

# ADX Energy Ltd

## Vienna Basin Hydrogen Project – Investor Webinar

*A transformational Austrian green energy development*



*Shown above ADX owned Gaiselberg and Zistersdorf field production infrastructure in the Vienna Basin as well as a proximal wind farm*

# Disclaimer Statement



## Important Notice

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**Persons compiling information about Hydrocarbons.** Pursuant to the requirements of the ASX Listing Rule 5.31, the unaudited technical and reserves information contained in this presentation has been prepared under the supervision of Mr Paul Fink. Mr Fink is Technical Director of ADX Energy Ltd, is a qualified geophysicist with 23 years of technical, commercial and management experience in exploration for, appraisal and development of oil and gas resources. Mr. Fink has consented to the inclusion of this information in the form and context in which it appears. Mr. Fink is a member of the EAGE (European Association of Geoscientists & Engineers) and FIDIC (Federation of Consulting Engineers).

An independent audit of developed reserves has been completed for ADX' Zistersdorf and Gaiselberg fields ("Fields") in the Vienna basin, Austria by RISC Advisory Pty Ltd ("RISC"). RISC conducted an independent audit of ADX' field evaluations, including production forecasts, cost estimates and project economics. Production from existing wells is classified as Developed Producing. Production from planned recompletion of the existing wells to new intervals is classified as Developed Non-Producing. RISC is an independent advisory firm offering the highest level of technical and commercial advice to a broad range of clients in the energy industries, worldwide. RISC has offices in London, Perth, Brisbane and South East Asia and has completed assignments in more than 90 countries for over 500 clients and have grown to become an international energy advisor of choice.

# Disclaimer Statement (2)

## PRMS Reserves Classifications used in this Report

**Developed Reserves** are quantities expected to be recovered from existing wells and facilities.

*Developed Producing Reserves are expected to be recovered from completion intervals that are open and producing at the time of the estimate.*

*Developed Non-Producing Reserves* include shut-in and behind-pipe reserves with minor costs to access.

*Undeveloped Reserves* are quantities expected to be recovered through future significant investments.

A. **Proved Reserves (1P)** are those quantities of Petroleum that, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from known reservoirs and under defined technical and commercial conditions. If deterministic methods are used, the term “reasonable certainty” is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability that the quantities actually recovered will equal or exceed the estimate.

B. **Probable Reserves** are those additional Reserves which analysis of geoscience and engineering data indicate are less likely to be recovered than Proved Reserves but more certain to be recovered than Possible Reserves. It is equally likely that actual remaining quantities recovered will be greater than or less than the sum of the estimated Proved plus Probable Reserves (2P). In this context, when probabilistic methods are used, there should be at least a 50% probability that the actual quantities recovered will equal or exceed the 2P estimate.

C. **Possible Reserves** are those additional Reserves that analysis of geoscience and engineering data suggest are less likely to be recoverable than Probable Reserves. The total quantities ultimately recovered from the project have a low probability to exceed the sum of Proved plus Probable plus Possible (3P) Reserves, which is equivalent to the high-estimate scenario. When probabilistic methods are used, there should be at least a 10% probability that the actual quantities recovered will equal or exceed the 3P estimate. Possible Reserves that are located outside of the 2P area (not upside quantities to the 2P scenario) may exist only when the commercial and technical maturity criteria have been met (that incorporate the Possible development scope). Standalone Possible Reserves must reference a commercial 2P project.

