

ENERTRAG: Scalable Solutions for Green Hydrogen. Just. Now.

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Aram Sander Head of Department: International Development PtX LATAM





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Since 2023

ENERTRAG Head of Department: International Project Development PtX *LATAM*

- Participation in major biogenic CO2 tenders in Uruguay
- Setup of country structures in COL, BR, 4 lead developers
- New business development focusing on **CL, AR, MEX, PER**



2022

ENERTRAG Head of Department: International Project Development PtX *Global*

- Setup of LATAM Head Office in MVF (10 employees by today)
- TAMBOR Green Hydrogen Hub
- Initiation of 4 mayor further project developments



2020-2021

ENERTRAG Head of International Business *Global*

- Expanding Business in LATAM and Africa, government relations and partners
- Intensive market sounding for tendering the NAM "Sperrgebiet" (30 GW)
- Winning of the first NAM tender for 4.000 km2 (5 GW, Project "HYPHEN")
- Founding of Spanish Development Cooperation in Spain, Head Office of ENERTRAG in Spain

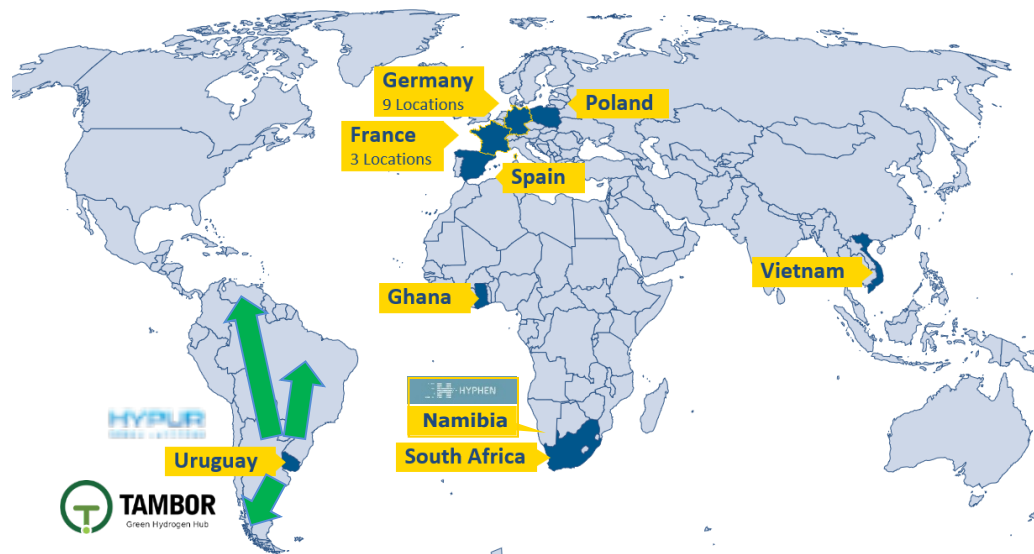


2011 -2020

ENERCON Coordinator for international large scale IPP wind farms for the board of ENERCON, CEO of ENERCON Uruguay, fully integrated development of several hundred MW wind power, solar power and hybrid developments

A German IPP Developing Large Scale PTX in LATAM and Africa

Worldwide Offices and Project Locations



Due to our **regional roots**, we see the strengthening of the **local and regional economy** as part of our responsibility

