Vestas

Riding the Green Wave

EFFICIENT ELEPHANTS

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Question

What should Vestas **strategy be towards 2030** to create new **business from Power-to-X?**

Strategy

Vestas should design, supply and service hydrogen electrolysers in on- and off shore wind projects, while minimizing uncertainty by leveraging capabilities and partnerships

Impact

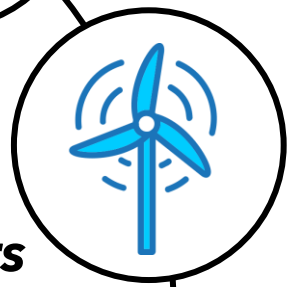
14%
EBIT margin in 2030

71m tonnes
saved in CO2 emission

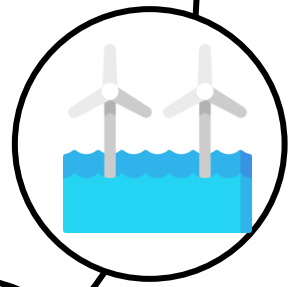
Vestas has the capabilities to develop a strong position in an untapped market using PtX

Global leaders in wind because….

Vestas drives innovation and optimisation in the whole value chain



Longstanding industry experience in wind farms



Performs and profits exceptionally well in servicing existing wind farms

Good relations to suppliers and many established partnerships

Renewable Power Developers Challenge

80%	20%

How to target untapped market?

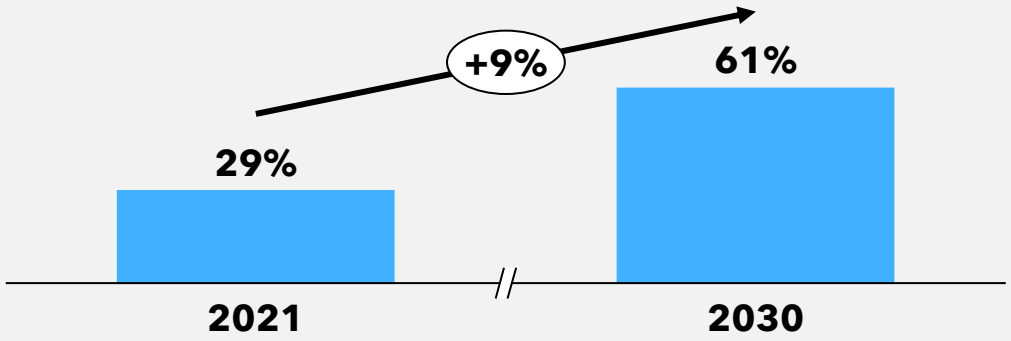
Penetrate	Direct Electrification	Indirect Electrification

Vestas should focus on Power-to-X

= key challenges for success

Increasing demand and current challenges makes hydrogen and electrolysis the perfect fit

Renewables share of power generation



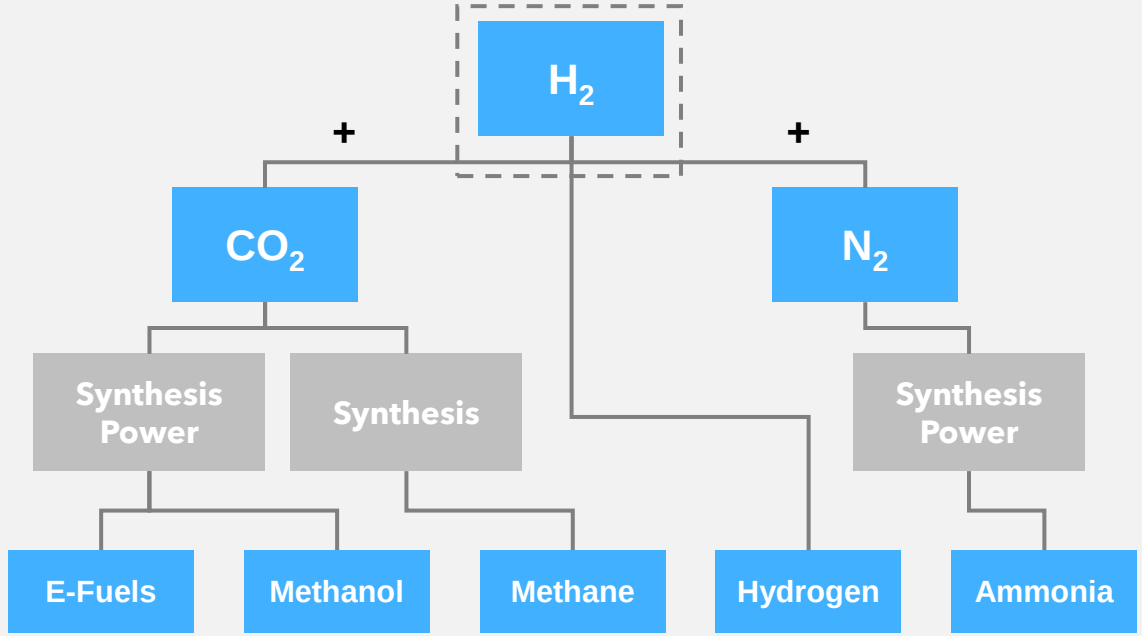
Challenges for the renewable energy sector

Flexibility

Negative prices

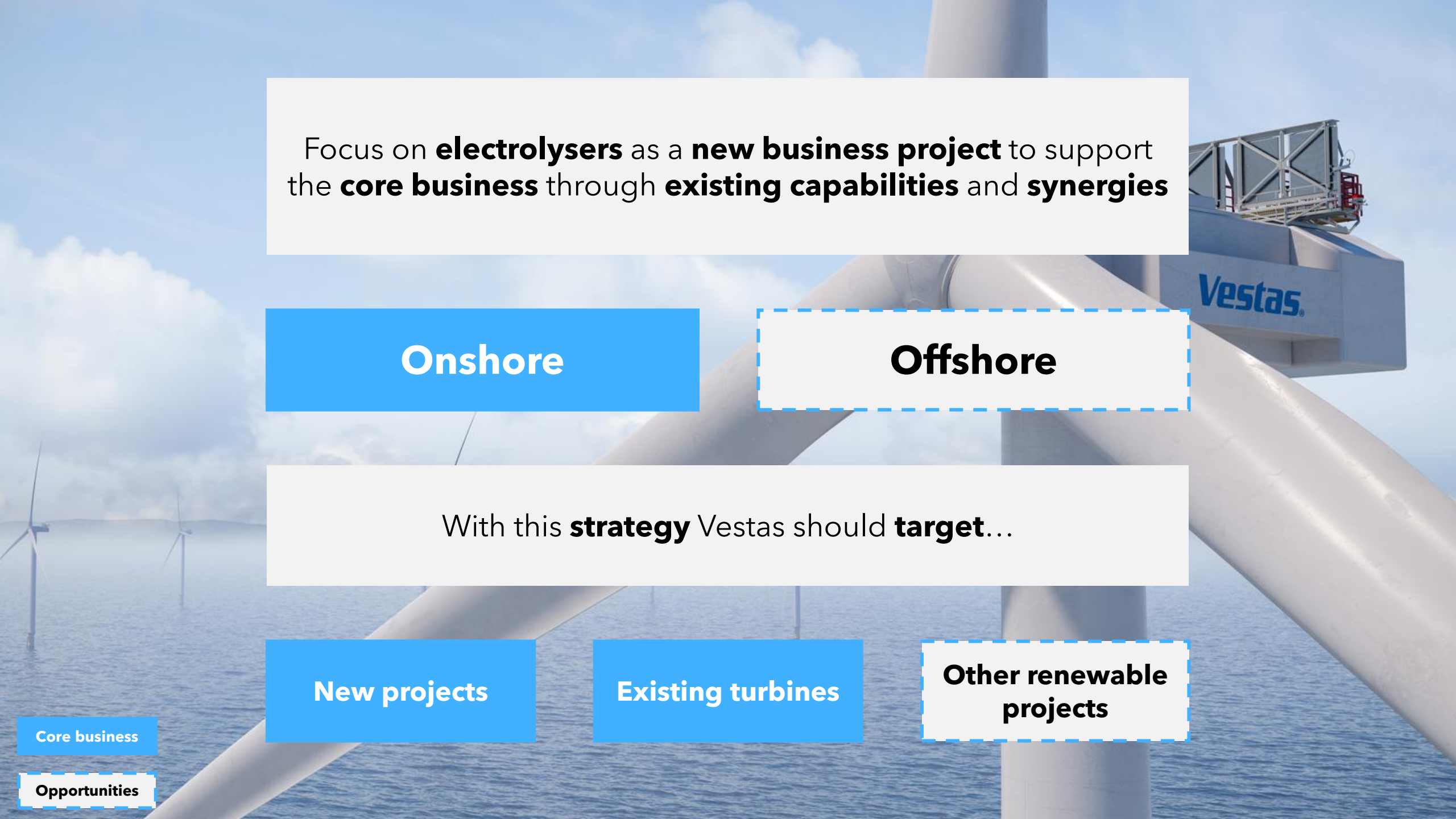
Optimize in order to **minimize** energy **waste**

Hydrogen breakdown



Vestas should become a **global leader** in **hydrogen** and **electrolyser** solutions to enter the **Power-to-X** market

Sources: 1) International Energy Agency, 2) FOM Technologies



Focus on **electrolysers** as a **new business project** to support the **core business** through **existing capabilities** and **synergies**