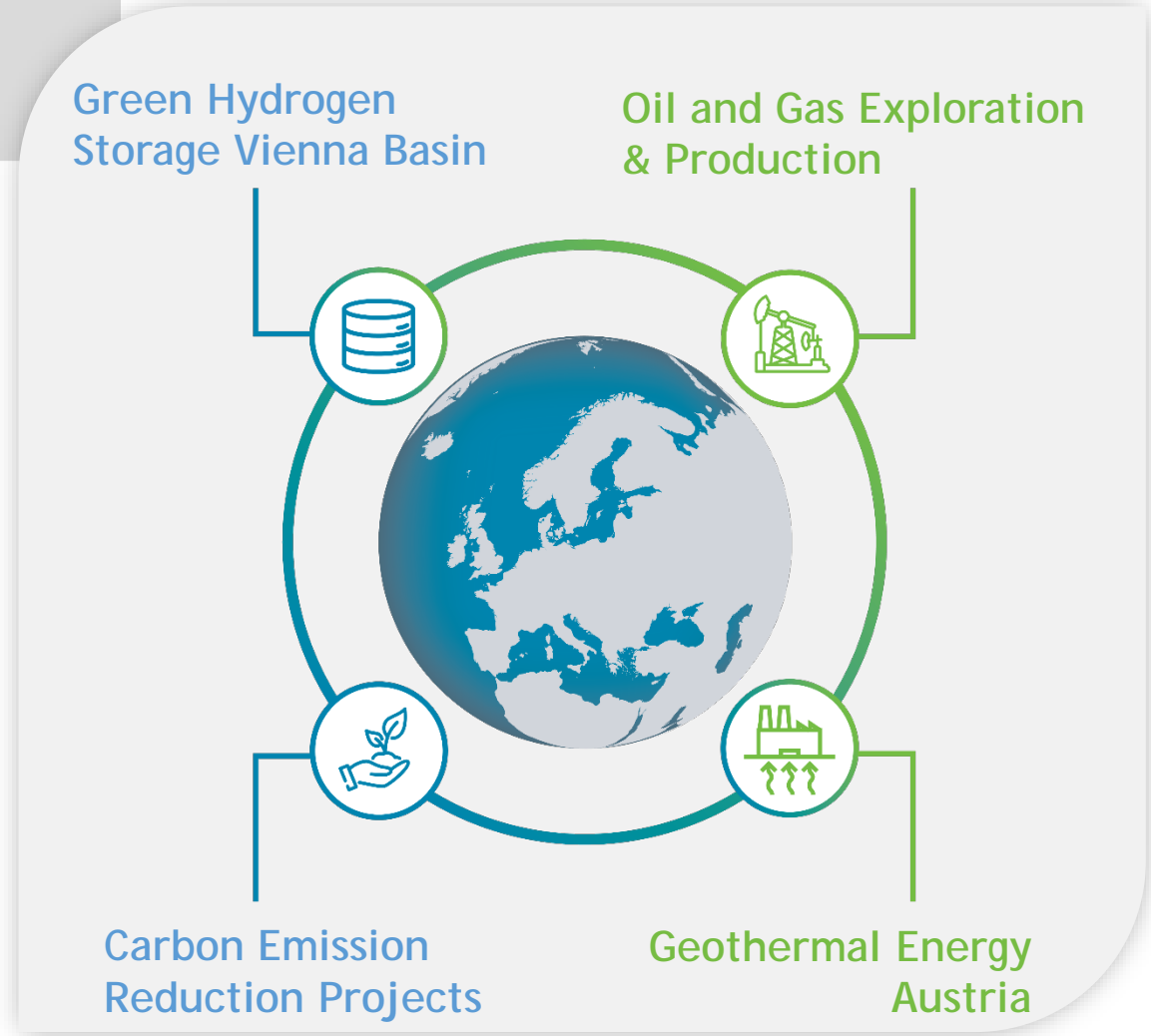
# ADX Strategic focus

ADX focus is on becoming a niche European energy producer and a provider of green energy solutions for a low carbon society

We operate energy projects in Austria, Romania and Italy

- » We produce safe, long life, low emissions oil and gas with substantial low-risk exploration upside to fund growth
- » We are redeploying our assets, people and skills into zero carbon energy production including:
  - Hydrogen (H<sub>2</sub>) production and storage project, and
  - Novel geothermal pilot project with Siemens Energy
- » ADX is focused on becoming a green H<sub>2</sub> supplier in the Vienna basin
- » We are pursuing other intelligent technological solutions and strategic partnerships to secure other synergistic green energy projects

*“By investing our oil and gas cash flows into long term, low carbon energy assets we are enhancing the value of both asset classes”*



# ADX positioning in Energy markets

## Immediate outlook for oil and gas remains bright

- » Oil and gas supply constraints are likely to continue with less supply
- » The oil and gas majors are paralysed but the need for responsibly produced (low emissions) hydrocarbons continues to grow
- » Being in a supportive jurisdiction is critical to success
- » ESG will become increasingly important to remain supported
- » But its not just oil and gas price that is important - Carbon price??

## Transition to green energy is good business

- » Asset redeployment adds value and extends life
- » Underground reservoirs provide multiple green energy solutions
  - Hydrogen storage, geothermal, CO<sub>2</sub> storage, underground methanisation
- » Geography and geology is important
  - Reservoir characteristics, proximity to green energy & availability of export infrastructure
- » Political and Financial Support (excellent in Austria EU)
  - Subsidies and loans for green projects are big enablers
  - Rising cost of carbon is a strong motivation for renewables

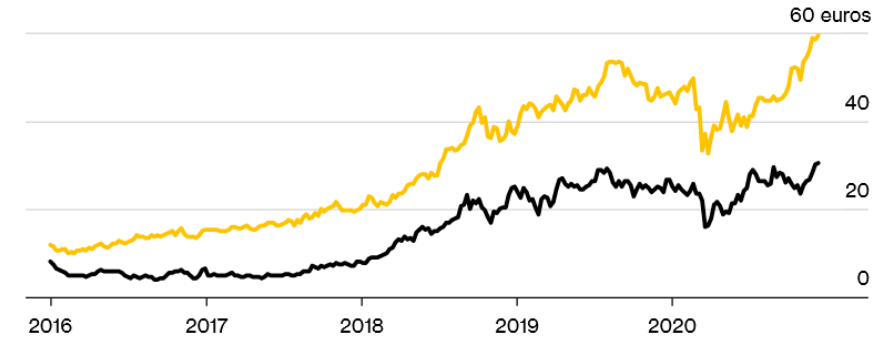
*“Oil and gas companies that transition effectively can be the solution not the problem”*