Key Figures

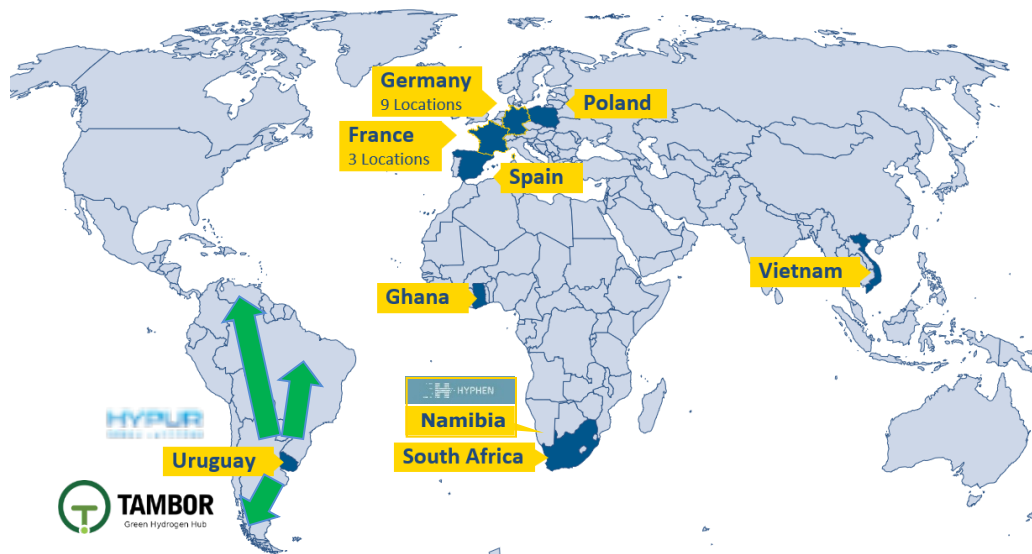
- + 1,6 GW** Installed Capacity
- 8** Countries
- + 800** Employees Worldwide
- €1 Billion** On Balance sheet
- €500 M** Annual Turnover
- + 850 MW** Wind Assets Own Operation
- + 9 GW** Pipeline of Wind + PV Solar

Founding Member of

 **H2Global Stiftung**

ENERTRAG is a Strong International Partner Committed to RE

Worldwide Offices and Project Locations



Due to our **regional roots**, we see the strengthening of the **local and regional economy** as part of our responsibility



Nuestro equipo y oficina en
Montevideo



Parte de los equipos de ENERTRAG y SEG
aliados estratégicos en Uruguay



Oficina de ENERTRAG
en desarrollo en
Punta Carretas



Punta Carretas, Montevideo

ENERTRAG Makes the Energy Transition Happen



Bulk Zero-carbon Electricity



- **Close to 2 GW** of wind implemented in Germany, France and Poland
- **Close to 1 GW** on own balance sheet
- **2 TWh** annual electricity production
- **> €2 billion** equity & debt raised
- More than **800 employees** worldwide
- **> 5 GW wind/solar pipeline** in Germany, France, Poland, Spain, Ghana, S. Africa, Vietnam, Uruguay



Green Powerfuels



- **MW scale** wind-hydrogen plant in operation since 2011 (**50 t/a**)
- **250 t/a** wind/solar-H2 for **6 fuel-cell trains** connecting **Berlin** to the region
- **210 MW** of electrolyzer capacity in H2-IPCEI, linked to H2 backbone
- Partner of CEMEX to make chemicals from **green hydrogen & cement-CO2**
- Partner of **Linde & Sasol** to participate in **H2Global** with green aviation fuel
- Won a tender to develop a **3 GW green ammonia** plant in **Namibia**