Onshore

Offshore

With this **strategy** Vestas should **target**…

New projects

Existing turbines

Other renewable projects

Core business

Opportunities

With several JVs, Vestas has the capabilities to enter the Onshore hydrogen market

Strategy

- Excess energy is used, creates less energy waste
- Various sizes and design for different offtakers
- Use on new and existing projects and plan for implementation in 2025

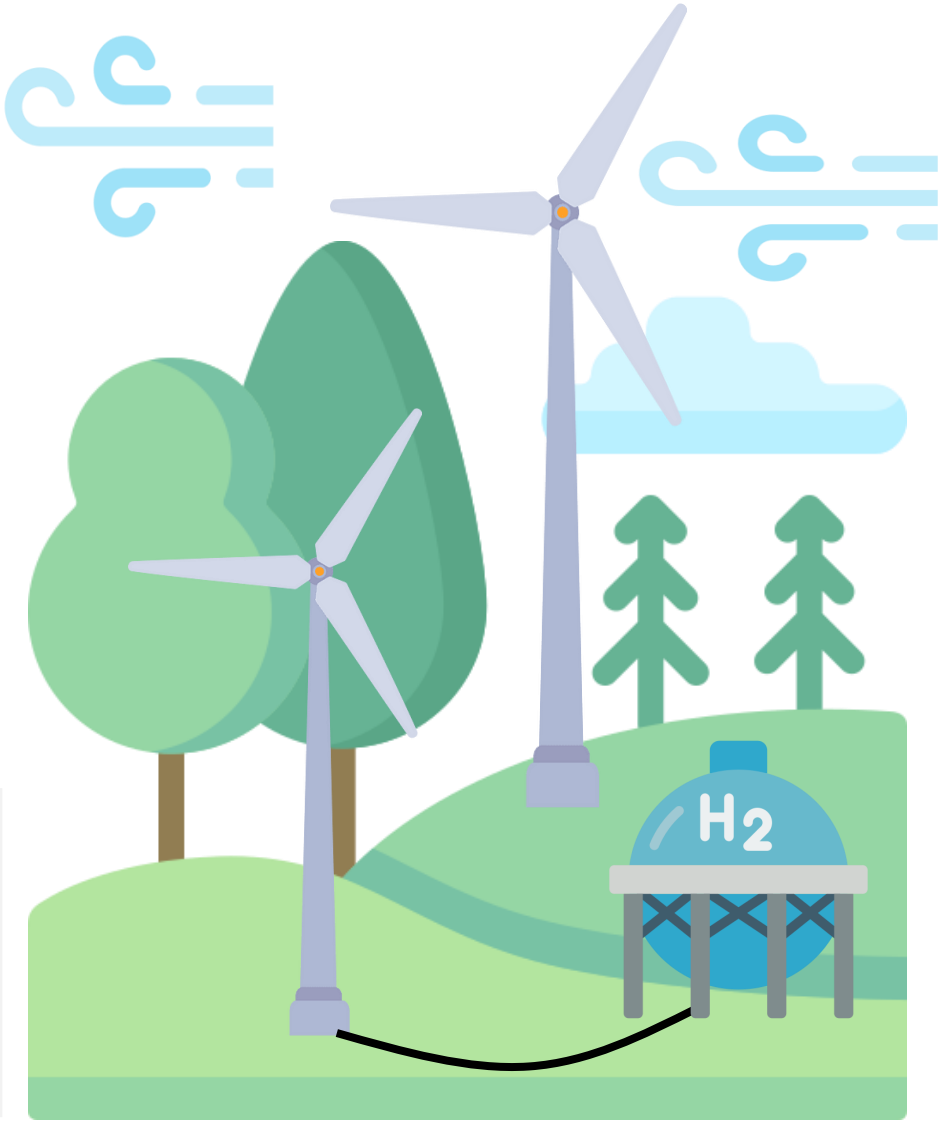
Fit with capabilities

- 25% ownership of CIP, who is already in development
- Provide customers with flexibility and create strong portfolio
- Use manufacturing capabilities and partnerships

Process

1. Develop and construct electrolysers
2. Install 1 MW electrolysers near onshore wind turbines
3. Connect cables from turbine to electrolyser
4. Increase size of projects

"Powering hydrogen electrolysers with available renewable energy is key to making hydrogen green"(1)



Sources: 1) Energywatch.com

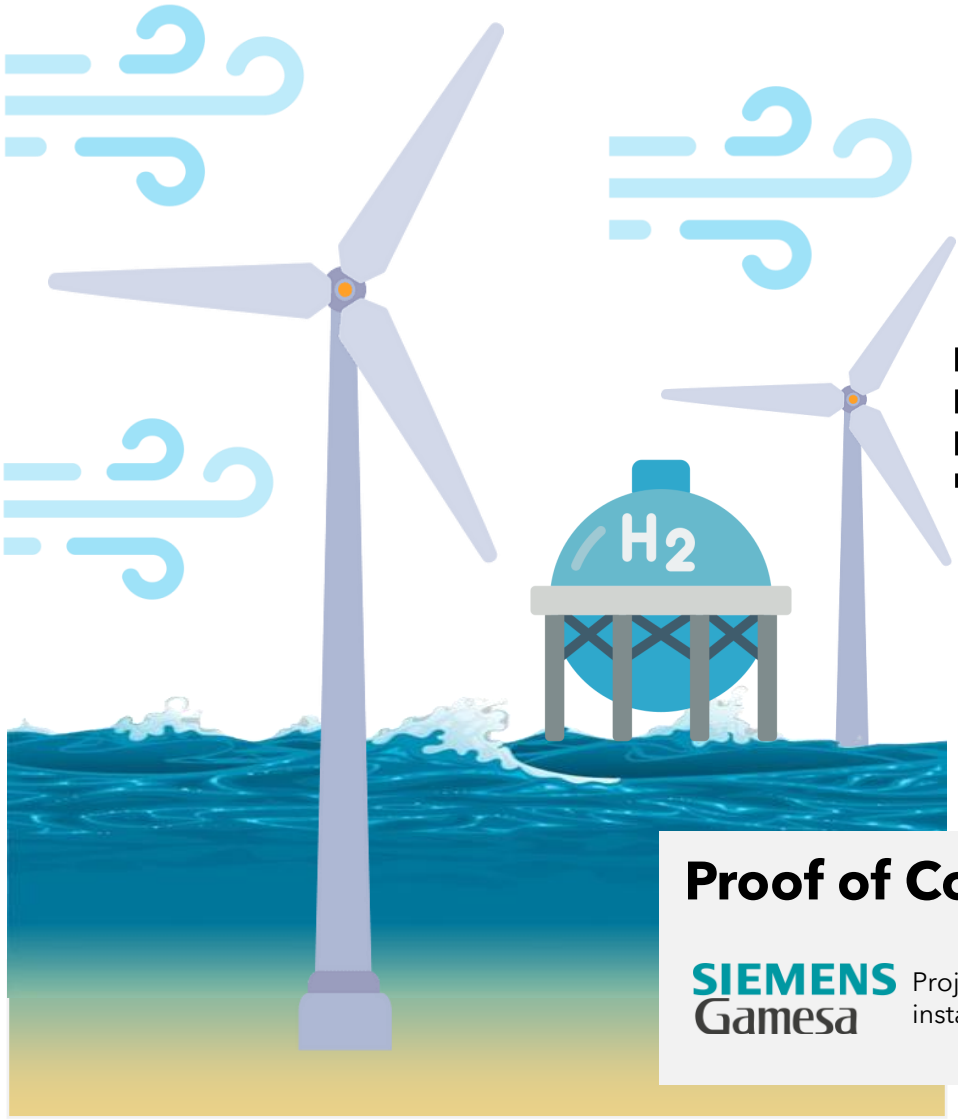
Vestas can utilize current resources and high growth potential in offshore hydrogen production

Strategy

- Develop electrolysers suitbale for water
- Utilize water source and develop distilling process
- Leverage technical sbilities from on-shore project, start commercilization in 2027

Growth Potential

- General high growth in market with 35-40% CAGR
- Larger wind turbines and more wind off shore
- Possibility to use existing gas pipelines for transport



Transport of Hydrogen

Power — *cable*

Hydrogen

Gaseous hydrogen — *existing gas pipeline*

- Transporting gaseous hydrogen using **pipelines is the most profitable**
- 120 mDKK vs 2500 mDKK for 80 MW (1)
- Use existing **gas pipeline**s to transport. Consider sites when developing

Proof of Concept

SIEMENS Gamesa — Project done in 2026 on installing electrolyzers off shore

POSHYDON — Pilot project subisidies by Dutch government

Sources: 1) Mälardalen University

What is Vestas role?

Vestas should be present in the areas of the value chain where they have core capabilities

Vestas

Development | **Design** | **Supply** | **Construction** | **Operations** | **Service**

Vestas should have control of the full relevant value chain

- Increased focus on development
- CIP for finding optimal land and knowledge

- In house driver
- Leverage existing knowledge
- Develop service

- Core business started as manufacturing
- JV with Green Hydrogen to leverage synergies

- Partner with past construction partner to connect to existing installations

- High margins
- Future revenue stream
- Part of core business

Possible partners

CIP

GREEN HYDROGEN SYSTEMS

Nexans

Roxtec

Success criteria for partners

1. Time and quality
2. Maximize capabilities
3. Possibility of JV
4. Flexible supply

= *primary presence* = *use current partner* = *partnerships needed*


But Vestas is looking into
an uncertain future...