## Green Energy valuations track Carbon Price

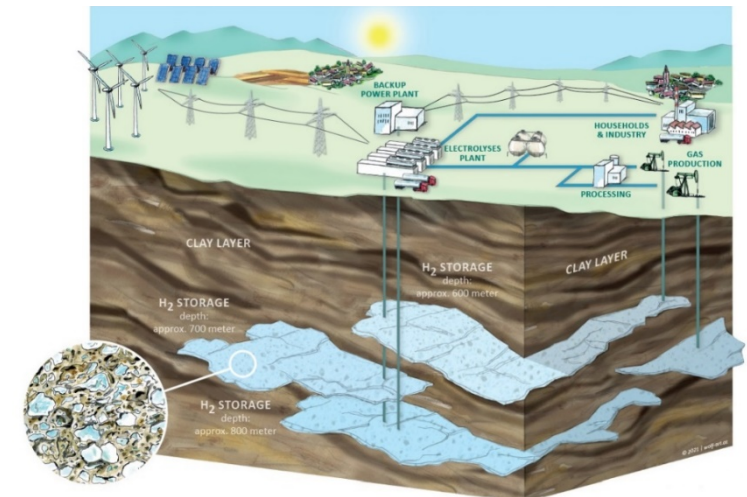
### Verbund Shares Track Carbon

Austrian utility's stock is up fourfold since 2016

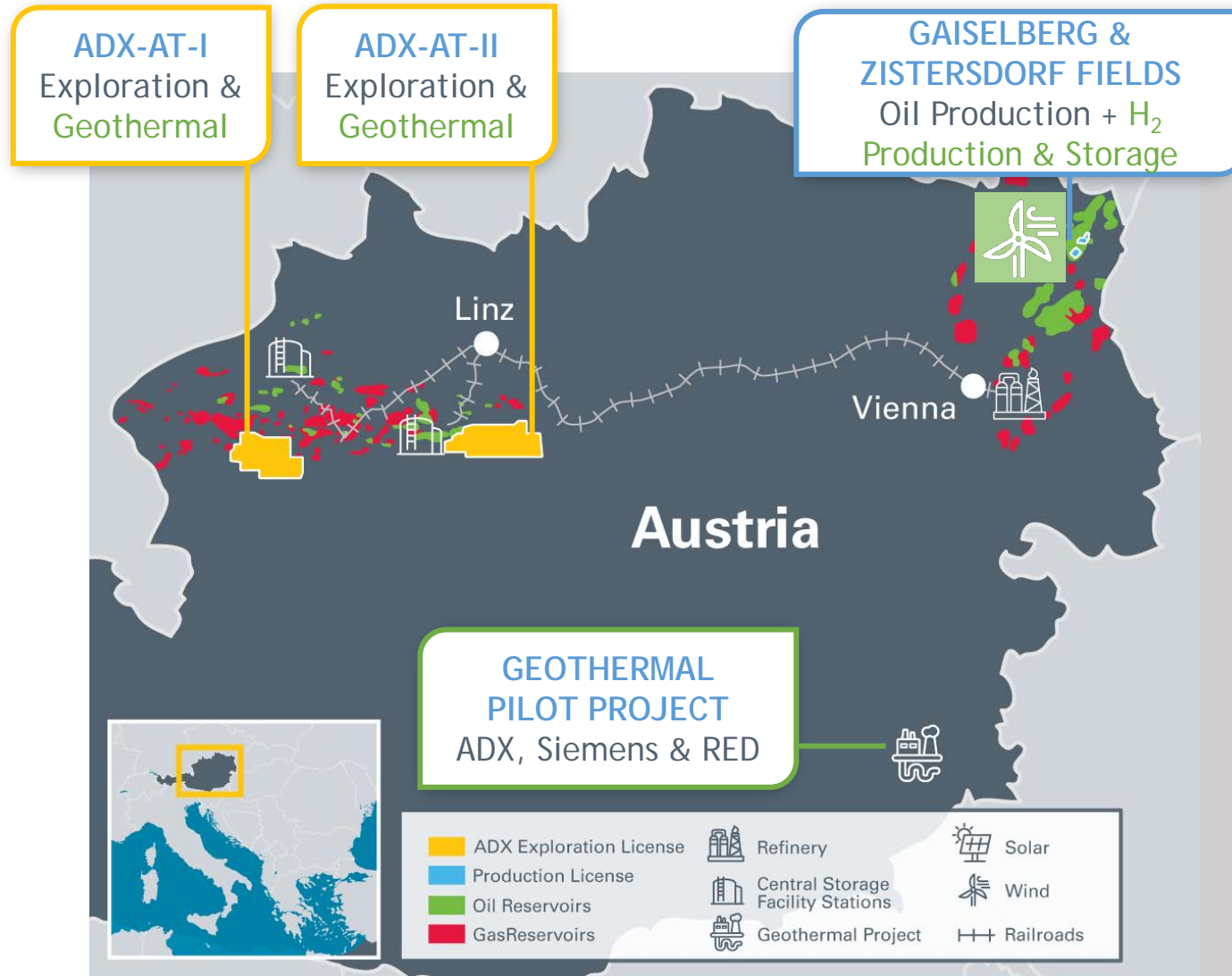
Carbon Certificates / Verbund AG



Source: Data compiled by Bloomberg



# ADX conventional & green energy assets in Austria



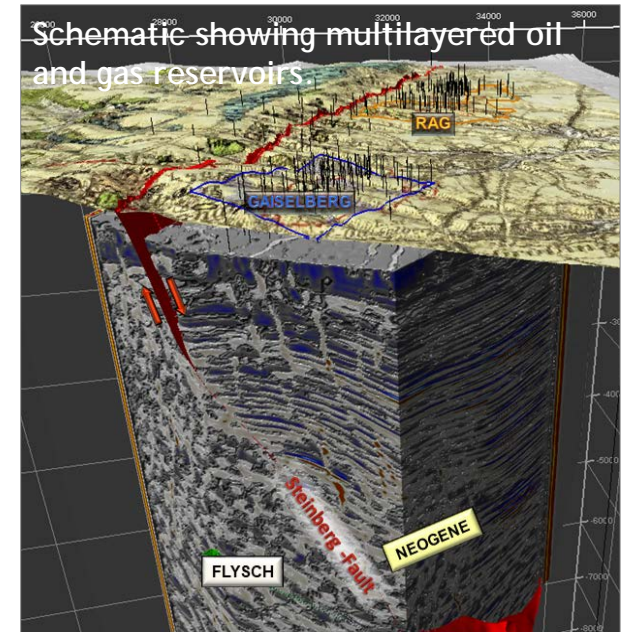
A rare and unique position for conventional and green energy projects

- Entry into a 75-year energy duopoly
- World-class oil & gas basins ~1 billion barrels of oil and 2.7 Tcf of gas
- ADX is one of 3 production and 2 exploration operators
- Excellent oil & gas and green energy infrastructure
- Exceptional access to 3D seismic geotechnical data
- Capable & experienced local team
- Government funding and regulatory support

# Vienna Basin Fields - Transition to low carbon future

## Summary of field and infrastructure attributes

- 100% equity purchased in December 2019
- Low decline long lived oil and gas production (currently 300 BOEPD)
- Currently generating approximately A\$ 900,000 per month of sales revenues
- Low emission production from state of the art facilities