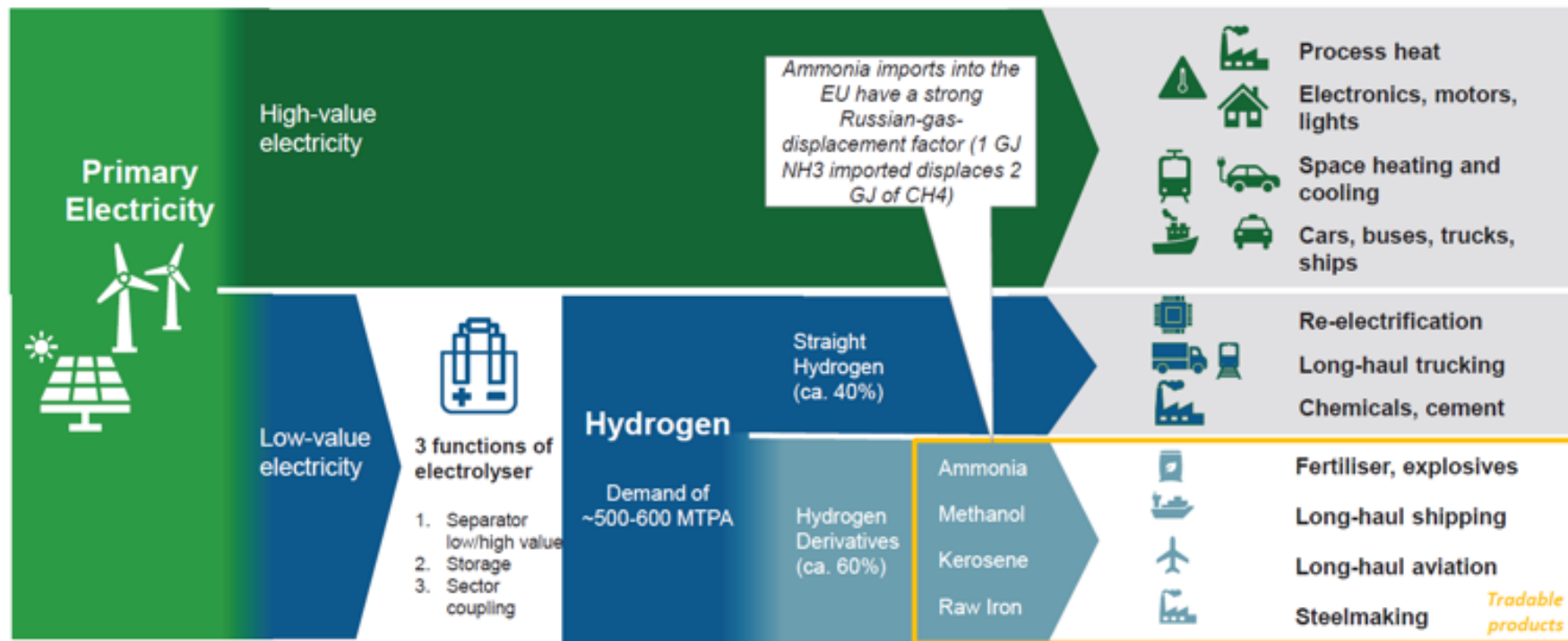
Security of Supply



- **> 6,000 MW** of **renewables** in remote control at own 24/7 control center
- **22 MW / 34 MWh battery** in operation to provide primary reserve
- More than **1,000 km** of **own medium- and high-voltage** grid in operation, plus several substations up to **220 kV**
- Fully integrated hybrid power plant approach (close to 1 GW electrical capacity operational in the north of Berlin) to take full **system responsibility**

The World has a growing Demand for “Deep Green” H2 and its Derivatives

Potential global energy system end state (~ 2050)



Estimated German Market Size According to Current Regulation

		2025	2030	2050	Regulatory Background
		%	%	%	
Green H2 for Industrial Purposes	H2 eq		50%	70%	RED II
Green H2 for electricity generation	H2 eq				RePowerEU
RFNBOs transport sector	H2 eq		2.6%		RED II
Sustainable Aviation Fuels	SAF	2%	5%	63%	ReFuelEU
eFuels	eKeros		0,7%	28%	ReFuelEU (subquota from SAFs)
Maritime Fuels	H2 eq		2%		Fuel EU Maritime *
Advanced Bio-Fuels Germany		0,7%	2,6%		GHG REduction Law Germany
eKerosene Germany	eKeros	0,5%	1%	2%	GHG REduction Law Germany

* proposed, not yet approved

Major incentives for Commercial Offtakes in GER and EU

GER: GHG Reduction Quota (German THG Minderungsquoten)

- 6% emissions reduction in transport by 2030
- Expected increase to 22% in 2023



EU: Green Deal Industrial Plan

- Net Zero Industry Act: simplified regulatory framework for decarbonization technologies
- First binding quantities for industry proposed
- Innovation Fund 800 Mio. EUR and InvestEU to receive additional funds

ReFuelEU (Fit for 55 Package)

- 2% of SAF in aviation by 2025, 5% by 2030 and 63% by 2050



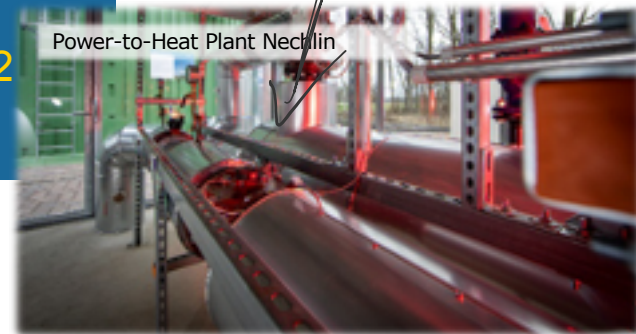
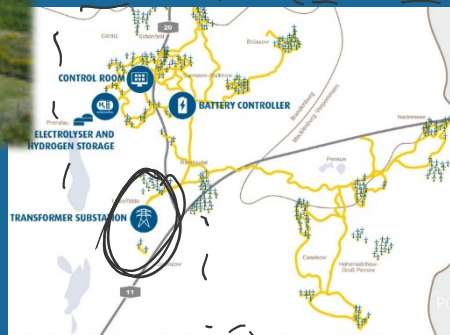
RePowerEU (Fit for 55 Package)