Scenario analysis shows uncertainty development of challenges for hydrogen

Uncertainties

1 Demand
Abs. renewable energy cons. stable across scenarios

2 Maturity
Market can keep current maturity or increase maturity

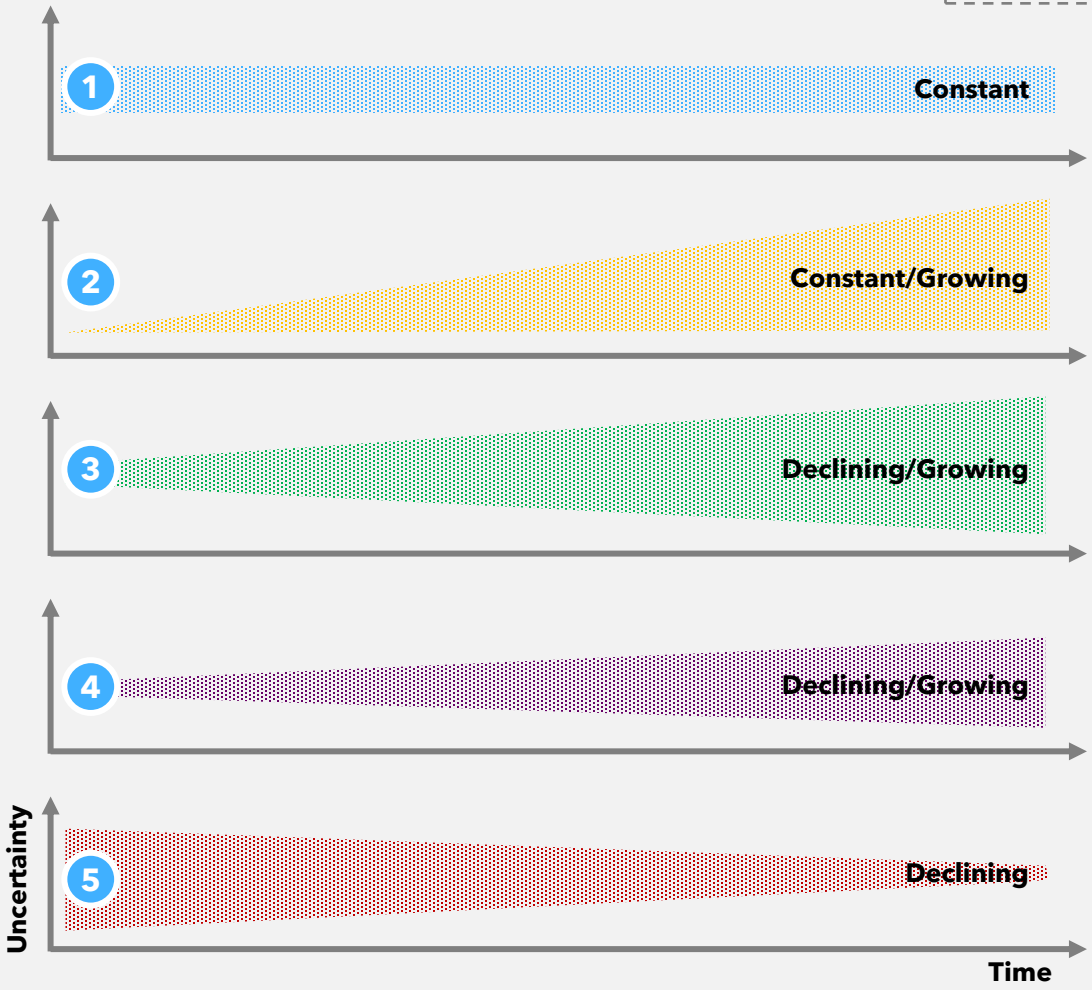
3 Commercialization
Increasing commercialization or disruption = decreasing

4 Regulatory
Will likely increase in the future but announced in advance

5 Existing contracts
Uncertainty now but will decrease as current contracts expires

Uncertainty development for key challenges

Indicative



Key focus areas

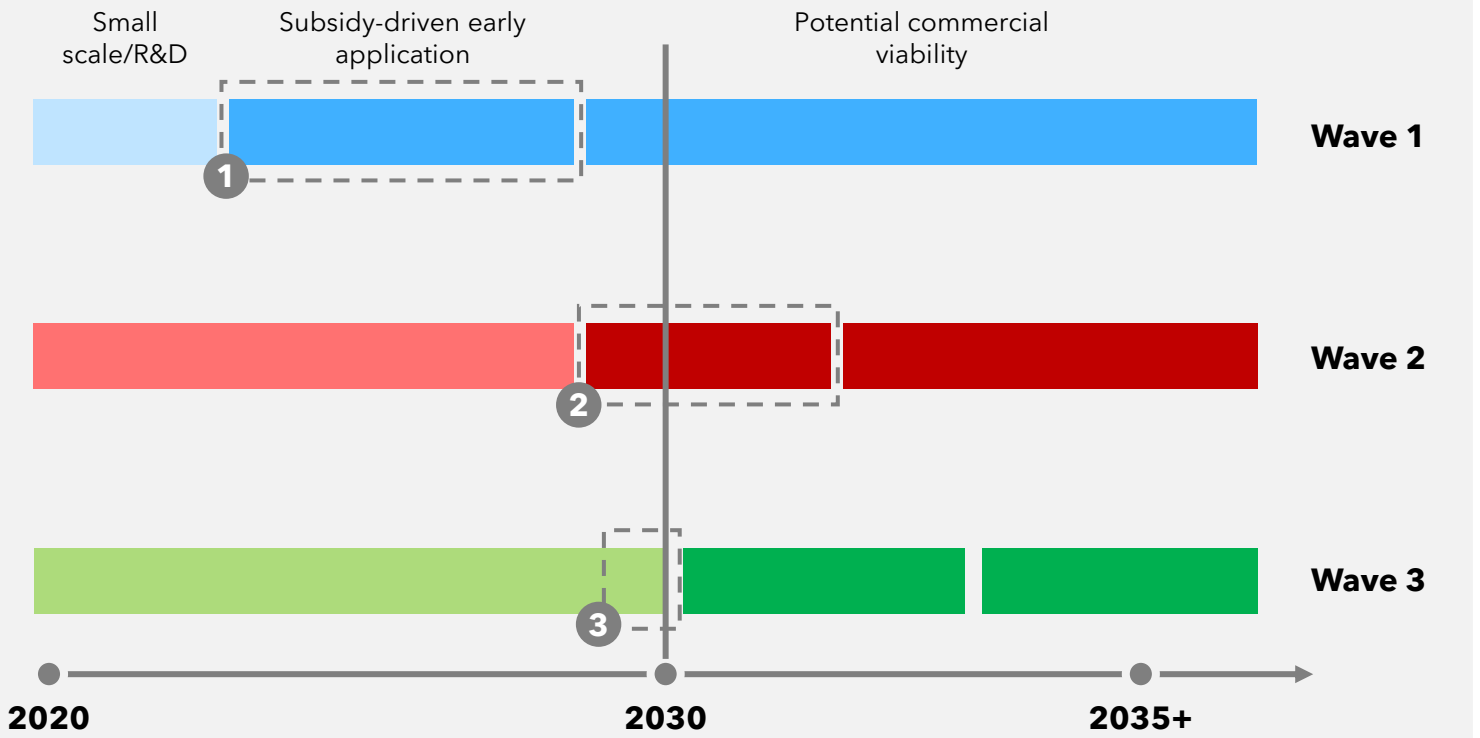
Contracts
High uncertainty short-term and therefore essential to ensure

Demand
Not as uncertain as believed but essential for industry focus

Commercialization
High future uncertainty and important to track through indicators

Sources: 1) Case Material, 2) Deloitte The Future of Energy

Specific focus throughout the waves will ensure secured offtake of hydrogen electrolysers



Criteria

Possibility to get contracts

Proven demand/ secured off takers

Signs of commercialization

Industries to focus on

1 Ammonia

36% of global hydrogen demand

80% is used for fertilizer production

2 Iron & steel

Existing demand for hydrogen

Risk of grey contracts

Local maritime applications

Currently under heavy development

3 If local maritime applications = successful

Further development of maritime industry

Sources: 1) iea Hydrogen, 2) Thyssenkrupp

Overview of Strategy

Vestas should **target**…

Onshore

Offshore

New projects

Existing turbines

Other renewable projects

By using **core capabilities** in…

Design

Supply

Service

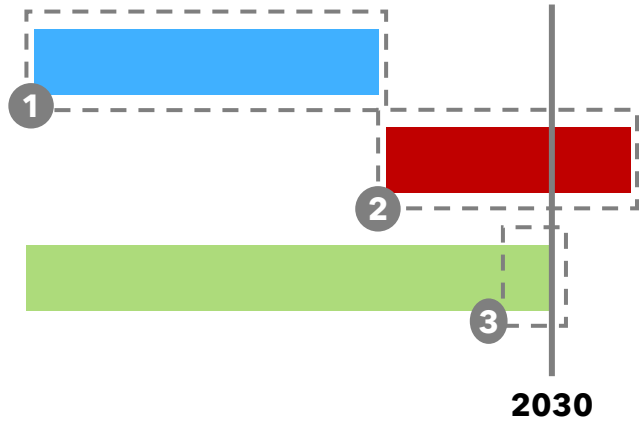
The strategy should consider uncertainty…