- Ownership of 13.7 hectares of land which can be utilised for future hydrogen project infrastructure
- High value sweet crude oil (33° API - 7.9% discount to Brent)
- Depleted gas reservoirs suitable for Hydrogen or CO<sub>2</sub> storage
- Connected to oil export pipelines to Vienna (70kms) and local gas grid for lower Austria
- Excellent infrastructure access for oil, gas and hydrogen



Photograph showing ADX Gaiselberg and Zistersdorf Field work over operations with wind farms in the background.

Multilayer reservoir producing since 1935	1.85 mmbbl 2P developed reserves <i>Note 1</i>	Pipeline to Schwechat refinery Vienna	34 wells, 20 producers, 14 injectors	4,000 boepd production capacity
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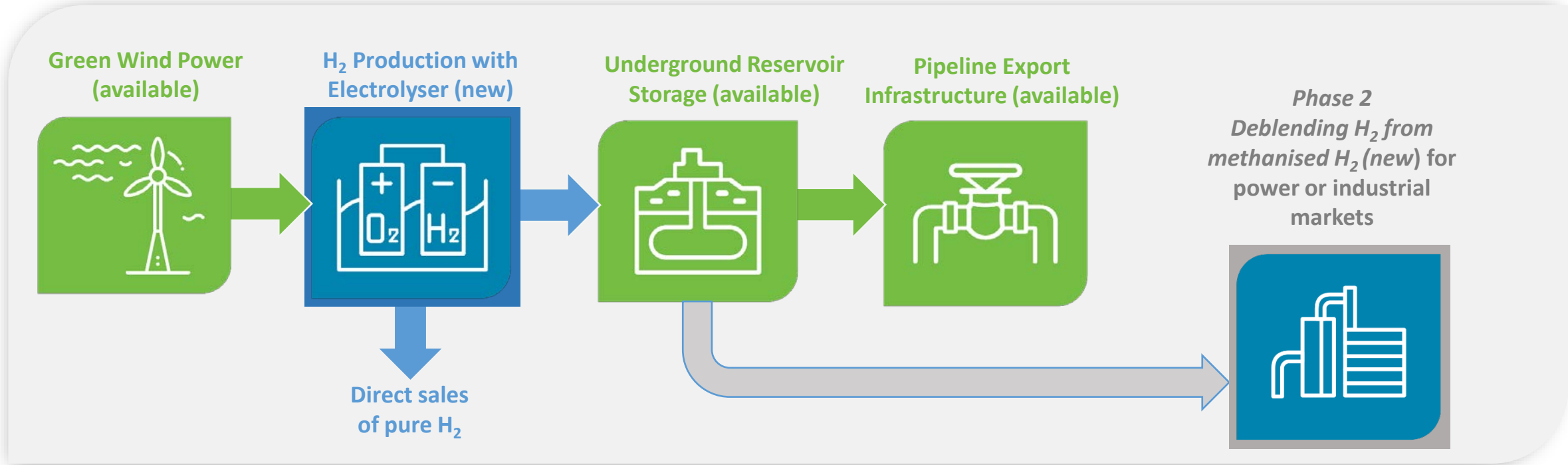
**Note 1: Reserves Reporting Date (Independently Audited) : Gaiselberg and Zistersdorf in Austria 4/11/2021**

# Vienna Basin H<sub>2</sub> Project - A phased approach

## Project scope and phasing

**Phase 1 (2.5 MW / 370 t of H<sub>2</sub> prod. p.a. cap)**  
Pilot project to demonstrate viability and position project in the **Green H<sub>2</sub>** value chain