- Additional budget of 270 Billion EUR
- Import of 10 Mta of Green H2 and derivatives to Europe by 2030

FuelEU Maritime (Fit for 55 Package)

- New proposed quota of 2% of renewable fuels for maritime transport by 2030

The Compound Power Plant in Uckermark Makes Green H2 Tangible



Core Quality Areas Needed to Develop Integrated PtX Plants for Import

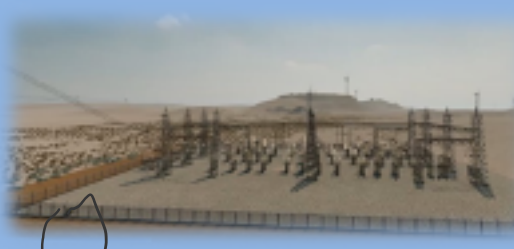
In Development, Construction and Operation

Technical System Optimization (ENERTRAG "SysOpt")

Electrolyzer



Electricity Grids including System Stability



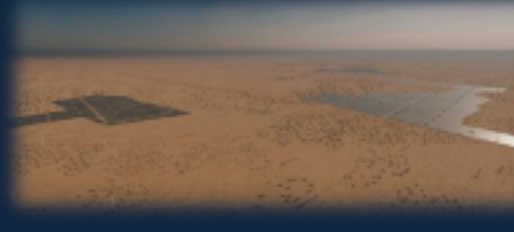
Process Engineering (Synthesis Plant, Water Plant)