Demand

Commercialization

Contracts

By considered each wave

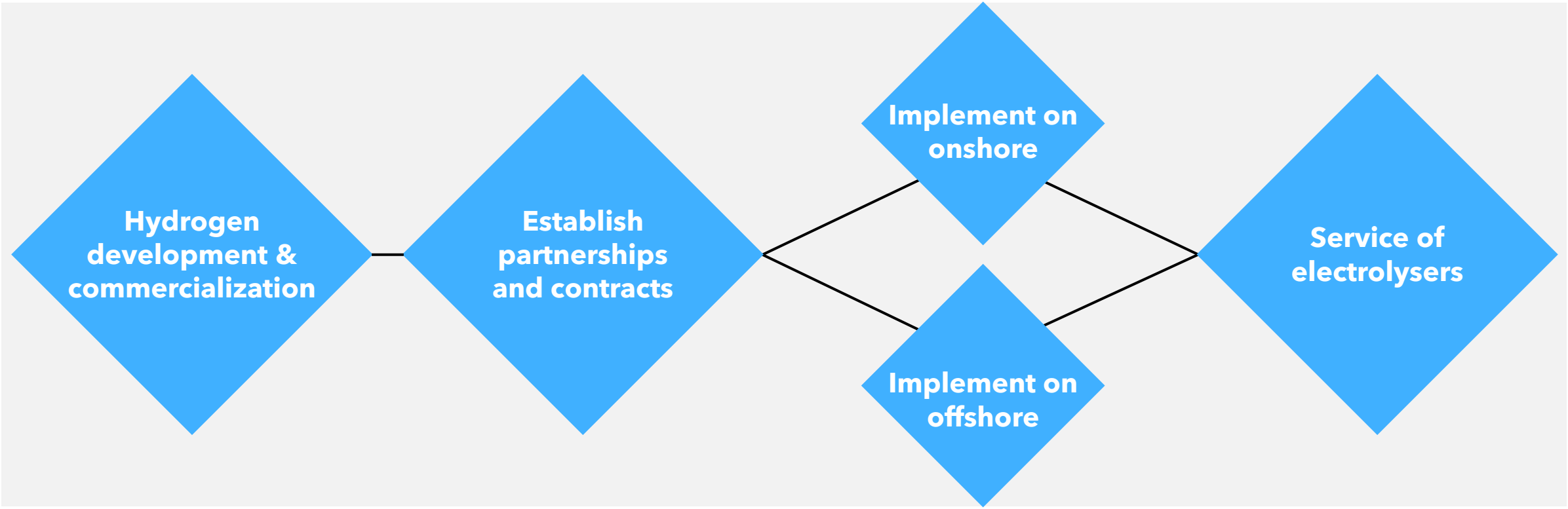


Criteria

Offtakers

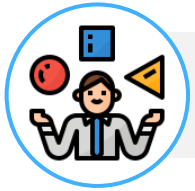
How do we implement the strategy?

Vestas should use implement Power to X in steps to secure a safe implementation

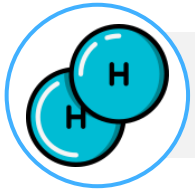


Must win battles

Utilize know how from joint ventures to get a head start



Secure strong partnerships in construction and operations



Ensure foundation for upscaling of P2X through hydrogen

Financial Goals

Profitable before 2030

Goal to establish strong enough capabilities and leverage partnerships to utilize synergies with existing core business to ensure a profit

Ensure offtakers

Settle contracts with potential offtakers to ensure demand and minimize debt financing

Commercial Goals

Accumulated 750 MW in 2030

This is 1.25 x the average coal plant size, showing a steady growth in installations

Install on two continents

Commercialise as global leader in existing markets. Leverage investment in Hysata and support EU mission of 10 million tonnes

Save 700,000 tonnes C02

Natural outcome of going from grey hydrogen to green hydrogen. Number may vary

= 71,190 tonnes * (8 to 12 kg CO2/kg hydrogen)

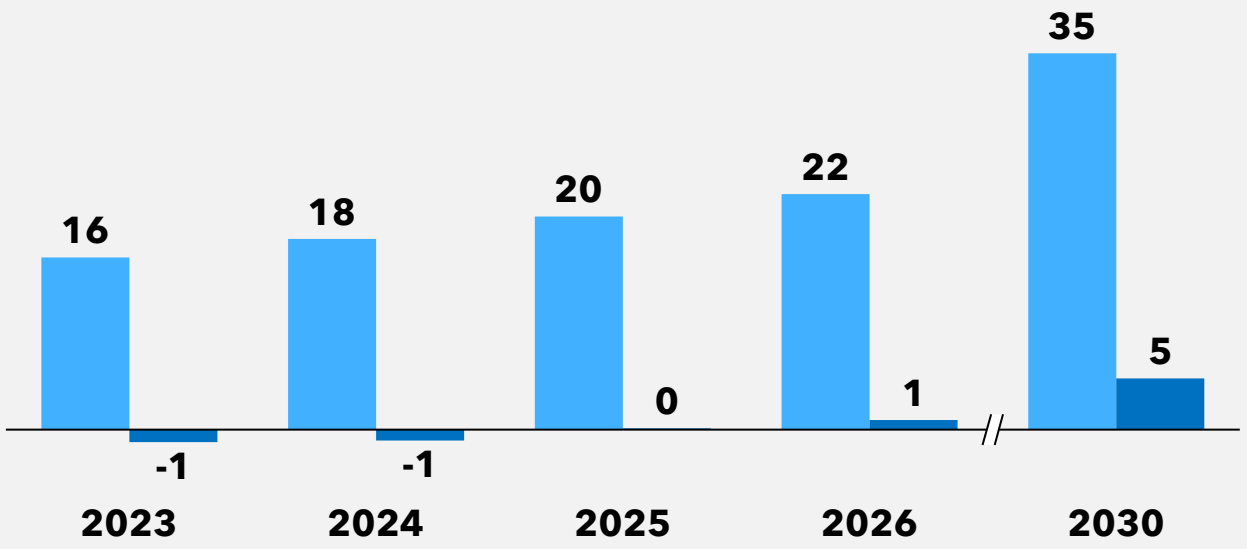
Develop indicators

Identify market indicators to support scenario planning to minimize uncertainty

Vestas can secure a 14% EBIT margin in 2030 by implementing hydrogen electrolysers

Financial impact

Revenue and EBIT development (bEUR)



14%
EBIT margin in 2030

23%
Gross profit margin in 2030

3bEUR
Profit in 2030

Assumptions

- **Vestas can generate 0.4% of their revenue from hydrogen in 2025**
- **The global green hydrogen market is expected to grow at a CAGR of 47% until 2033 (1)**
- **Price of 1 MW electrolyser is assumed to be 2 mEUR and decrease in following years**
- **R&D costs are assumed to be 4.1% in 2023 based on 3.55% R&D margin in 2022**

Sources: 1) Yahoo finance

Question

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Vestas should design, supply and service hydrogen electrolysers in on- and off shore wind projects, while minimizing uncertainty by leveraging capabilities and partnerships

Impact

14%
EBIT margin in 2030

71m tonnes
saved in CO2 emission

APPENDIX OVERVIEW

APPENDIX 1 Income statement and assumptions

mEUR	2023	2024	2025	2026	2027	2028	2029	2030
Revenue	**16.042**	**17.765**	**19.864**	**21.959**	**24.296**	**27.144**	**30.661**	**35.055**
COGS	-15.634	-17.089	-17.890	-19.002	-20.441	-22.408	-24.625	-27.019
Gross profit	**408**	**676**	**1.975**	**2.957**	**3.855**	**4.736**	**6.036**	**8.036**
SG&A	-650	-700	-735	-812	-899	-1.004	-1.134	-1.297
EBITDA	**-242**	**-24**	**1.240**	**2.144**	**2.956**	**3.731**	**4.901**	**6.739**
Depr. & Amortizations	-896	-992	-1.110	-1.227	-1.357	-1.516	-1.713	-1.958
EBIT	**-1.139**	**-1.016**	**130**	**918**	**1.599**	**2.215**	**3.188**	**4.781**
Net financial items	-108	-119	-133	-147	-163	-182	-206	-235
Profit before tax	**-1.246**	**-1.135**	**-3**	**770**	**1.436**	**2.033**	**2.982**	**4.545**
Taxes	238	213	-27	-192	-335	-463	-667	-1.000
Profit after tax	**-1.008**	**-923**	**-30**	**578**	**1.101**	**1.569**	**2.315**	**3.545**

Margins	2023	2024	2025	2026	2027	2028	2029	2030
EBIT	-7%	-6%	1%	4%	7%	8%	10%	14%
Gross Profit	3%	4%	10%	13%	16%	17%	20%	23%