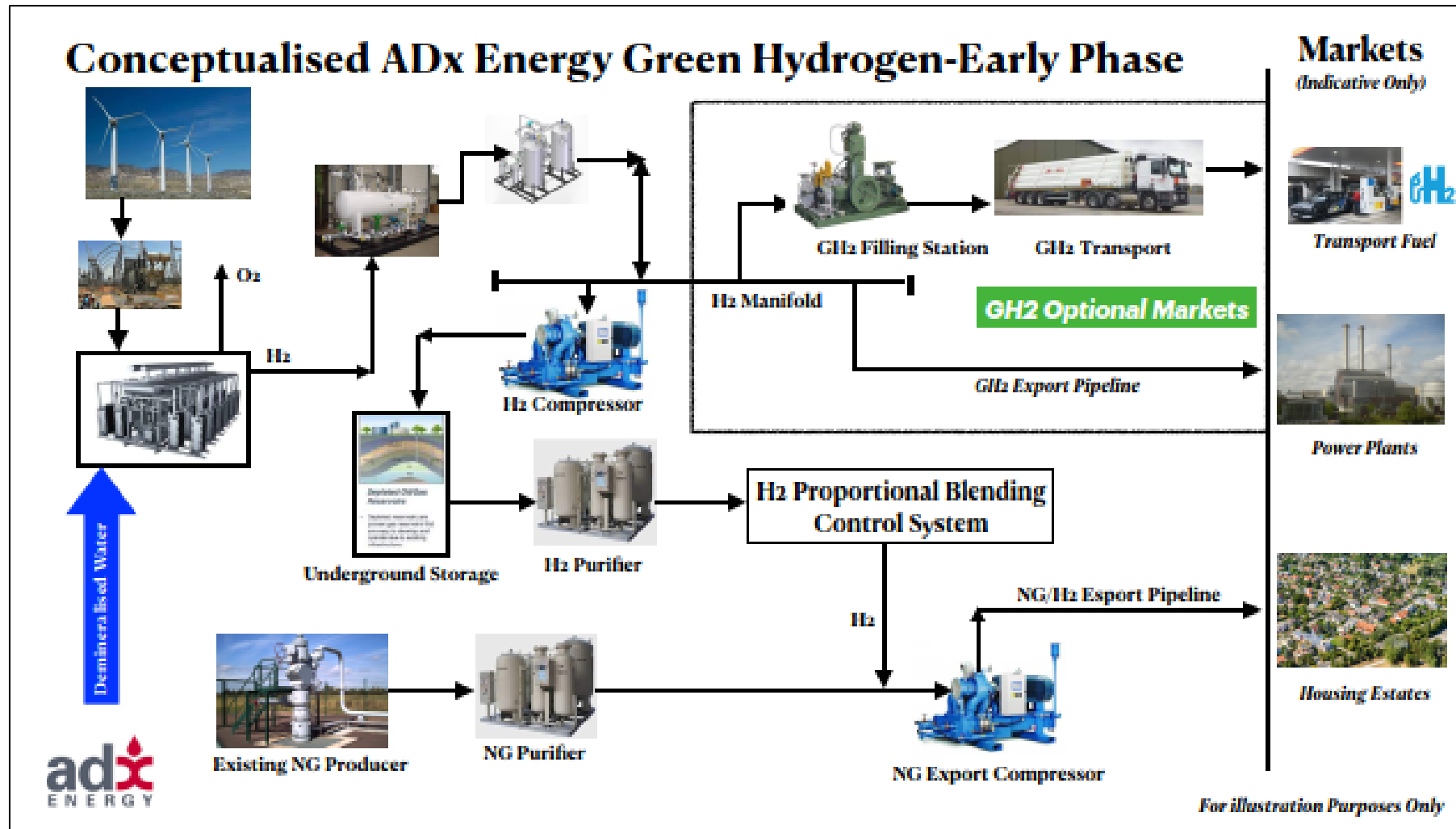
**Phase 2 (30 to 50 MW / 8,800 t of H<sub>2</sub> prod. p.a. cap)**  
Project upscaling to commercial capacity with increasing market demand for **Green H<sub>2</sub>** and availability of green power



*“A phased approach enables the initial establishment of project to demonstrate viability while further green power supply is sourced and hydrogen markets are developed”*



# Vienna Basin H<sub>2</sub> Project - Hydrogen processing chain



*“Choosing technologically proven, simplest and currently available commercialisation pathway”*

# Vienna Basin H<sub>2</sub> Project - Why store underground

## An efficient energy storage solution

- » A cost effective, safe, large scale energy storage solution that have stored methane for millions of years
- » Out of sight with minimal surface footprint unlike pumped hydro or batteries
- » Larger reservoirs have a storage capacity of up to 100 GWh of H<sub>2</sub>
- » High efficiency compared to a 200 MWh surface battery system<sup>1</sup>:
  - 100 times less land usage (100 m<sup>2</sup> vs 10,000 m<sup>2</sup>)
  - 500 times higher energy storage capacity
  - 2,000 times lower cost on an energy equivalent basis
- » Sufficient energy to power 20,000 households for one year
- » Multiple reservoirs allows scalable solution
- » High injection and offtake rates are possible

<sup>1</sup> Such as battery systems developed by Tesla, Inc.

Parameter	Unit
Reservoir depth	660 meters
Geometric volume	0,5 MM m <sup>3</sup>
Hydrogen storage volume	25 MM m <sup>3</sup>
<b>Hydrogen energy storage capacity</b>	<b>75 GWh (max)</b>
Reservoir pressure	Around 60 bar
H <sub>2</sub> max. flow rate	30 MWh/ h
H <sub>2</sub> max. flow rate	0,2 MM m <sup>3</sup> /d
Electrolyser max. power (Upscaled development)	50 MW



**Storage capacity can be increased by a factor of 1:10.**

The ADX hydrogen storage reservoirs are “porous media” reservoirs.



