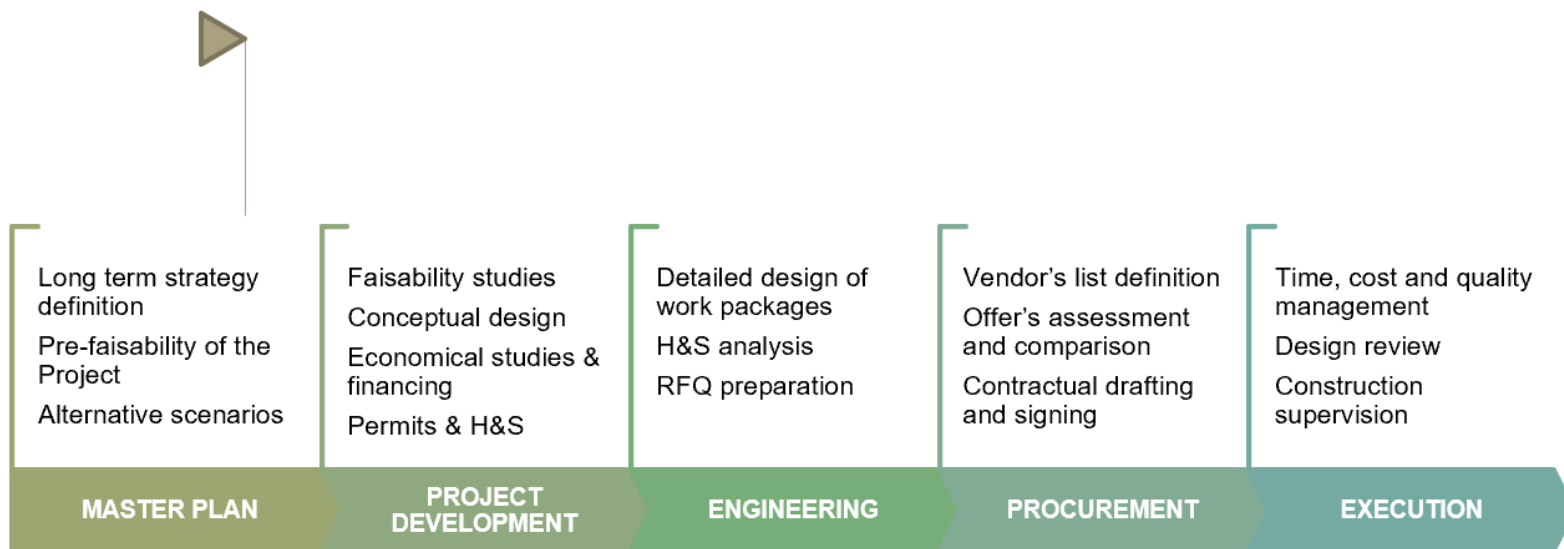


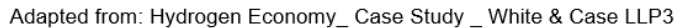
## OPORTUNIDADES: ¿para quienes?

- Empresas de desarrollo de proyectos
- Empresas de R&D
- Empresas de ingeniería
- Empresas de construcción
- Empresas de infraestructura y operación portuaria
- Propietarios
- Comunidades locales



## Etapas de un proyecto de hidrógeno verde





## Assets

## Pongamos en forma comparativa algunas cantidades (planta de e-fuel):

- Ingenierías conceptuales: de 10.00 a 30.00 horas – 3 meses
- Ingenierías básicas: de 8.000 a 40.000 horas – 5 a 9 meses
- FEED: de 50.000 a 120.000 horas – 8 a 12 meses
- EPC: 30.00 personas en sitio durante el pico – 3 años

## Comparemos algunas cantidades de una planta de hidrogeno verde de 100 MW:

- 400 instrumentos + 1.000 detectores (F&G)
- 600 tn piping
- 10.000 m3 concreto
- 1.000 tn de estructuras metálicas
- 300.000 m de cables eléctricos y de instrumentación y control





# Creatividad en soluciones de ingeniería contractual:

- Costos “budgetarios” pueden sufrir grandes distorsiones cuando se pasan a precios en firme
- Estudios ALMA (Area Labor Market Analysis)
- Plantas multi-usuario y multi-propósito (plantas con altos requerimientos de consumo eléctrico, agua de enfriamiento y *footprint*)
- No extrapolar soluciones de ingeniería (entre OEMs las soluciones son diferentes así como lo son sus alcances)
- Soluciones atmosféricas demandan grandes compresores de proceso
- Bloques con EPC para renewable power + industry plants + port facilities
- Proyectos offgrid presentan desafíos para el armado y estabilización de red (BESS)
- Definición de battery limits
- Rol integrador de un EPCm
- Empresa de ingeniería dedicada en la revisión de ingenierías de detalle constructivas, buscando sinergias entre las empresas constructoras
- Administración óptima de las interfases de proyecto
- Mecanismos de notice to proceed para compensar avances en los distin;
- Manejo del oxígeno en términos de HSE



# BACKUP INFORMATION

# Advantages of producing green hydrogen in south of Argentina



## Fastest regulatory approval processes

- To promote massive green  $H_2$  to be supplied to the European Union ("EU"), the regulatory approval in Argentina is faster than in any other country;
- Allows to achieve Ready To Build (RTB) status within 2-3 year on large scale projects; and
- Potential to play significant role in the EU decarbonization goals and replace Russian gas with clean fuels.

## Low levelized cost of $H_2$ (LCOH)

- Onshore wind resources in Patagonia are among the best in the world (steady & high energy production), with net capacity factors of 50-60%, Levelized Cost Of Energy (LCOE) of USD 20-25/MWh, and LCOH of USD 1.5-1.8/kg achievable by the end of this decade;
- Vast uninhabited plains with access to water through the Atlantic coast allowing scalability;
- Available ports and logistics infrastructure to minimize investment cost and improve time to market; and
- Limited environmental impact.