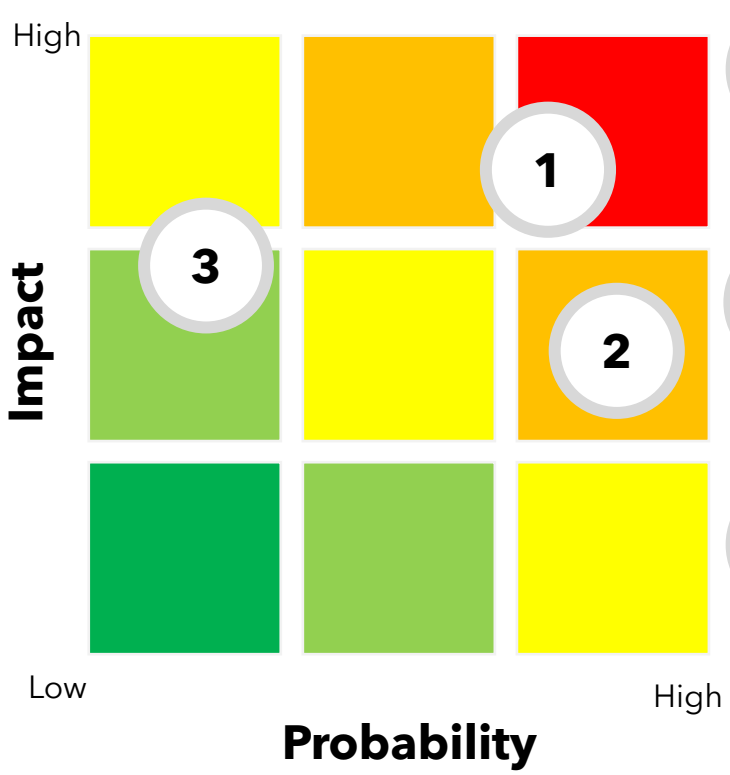
Assumptions	2023	2024	2025	2026	2027	2028	2029	2030
Revenue								
Revenue from 2023 to 2025 is increasing with projected CAGR on offshore, onshore and service	16.042	17.765	19.864	21.959	24.296	27.144	30.661	35.055
Revenue from offshore wind	1.265	1.401	2.479	3.291	4.345	5.750	7.629	10.151
Revenue from onshore wind	11.276	12.487	13.153	14.101	15.036	16.072	17.225	18.511
Revenue from service	3.502	3.878	4.161	4.460	4.756	5.084	5.449	5.855
Revenue from Hydrogen	0	0	71	107	159	238	358	538
Costs								
Assumed selling price of 1 MW electrolyzer			2,0	2,0	1,9	1,9	1,8	1,8
Sold amount of 1 MW electrolyzers			36	54	83	127	194	298
Assumed profit margin per sold electrolyzer			10,00%	10,00%	10,00%	10,00%	10,00%	10,00%
COGS from electrolyzers			64	96	143	214	322	484
Research and Development percentage costs from hydgrogen	1,6	1,0	0,9	0,9	0,9	0,9	0,9	0,9
Investments in additional production facilities and off-shore investments	15,00	10,00						

APPENDIX 2 Forecast of development in crossing

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Offshore Revenue	100	2300	900								
Onshore Revenue	12600	10800	10400								
Service Revenue	2100	2500	3200								
Offshore share	0,7%	14,7%	6,2%	7,9%	10,0%	12,5%	15,0%	17,9%	21,2%	24,9%	29,0%
Onshore share	85,1%	69,2%	71,7%	70,3%	68,5%	66,2%	64,2%	61,9%	59,2%	56,2%	52,8%
Service share	14,2%	16,0%	22,1%	21,8%	21,5%	20,9%	20,3%	19,6%	18,7%	17,8%	16,7%
Expected hydrogen share	0,0%	0,0%	0,0%	0,0%	0,0%	0,4%	0,5%	0,7%	0,9%	1,2%	1,5%
Total	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**	**100,00%**

Projected shares of revenue used to calculate actual shares of revenue from operations								
	2022-23	**2023-24**	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**
Offshore share	8,69%	11,04%	13,96%	16,23%	19,48%	23,25%	27,54%	32,35%
Onshore share	77,46%	75,91%	74,03%	69,53%	67,43%	64,98%	62,17%	58,99%
Service share	24,06%	23,79%	23,42%	21,99%	21,33%	20,55%	19,67%	18,66%
Expected hydrogen share	0,00%	0,00%	0,40%	0,53%	0,71%	0,96%	1,29%	1,71%
Total	110,21%	110,74%	111,80%	108,27%	108,95%	109,75%	110,66%	111,71%

Light Risk Assessment Matrix



	Risk	Mitigation
1	**Estimated installed capacity is too low**	Demand must be ensured, however productions can be ramped up with partnerships through JVs and CIP
2	**Contracts cannot be changed in the short term**	Ensure long term green contracts and improve development
3	**Partnerships are not possible**	Plan for negotiation or penetrate market thorugh transaction or M&A

A group of German and US researchers claim that green hydrogen and derived electrofuels will likely supply **less than 1% of final energy by 2030**
By 2040, a breakthrough to higher shares is more likely, but large uncertainties prevail

Important that Vestats focuses on core business and uses PtX to leverage opportunities rather than demanding a global leader position

Sources: 1) PV Magazine

APPENDIX 4 How Vestas overcome risks in PtX

Demand Uncertainty	Vestas can overcome this uncertainty by securing contracts with offtakers and following trends. First investments may be more risk heavy, however, current projects show promising portoflio. This ensures Vestas profitability
Regulatory frameworks	Regulations can in most cases be beneficial for Vestas as the beginning will be subsidizes. The risk is lower as most reguations will be warned
Lack of infrastrucuture	Lack of infrastrucuture is bound in raw materials, construction, structural adaptions and the grid. However, Vestats can with a fast follower mentality and good partnerships mitigate some
Supply chain scale up	Supply chain scale up is a main risk for Vestas as they are are not currently directly active in the hydrogen supply. Despite this, flexible and many partners will be useful
Financing	Financing is not a major risk with this strategy, as the requirements are relatively low and should be debt free

APPENDIX 5 Detailed implementation plan

Initiatives	2023	2024	2025	2026	2027	2028	2029	2030
Develop Technology	Plan with JV-partners	Procurement and preparation for production	Launch	Ensure ongoing R&D to optimize technology and utilize new opportunities				
Establish partnerships	Contact potential partners	Negotiate contracts set up targets	Monitor performance of partners to ensure high quality					
Onshore integration	Look for potential offtakers and prepare integration		Secure the first offtakers	Integrate onshore and continuously look for new offtakers				
Offshore integration	Work closely with development team		Identify potential offtakers and prepare for launch		Secure the first offtakers	Integrate offshore and continuously look for new partnerships		

Financial Goals - WHY

Profitable before 2030

Vesats has a goal of an EBIT margin of 10%. However, Vestas is currently negative, meaning profitable within 7 years of development is ideal

Ensure offtakers

Providing value for customers and remaining low in debt is necessary to compete with E&P in O&G

Commercial Goals - WHY

Accumulated 750 MW in 2030

This is 1.25 x the average coal plant size, showing a steady growth in installations

Install on two continents

In order to become a global leader, Vestas must actually be presnet in al part of the business across the globe

Save 700,000 tonnes C02

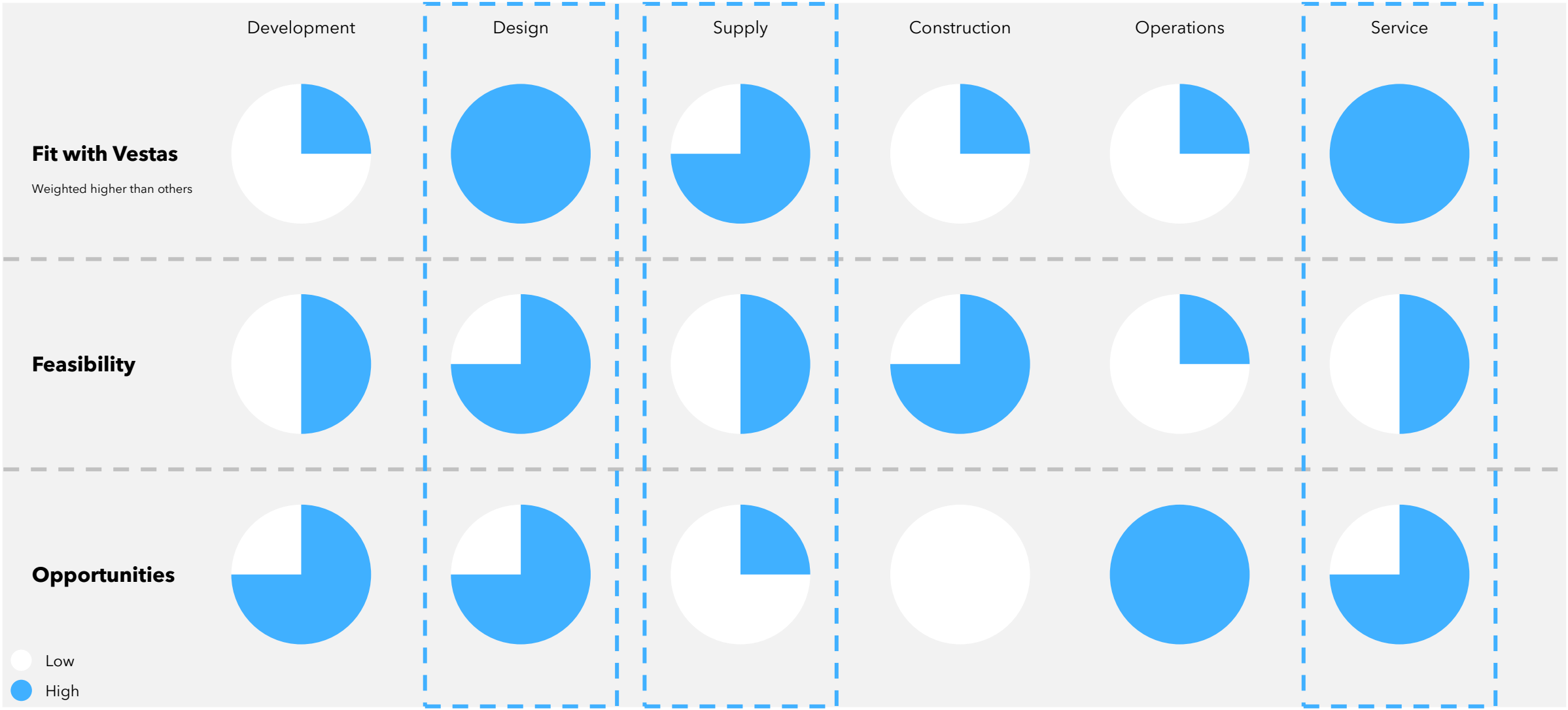
Natural outcome of going from grey hydrogen to green hydrogen. Number may vary