**Porous media reservoirs are the safest possible form of underground storage.**

The same rocks have contained natural gas for several million years without any leakage.

*“A large-scale storage solution is needed close to Vienna for a green hydrogen transition to succeed”*

# Vienna Basin H<sub>2</sub> Project - Project objectives

## Phase 1 Project Commercial and BOD philosophy

- » Utilise curtailed green power from the nearby wind farm owned by Windkraft Simonsfeld AG\* to produce green hydrogen at our producing Gaiselberg and Zistersdorf fields.
- » Basis of design approach
  - » Phase 1 project electrolyser selection will be scaled based on current availability green power with the ability to upscale
  - » Minimise project complexity and cost by using existing infrastructure and off the shelf technology
  - » Construction of an interconnector bypassing the grid ensures ability to receive curtailed power when available
- » Hydrogen sales via local natural gas network now able to receive up to 10% hydrogen concentration by volume and proximal local industry
- » Make provision for direct hydrogen sales for transportation etc

*“A unique opportunity to develop of hydrogen ecosystem and commence decarbonisation of the local community”*

\*The Parties have agreed a Memorandum of Agreement to collaborate on supply of green power and project participation.



# Vienna Basin H<sub>2</sub> Project - Corporate objectives

## Corporate philosophy

- » Utilise skills and financial resources to progress renewable asset opportunities to FID and transform the Company's asset base
- » Continue to develop important relationships such as Windkraft Simonsfeld and Siemens which enable the low carbon transformation
- » Establish renewable energy subsidiary arms length commercial relationships for access to required low carbon assets and skills
- » Utilise green subsidiary to attract ESG focussed funding
- » Initiate Vienna Basin Hydrogen project as quickly as possible to benefit from first mover advantage and develop credibility as a green hydrogen supplier
- » Scale hydrogen project in line with increase green power availability and green hydrogen markets