Logistics



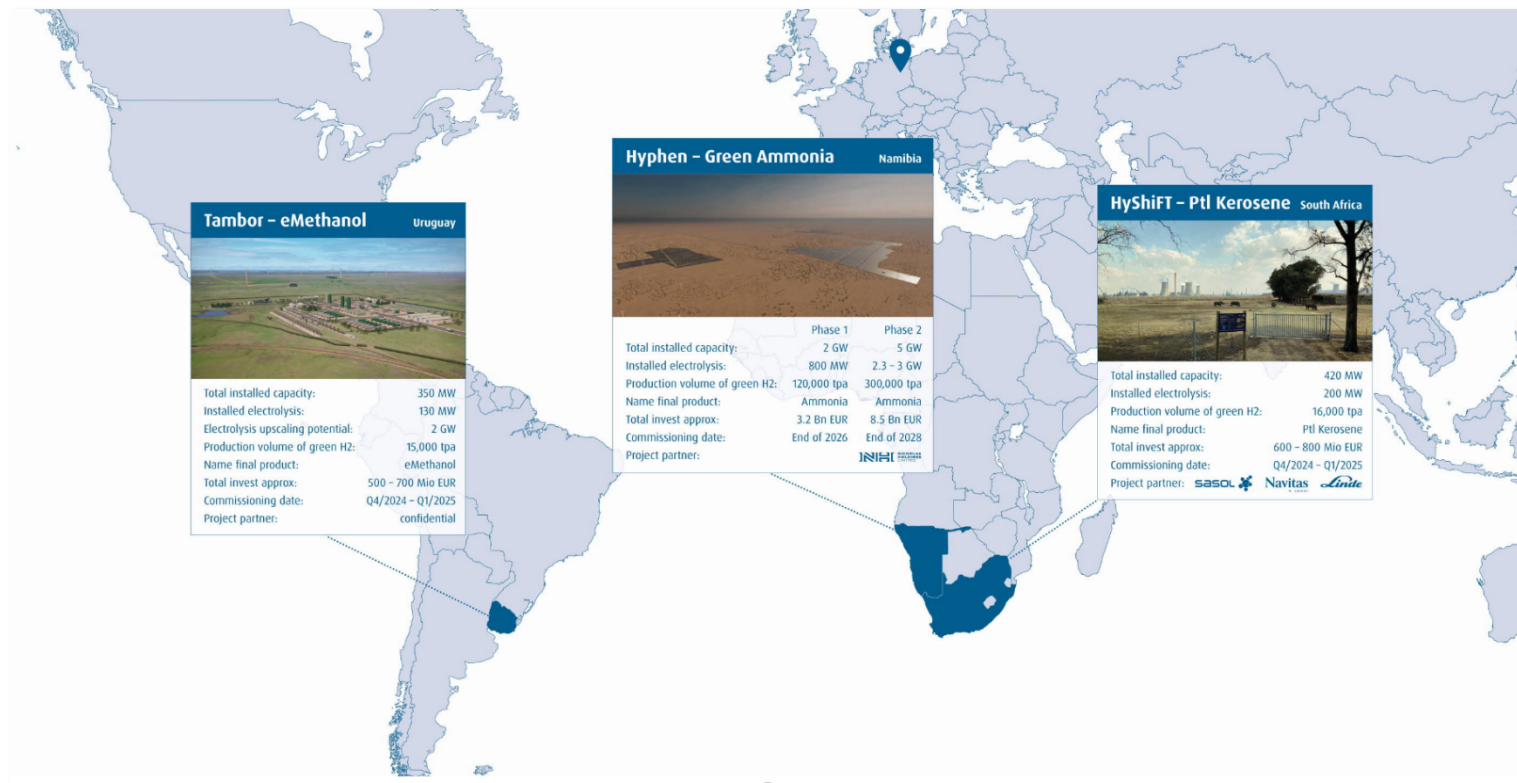
Renewable Energies



Fully Sustainable Thinking

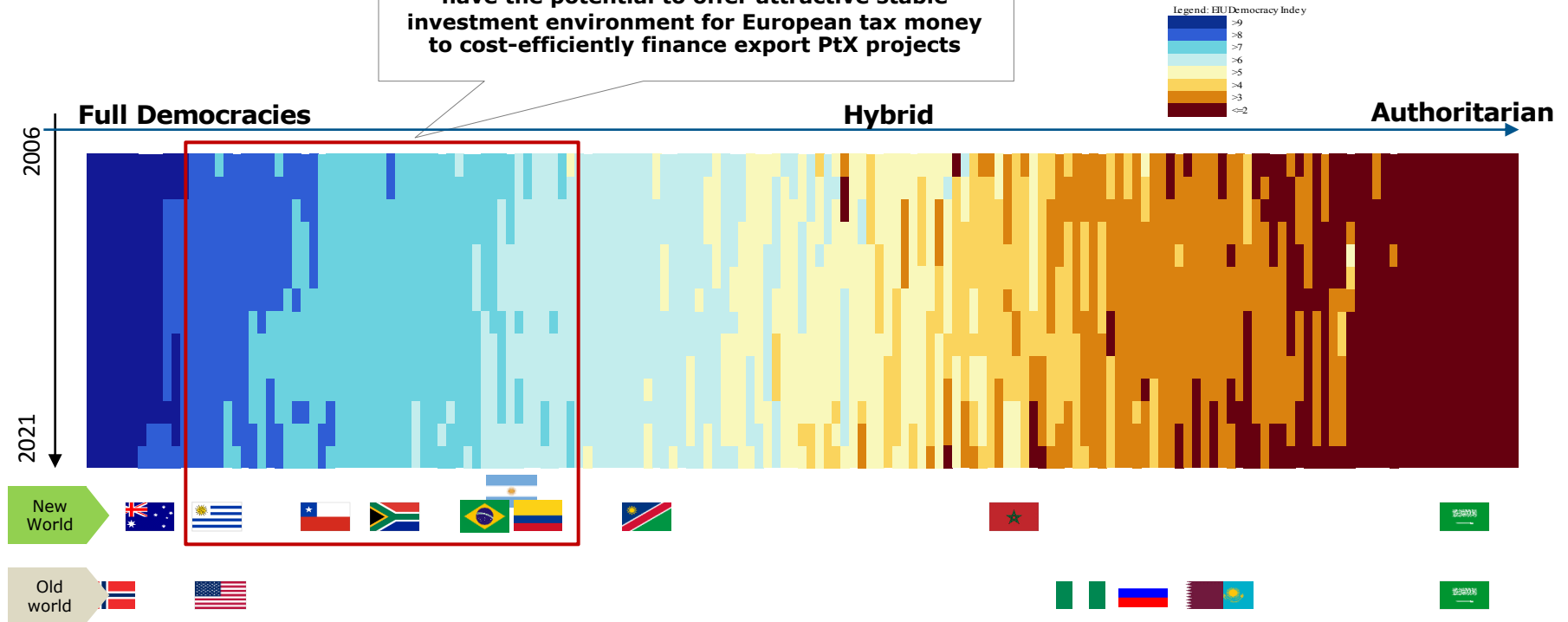


Some of ENERTRAG's Leading Export Projects for Green H2 to Europe



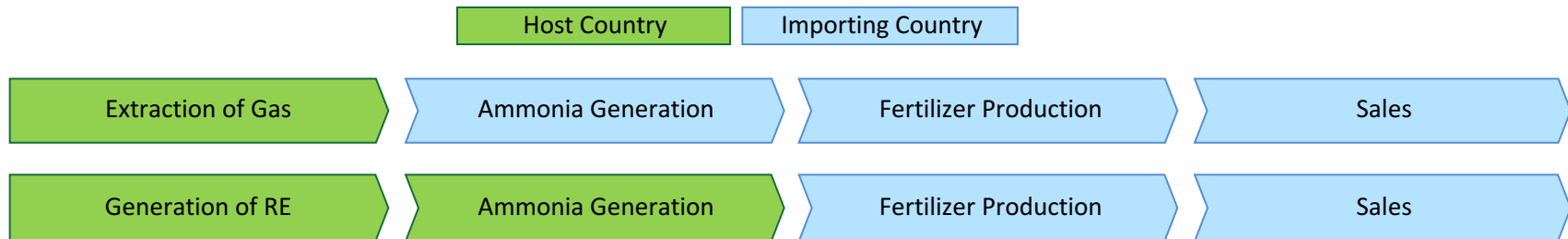