= 71,190 tonnes* (8 to 12 kg CO2/kg hydrogen)

Develop indicators

This is a key element of successful scenario planning. This may have to be developed in collaboration with consultancy firm

APPENDIX 7 Value chain selection



APPENDIX 8 Why demand remains constant over time

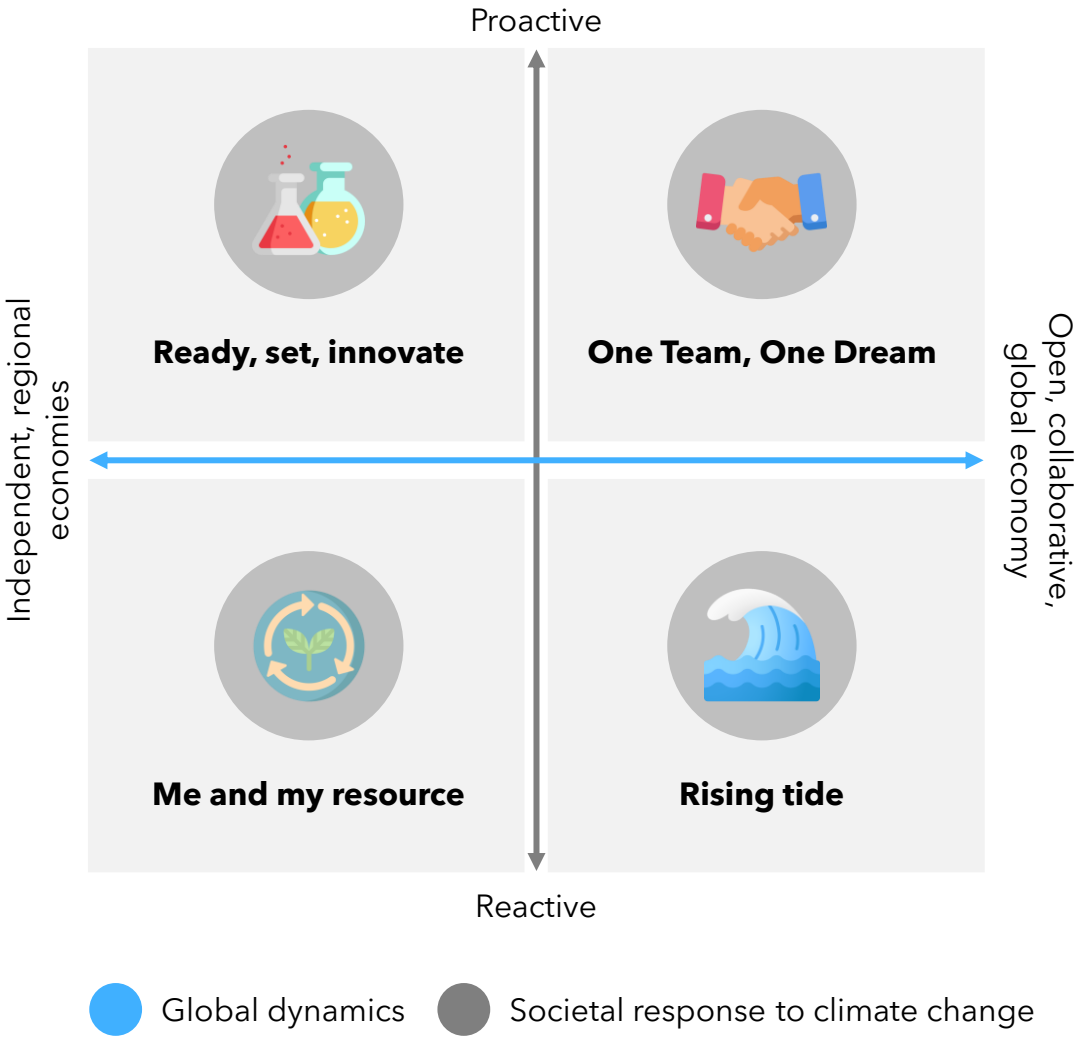
Explanation of scenarios in Appendix 9

	One Team, One Dream	**Ready, set, innovate**	**Me and my resource**	**Rising tide**
Total annual energy demand (EJ)	500-550	600-650	700-750	750-800
Share of renewables in electricity consumption	70-75%	65-70%	55-60%	50-55%
Annual CO2 emissions (Gt)	15-20	25-30	30-35	35-40
Renewable energy consumption (abs. EJ)	412.5	455	450	440

Renewable energy consumption remains relatively stable across all scenarios in absolute terms, and therefore hydrogen is assumed to follow the same pattern

Sources: 1) Deloitte The Future of Energy

APPENDIX 9 Future energy scenarios



- Global collaborative working towards a green future and drastic decarbonization
- Successful commercialization of low-carbon technology
- Fierce competition and governments open borders
- **Hydrogen: Very high demand**

- Governments fail to address the climate change so the private industry takes action
- Limited coordination between nationalistic governments creates hurdles for scale-up
- High competition
- **Hydrogen: High demand**

- A world defined by tribalism and protectionism → nations are limited to local resources and technologies
- Trade barriers and fight for resources
- **Hydrogen: Low demand**

- Global powers share the priority of short-term economic growth
- Advanced technologies create options for addressing climate change but the "switching costs" away from economic growth are too high
- **Hydrogen: Very low demand**

Sources: 1) Deloitte The Future of Energy

0.791 GW * 90.000 tonnes = 71.190

71.190 tonnes * 10 = **710 tonnes**

Own calculations of accumulated installed capacity

The 1 GW electrolyzer capacity would be able to produce up to 90,000 mt/year of hydrogen, zur Nieden said in an email.

https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/090221-h2-energys-1-gw-danish-green-hydrogen-project-to-supply-trucks-stations-industry

The hydrogen plant that is currently being built should be operational in 2022 and will have a capacity of 1 megawatt. It will have a positive impact on the environment, because every sustainably produced kilo of hydrogen **saves 10 kilos of CO2 compared to hydrogen produced from natural gas.**

Sources: 1) Spglobal

APPENDIX 11 Why is it Vestas that should do this – synergies with core business

= primary presence = use current partner = partnerships needed

Development | **Design** | **Supply** | **Construction** | **Operations** | **Service**

Why Vestas here?

1. Vestas is **still** the **worlds largest** wind turbine Original Equipment **Manufacturer**
2. **Designing** and **manufacturing** wind turbines has always been a part of the **core business** for Vestas

"Vestas is historically a manufacturing company and has played an important role in advancing the supply of commercial wind turbines used Today"

Therefore, it also makes sense that Vestas should **play a role in manufacturing** and **advancing** the **supply** of commercial **electrolysers** for the **future**

Why Vestas here?

Service is a **key business area** for Vestas today, and Vestas is also **undisputed market leader** with expanding scale and capabilities servicing onshore and offshore

Additionally, servicing also has great synergies with designing and manufacturing the sites

Servicing is also a **high profit margin** and **growth** segment

Sources: 1) Case material

APPENDIX 12 System integration initiatives

1 Hydrogen Electrolisers

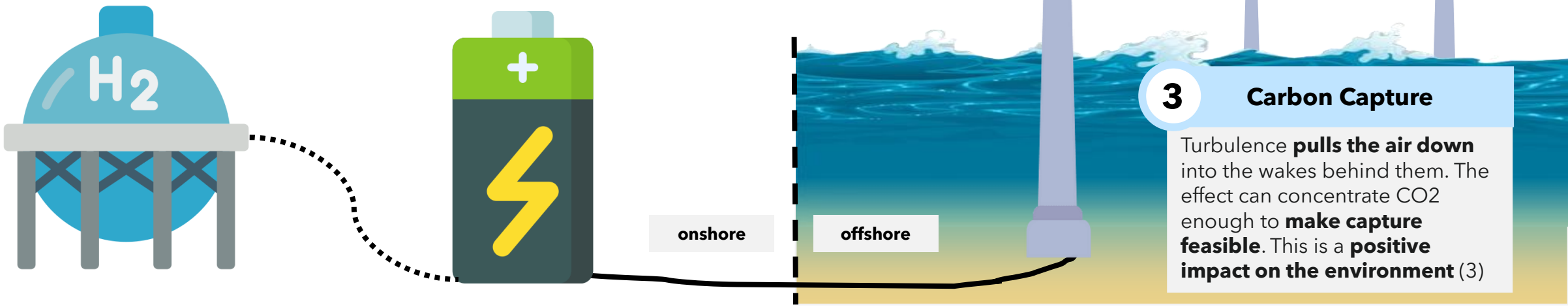
The hydrogen will be produced through **electrolysis powered by offshore wind** stored in the battery. Biogenic CO2 is then used to **synthesize green fuels captured from cogeneration** heat and power plant (1)

Vestas can build on developing hydrogen solutions. They can offer this when lenders wants projects to **promote sustainable flexible power**

2 Battery Storage

The battery would be **placed onshore with a direct cable** connection to the wind turbines. This will **store energy for more flexibility** when there are unstable weather conditions.