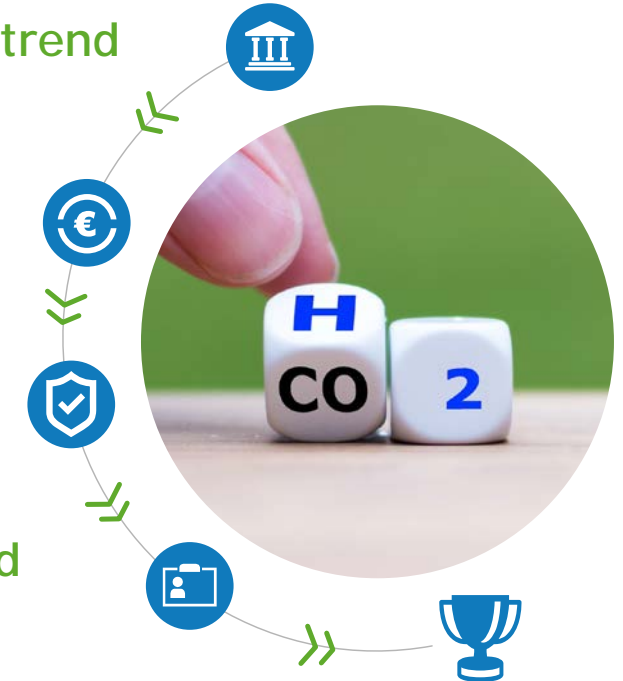
Participate in Hydrogen megatrend

Optimize value from project upscale

Use momentum to access finance and subsidies

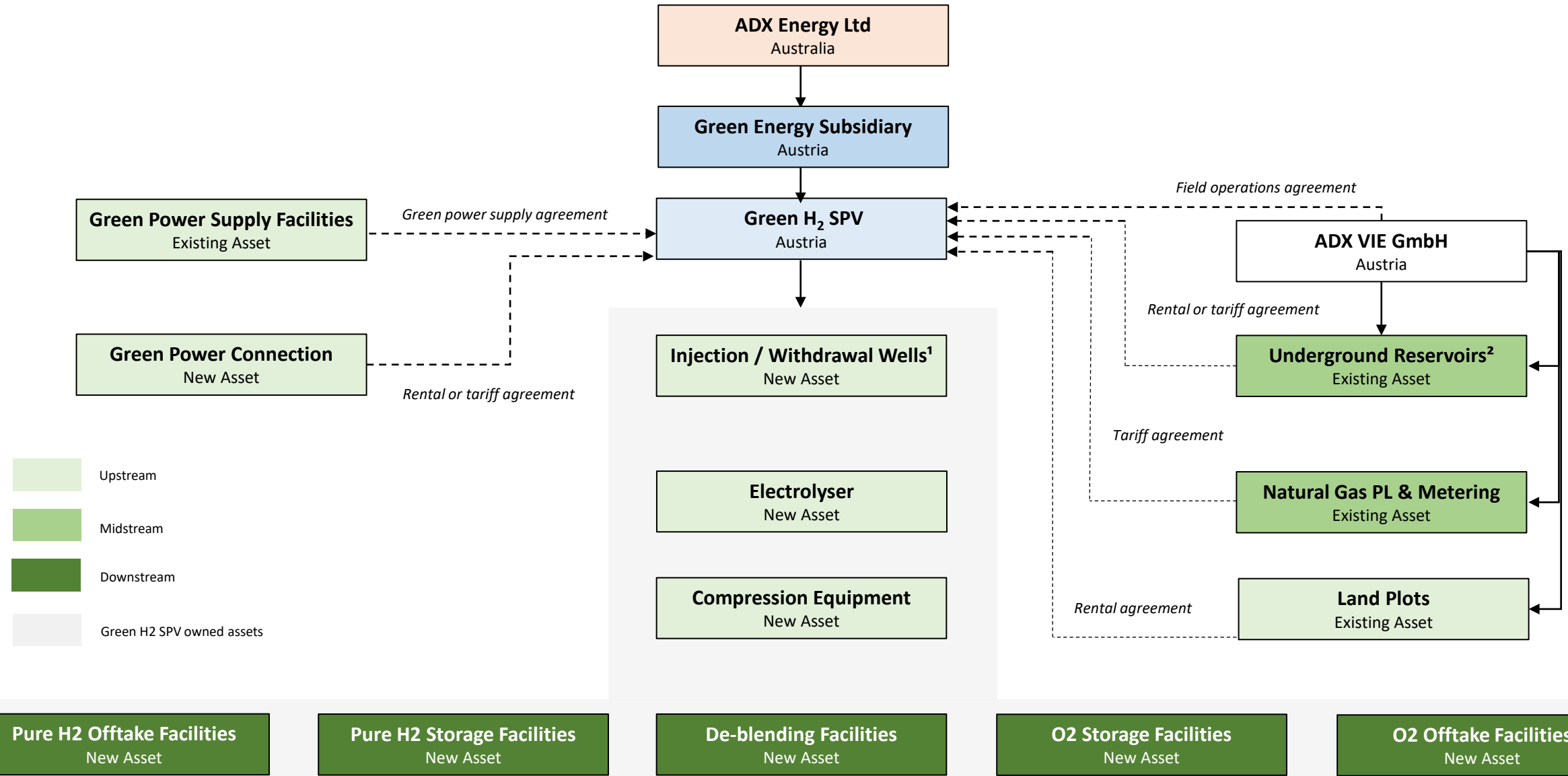
Develop value recognition and funding in green corporate entity

*\* 750 bn EUR total subsidies for Green Deal in EU*



***“Establish ADX as zero carbon hydrogen producer leveraging our assets, relationships and skills”***

# Vienna Basin H<sub>2</sub> Project - Indicative Commercial Structure



<sup>1</sup> New wells to be drilled and completed in the underground reservoirs selected for H<sub>2</sub> storage <sup>2</sup> Includes existing wells already drilled in the underground reservoirs selected for H<sub>2</sub> storage

# Vienna Basin H<sub>2</sub> Project - Success factors

A unique combination of circumstances has created an exceptional opportunity

- » Availability of green power\* and water for green hydrogen production at our fields
- » ADX owned land and facilities for the installation of off the shelf electrolyser
- » The ability to store large quantities of intermittently produced hydrogen economically in depleted ADX reservoirs
- » The availability of an existing local pipeline network where we can deliver Hydrogen for use by the local industry and the community; and
- » Proximity to the city of Vienna with substantial high value market development opportunities

\* Government policy is 6 fold increase in renewable power by 2030

***“Everything we need to immediately pursue our project is available or off the shelf technology”***



ADX fields and surrounding wind turbines

Gas pipelines in the Vienna Basin, Austria  
Source: Gas Connect Austria



ADX gas compressor; entry point into regional (11 bar) mid pressure gas grid

ADX field production entry point into local (6 bar) low pressure gas grid

# Vienna Basin H<sub>2</sub> Project - Phase I project analogy

## Power-to-Gas (P2G) facility

- » Recently completed facility
- » Utilising excess electricity from five wind turbines
- » Conversion of H<sub>2</sub> with 2.4 MW PEM electrolysis unit
- » Up to 450 m<sup>3</sup> (40kg) of H<sub>2</sub> per hour
- » Feeds H<sub>2</sub> into the natural gas network or a neighbouring hydrogen filling station
- » A battery storage system at site with a capacity of 2 megawatts



Brunsbüttel, Hamburg, 2.4 MW electrolyser facility

***Germany's national hydrogen strategy aims to build 5GW of electrolyser capacity by 2030 targeting decarbonisation of mobility and industrial sectors.***