LATAM is an Ideal Partner for Long Term Hydrogen Partnerships

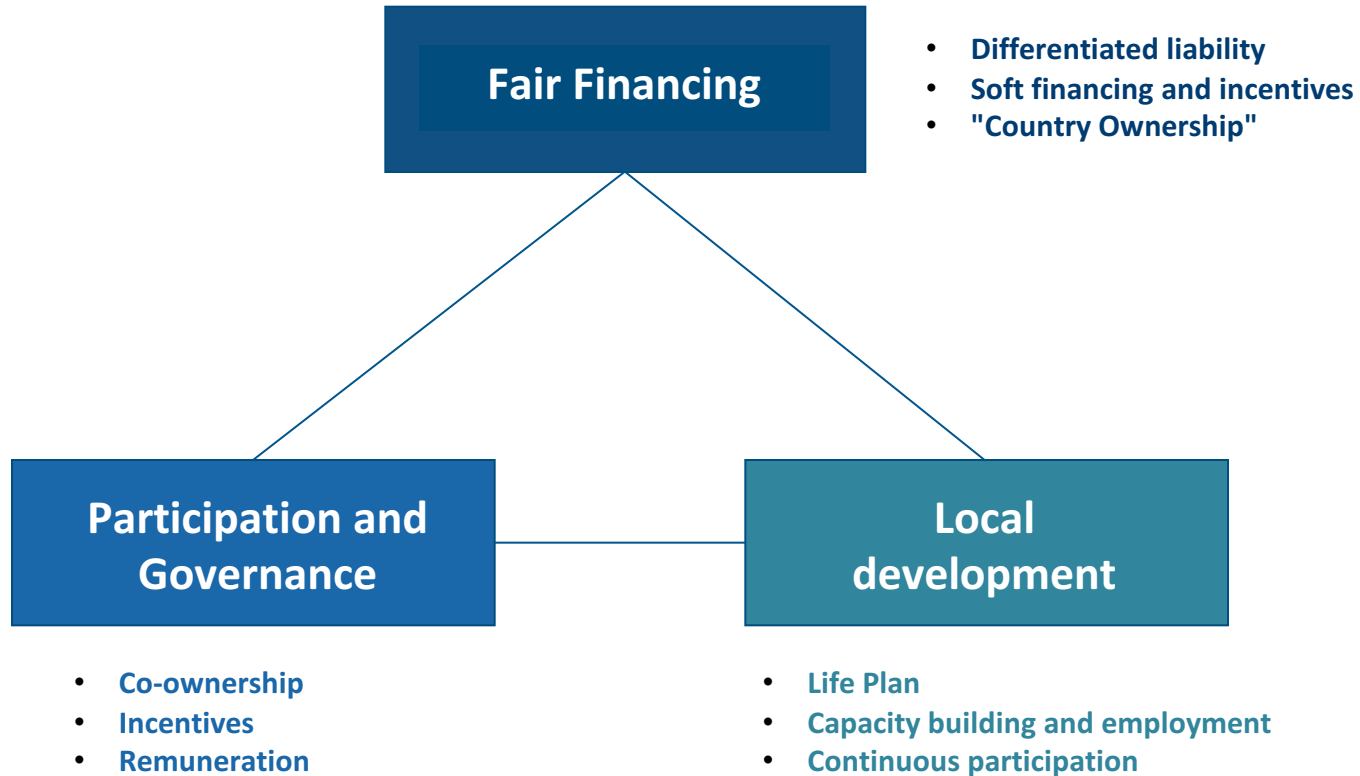
LATAM: Highly stable and democratic countries have the potential to offer attractive stable investment environment for European tax money to cost-efficiently finance export PtX projects