Offering a battery solution will make **Vestas project more competitive** as this will increase attractiveness. This should be similar to the site being **developed for Hornsea** (2). Requires new developments



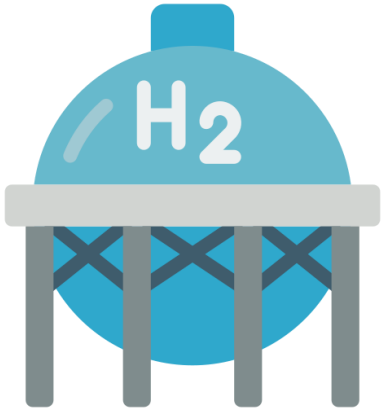
3 Carbon Capture

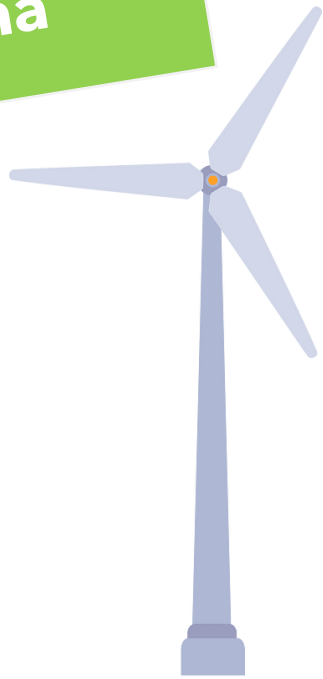
Turbulence **pulls the air down** into the wakes behind them. The effect can concentrate CO2 enough to **make capture feasible**. This is a **positive impact on the environment** (3)

Sources: 1) Energywatch.com, 2) Europewind.next, 3) Powermag + RWE as proof of conept (RWE)

APPENDIX 13 Need for acceleration due to Catalina & CfD?

Project Catalina





Project Catalina, in the northeastern region of Aragon, will be powered by 5GW of wind and solar – a combination of resources that will help to run the 2GW of electrolysers day and night, thus reducing the levelised cost of hydrogen. (1)

Contract for Difference

The Norwegian government has agreed, in principle, to introduce a Contracts for Difference (CfD) subsidy scheme to ensure that clean hydrogen is no more expensive than grey H_2 from unabated fossil fuels. The "budget settlement" is simply a list of agreed policies that ensures opposition support for the coming national budget.

Sources: 1) Rechargenews

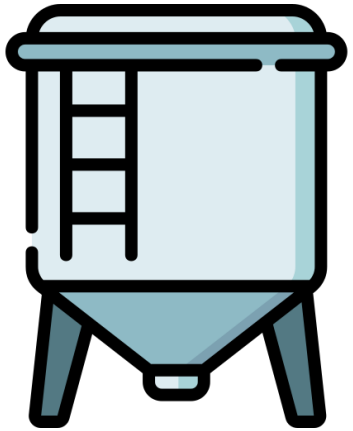
APPENDIX 14 Offshore Wind to Ammonia Project in Greenland

Vestas

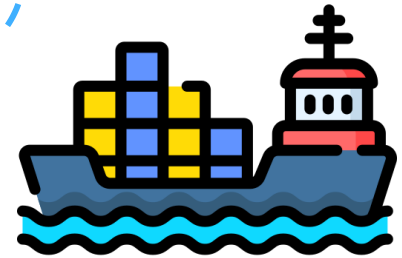
H2CARRIER

Teams up with Greenland-based **Anori** to **develop** the **first** commercial **wind farm** in **Greenland** with subsequent production and export of **green ammonia**.

1.5 GW renewable energy which will supply power to H2Carrier's **floating** production **vessel** for **hydrogen** and **green ammonia**



Green ammonia will be **stored** in **tanks** onboard the **vessel**, then **exported** to **smaller shipping vessels** and **carried** to the **international market**



H2Carrier's proprietary design for a **vessel** that **produces**, **stores** and **exports** green ammonia, the **P2XFloater**, is said to be the **first** of its **kind** to be **launched** on a **global basis** capable of **producing** **hydrogen** and **ammonia** on an **industrial scale**.

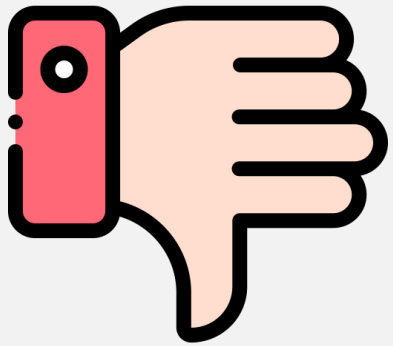
Source: 1) Offshore Engineer

APPENDIX 15 Joint venture advantages and disadvantages

Advantages

- **Shared** risk
- **Access** to local **knowledge** through a partner
- **Control** over operations
- **Both** partners have **interest** in **maximizing** the **value** of the JV

Disadvantages



- High potential of **corporate conflicts**
- Potential **loss** of **proprietary knowledge**
- **No** full **control** over the JV

When is it appropriate?

- Firm has **limited** resources
- Other equity entre modes are prohibited
- Inputs are hard to sell

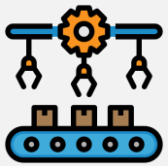
Source: 1) Peng, M (2016)

APPENDIX 16 Vestas strengths and capabilities

R&D

- Great **R&D** and testing of technologies
- Recycling of blades
- Development of **innovative** technologies
- **First** movers

Manufacturing



- High **quality** record
- Increases developers' chance of **financing** the projects
- Great deliverability record
- **Procurement**

Outsourcing

- Lowers fixed cost
- Focus on **partnerships**
- Focus on **core capabilities**

Service

- **Proactive** on service and keeps turbines running
- Usage of **smart data** lowers cost of energy
- **High margins** on service
- Great at **optimization** after sales (simulations)

Control over value chain

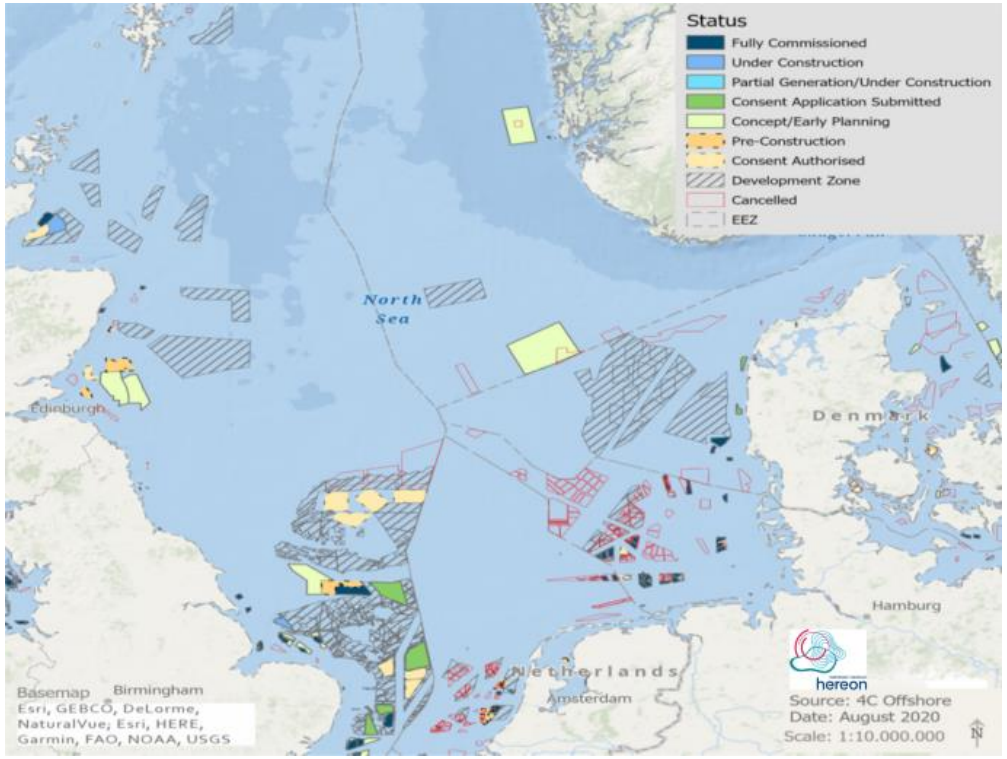
- Strong **business partner** focus
- **Control** over the full value chain
- Ensures **high quality** across value chain