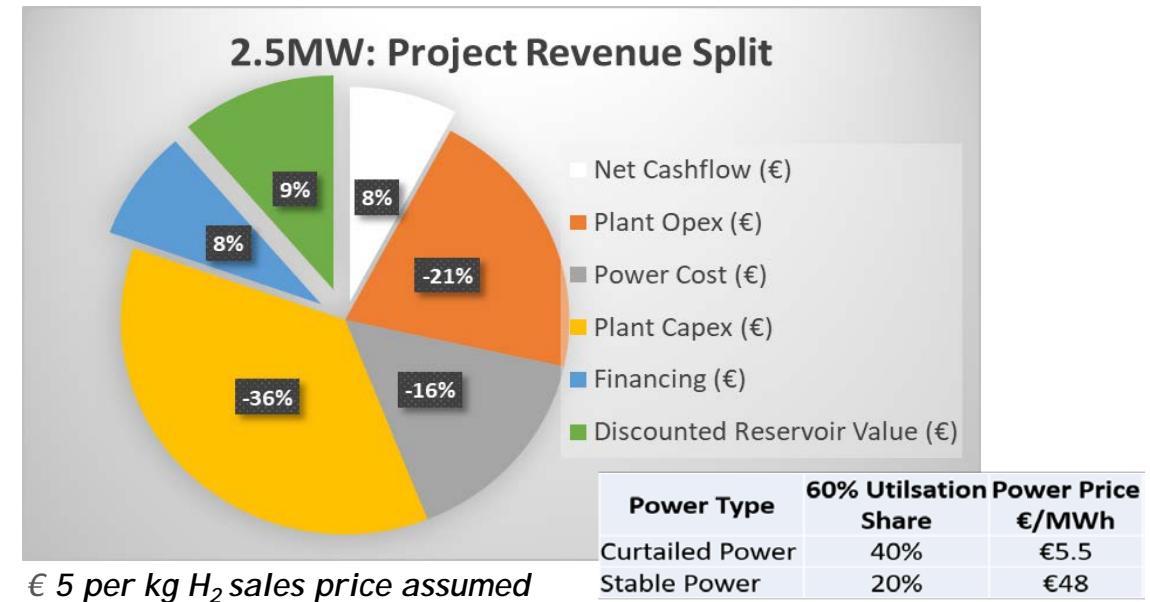
# Vienna Basin H<sub>2</sub> Project - Phase I facts and figures

## Facilities and reservoir storage assumptions

- » Interconnector
  - » Provide direct green power supply Prinzendorf and Poysdorf-Wilfersdorf windfarms
- » Electrolyser
  - » 2.5 MW total capacity, installed over 2 years
  - » 70% conversion efficiency (in line with average for PEM electrolyser). Industry expectation is an increase to 80%
  - » 1,072 kg/day H<sub>2</sub> production
  - » Unplanned downtime 2%
  - » Refurbishment requirement after 50,000 full load hours (cost estimated at 60% original CAPEX)
- » Reservoir storage
  - » Assumed no new wells required. (further study required)
  - » One existing well is sufficient to meet varying injection and Maximum Daily Withdrawal Capacity (MWDC)
  - » 10% "buffer" to allow for gas cushion and any minor losses

## Prefeasibility cost estimates

- » Estimated upfront CAPEX € 6.5 mill (20% contingency)
  - » Interconnector: € 1.0 million
  - » Electrolyser and Balance of Plant: € 4.0 million
  - » Installed 2 x 1.25 MW - 2 years FID to start up
  - » Current electrolyser costs range € 800 - € 1,200k per MW
    - » Expected 50% reduction within 5-10 years
  - » CAPEX included for other systems





# Vienna Basin H<sub>2</sub> Project - Next Steps

## Project definition

- Finalise ownership and commercial structure with project partners
- Finalise power supply agreement
- H<sub>2</sub> sales discussions with gas utility and local industry opportunities
- Finalise scope of work for engineering contractor
- Engage engineering contractor to finalise basis of design and project execution plan
- Develop project budget and economics for pilot and scaled up project
- Finalise approvals and licenses to operate
- Continue to progress green power and green H<sub>2</sub> sales opportunities

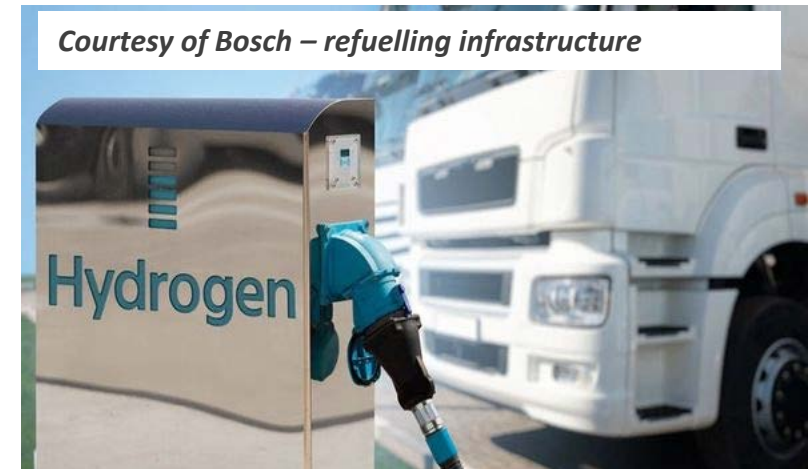
## Green project company formation

- Set-up separate corporate structure and intercompany agreements for green project developments
- Establish ESG accreditation for future debt and equity funding

## Progress subsidies and finance

- Register and apply for voluntary emissions reduction (VER) credits
- Subsidy applications in Austria and EU
- Source equity and project funding for developments

*“ADX pathway for participation in the Hydrogen megatrend”*



*Courtesy of Bosch – refuelling infrastructure*

Bosch to spend EUR 800 million to develop infrastructure for hydrogen vehicles

*Source: express.co.uk*



Hybrit (Sweden) - 1.2 million tonnes pa clean steel pilot and green/blue hydrogen project using 500 MW electrolyser *Source: RECHARGE*

# Contact details

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*“Thank you for your low carbon attendance”*



*Embracing the future of green energy in Austria!*

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