Source: EIU, Democracy Index, 2022





- Highly efficient and cost-effective projects rely on large scale non-recourse debt financing with significantly lower interest rates than equity finance
- A few efficient projects lie in host countries of low interest rates – however most necessary areas for needed quantities reflect this sufficiently
- Uncertainty and country risks are a main reason for the deviations
- Highly sustainable, “just” approaches in development of projects can bring a solution by integration of the value chains
- The basis are long term partnerships between countries and the strong profit of host countries in the value chains of hydrogen



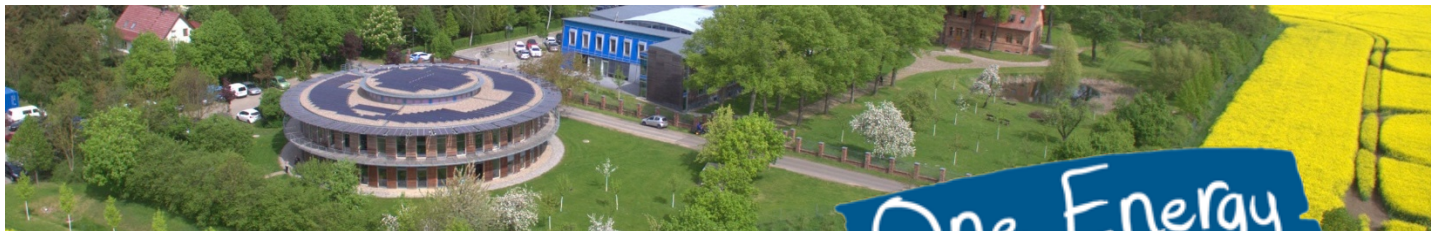


Components of Just transition Identified

		Concrete actions	Effects/Impacts
	Access to low-interest loans	In connection with fair financing funds as a measure for low-interest financing in countries with higher financial risk.	Financing to medium and large companies without dependence on shareholders. Decrease in investment risk.
	Employment generation	Maintaining existing jobs (development without loss) and creating new job opportunities.	Prioritization of local hiring and designated groups. Guarantee of social development at regional and local level
	Gender equity	Promotion of women's participation in central roles related to local and regional social growth through the development of the project.	Elimination of barriers to equal opportunity. Power and participation in decision making.
	Prevention of land grabbing	Fair and transparent negotiation with commitments at the local and regional level.	Stability in terms of land acquisition contracts.

		Concrete actions	Effects/Impacts
	Transparency	Creation of visible and accessible conditions for all stakeholders . Towards the prevention of corruption	Increase in the level of acceptance.
	Technology transfer	Creation of public and educational infrastructure , road infrastructure and infrastructure for the provision of public services at the local and regional level.	Adequate management to cope with the expected demographic and economic growth resulting from the development of the project.
	Capacity building	Capacity building → local "Know-How", oriented towards the generation of skilled and unskilled labor.	Creation of social value at the local level and assurance of stakeholder permanence during and after the project
	Continuous Dialogue	Promotion of transparent and continuous dialogue with stakeholders throughout the project development phases.	Guarantee of the continuity of the dialogue and maintenance of the commitments reached with the parties involved.

Together „one energy ahead“!



Thank you for your attention! Questions?

One Energy
ahead



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