## Export focused economy

Advanced ecosystem of petrol, mining and petrochemical industries, with multinational companies already operating in the country.

## Experience in large projects

Mega projects have been executed and human resources are available.

## Incentive Regime for Large Investments (including hydrogen)

Remarkable incentives and bankable conditions for attracting external investment, which can be securely expatriated. In addition, a special  $H_2$  law is under discussion today to further foster investments.

# ABOUT



We are a consulting firm developing 'green hydrogen valleys' with a **strong social and environmental license**, built through the active involvement of the landowners.

LIMBER combines **technical, business, legal, financial and strategic expertise** to develop the 'green hydrogen valley', realize value and mitigate risk. We achieve unbeatable conditions, breaking paradigms and designing business schemes that are profitable for all the parties involved.

The essence of our strategy is to **strengthen the relationship with the investors**, understanding the needs of the project, providing an interdisciplinary approach in making important decisions and in the execution of the project.

We believe that there is always room to add a new perspective, striving for extraordinary results from ordinary challenges and **combining the knowledge and resources from the landowners to the best benefit and development of the project.**

LIMBER has a **multidisciplinary, agile and creative team** linked by experience and shared values, which forms an organic whole and allows us to offer diverse and meaningful synergies and an innovative range of services to shape the future together.

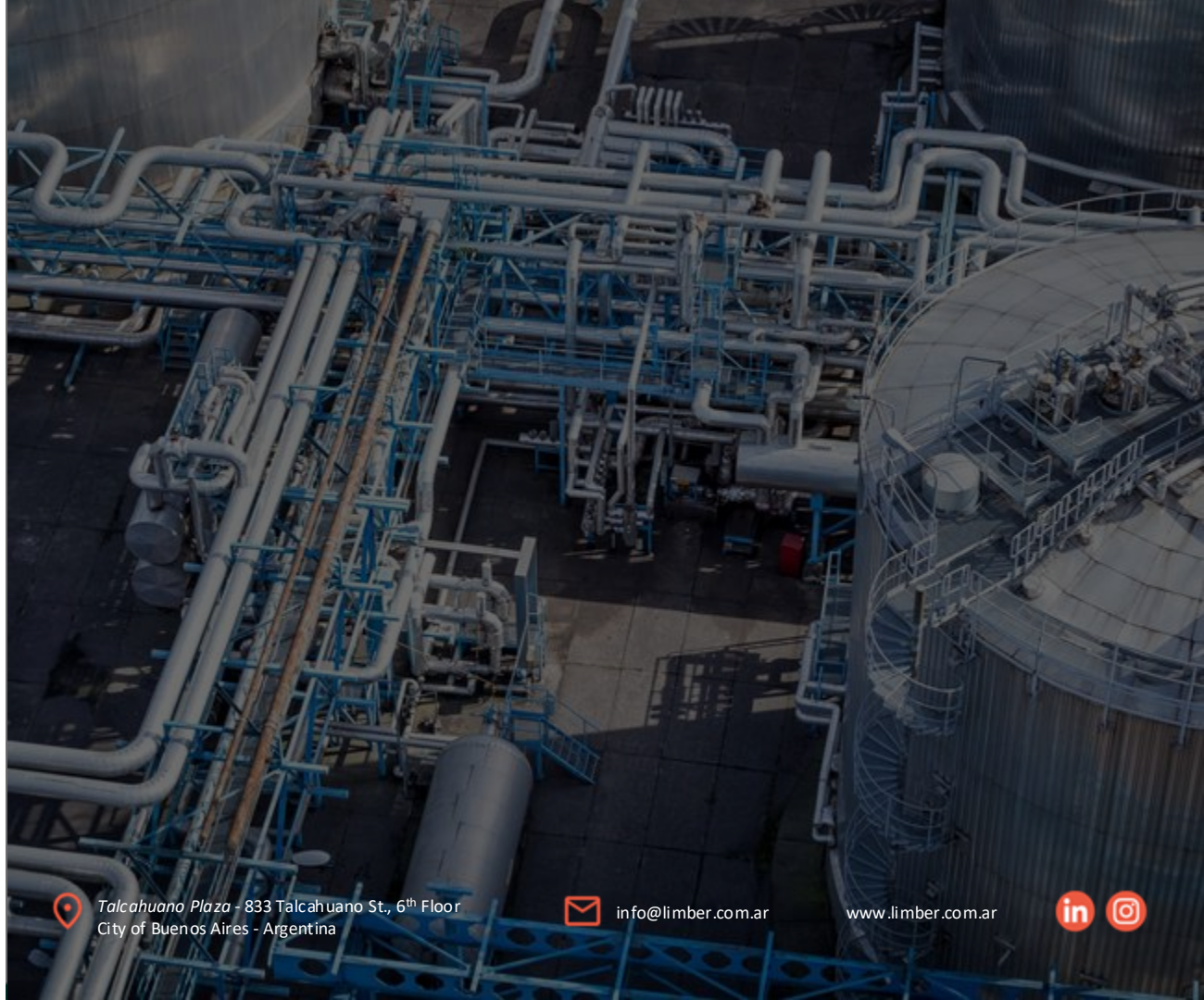
Our team has a **recognized track record in comprehensive management of projects development and execution**, having been involved in the largest renewable energy projects in the region, including international and local operators and multilateral financing.

Our professionals serve as trusted advisors to **secure the development of the project, with staunch integrity, proven experience, clear-cut proposals, and a deep understanding of all the aspects of the value chain.**

Driven by project-centric values, we constantly seek new and innovative ways to enrich the renewable energy industry. **We make things happen.**



BIG BANG  
THINKERS



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