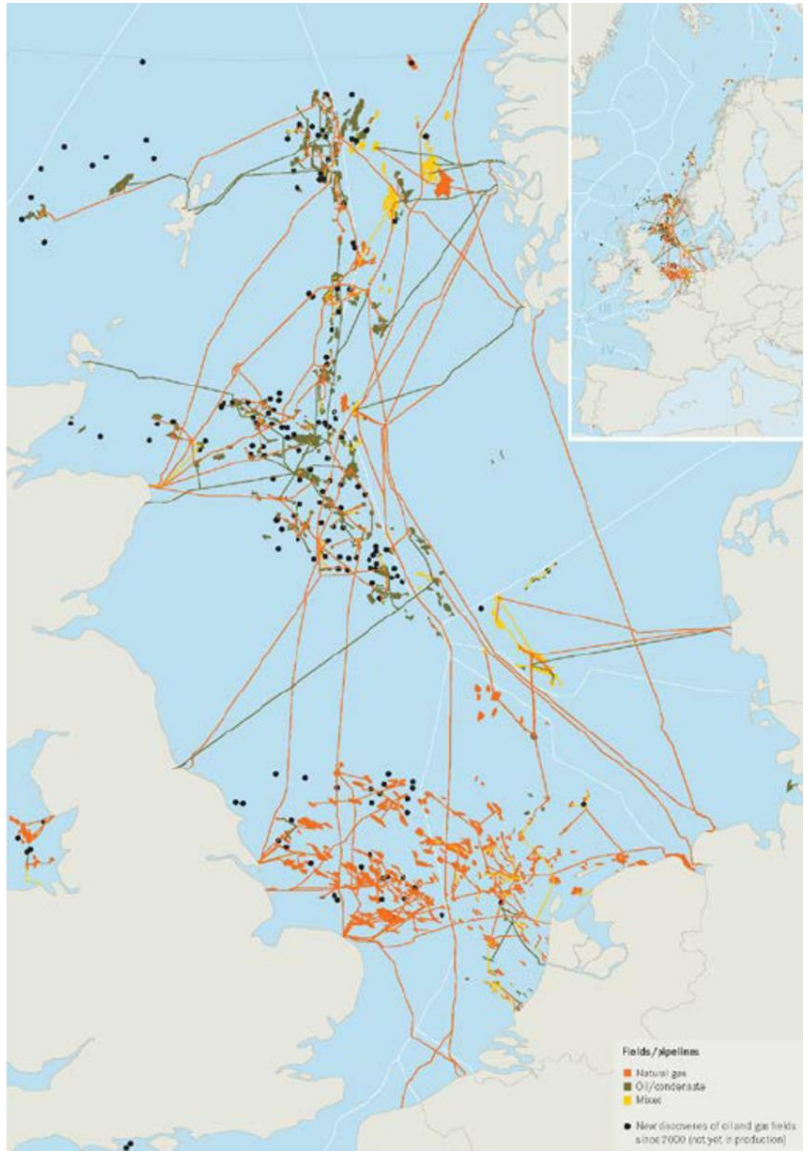
Global market leader in onshore wind solutions and services

A leading global player in offshore solutions

APPENDIX 17 Placement of offshore electrolysers

Increasing numbers of wind farms are being built offshore, and ever further from the coast. But what is the best way to get the electricity to the mainland? Through electrolysis of seawater, you can convert electricity into hydrogen and transport the gas using existing gas pipelines. **Transporting such hydrogen molecules is considerably cheaper than using cables** to bring electricity to land from offshore wind farms.





Offshore wind will have to become our most important source of renewable energy – even more crucial than land-based wind, solar, geothermal or biomass. **The good thing is that there are many platforms in the North Sea that have reached the end of their service life.** They need to be demolished, but there are still gas pipelines in place. These can still be used to transport hydrogen before they're finally disposed of.

Vestas can plan to build offshore wind farms close to existing pipelines to utlise space

Sources: 1) tno.nl

APPENDIX 18 Vestas acquired MHI's shares in the MHI Vestas Offshore Wind joint venture

Vestas

Vestas has **acquired MHI's shares** in the MHI Vestas Offshore Wind **joint venture**

> Today, offshore wind is officially a **full part of the Vestas family again**, and I look forward to creating a strong team that can establish the technological, operational and cultural platform to make us a **leader in offshore**

> Welcoming offshore back is the **beginning of a new chapter** in Vestas' history, offering **strong growth opportunities towards 2030** and further acceleration of the deployment of renewable energy

> The priority for us will be to integrate offshore into our operating model, which together with a leading offshore product platform and focus on execution will enable us lead the industry overall and accelerate the energy transition

Sources: 1) Vestas press release

APPENDIX 19 Vestas acquire 25% stake in Copenhagen Infrastructure Partners

Vestas

X

CIP
Copenhagen Infrastructure Partners

Vestas has acquired a **25%** stake in Copenhagen Infrastructure Partners in **2020**

Through its investment in CIP, Vestas aims to **further expand its presence in renewable project development**, and invest within **areas** of the renewables value chain that **lie beyond its existing activities**

The investment also marks a **key milestone** in Vestas' overall growth journey, which includes an **increased focus on development** through the launch of a new **dedicated development business unit**

As **part of the agreement**, Vestas will **invest** into a new **'Energy Transition Fund'** managed by CIP as an anchor investor. The fund will focus on nurturing **Power-to-X**…

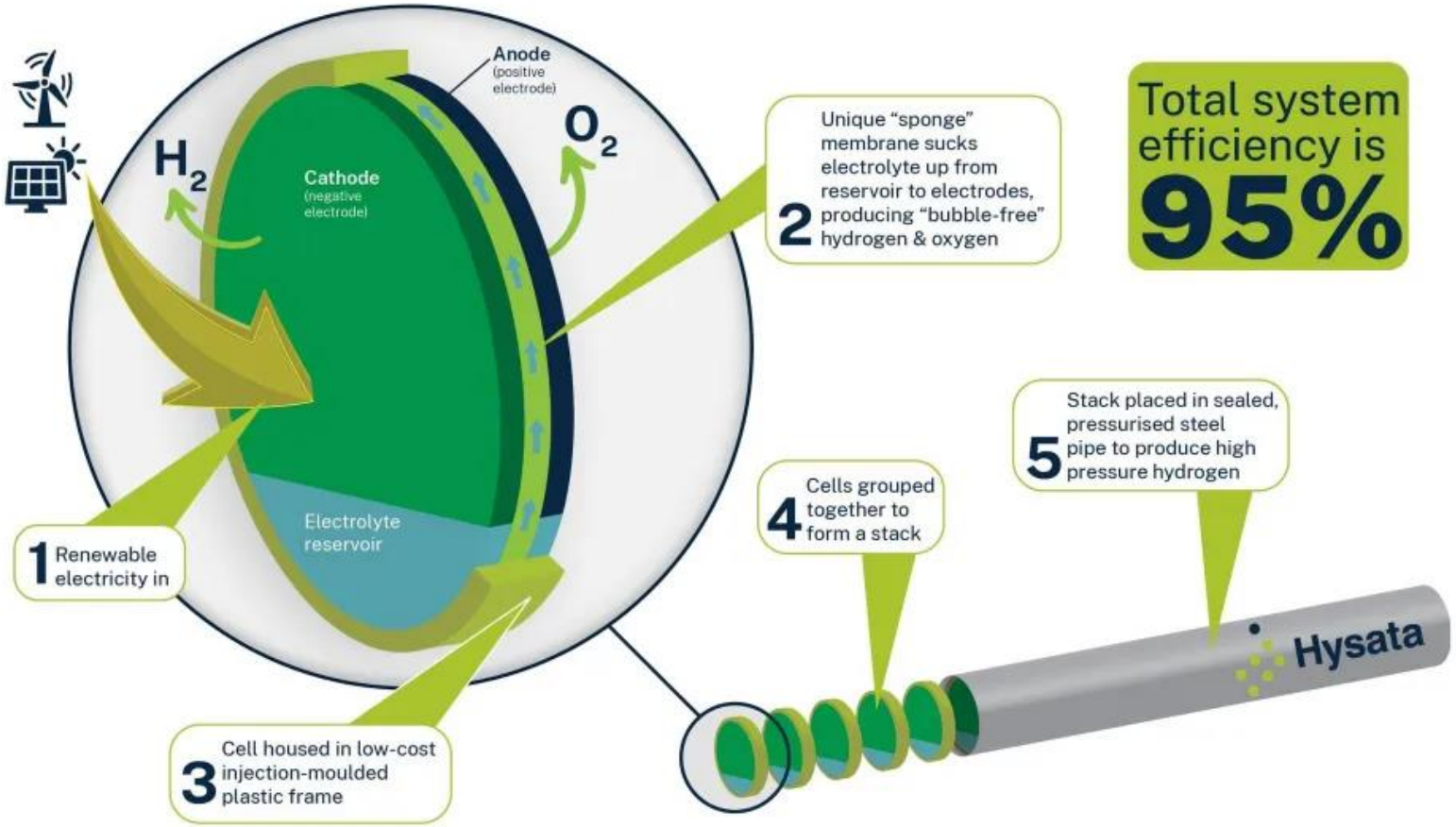
Sources: 1) Vestas press release

Hysata

Hysata is an Australian **electrolyser company** developing a new type of **breakthrough hydrogen electrolyser** with a novel cell architecture. Hysata's mission is to accelerate the world's shift away from fossil fuels to green hydrogen by delivering the world's most efficient, simple, and reliable electrolyser. Vestas Ventures invested in Hysata in **July 2022**, as we see great potential in combining wind power with electrolysers for green hydrogen production.

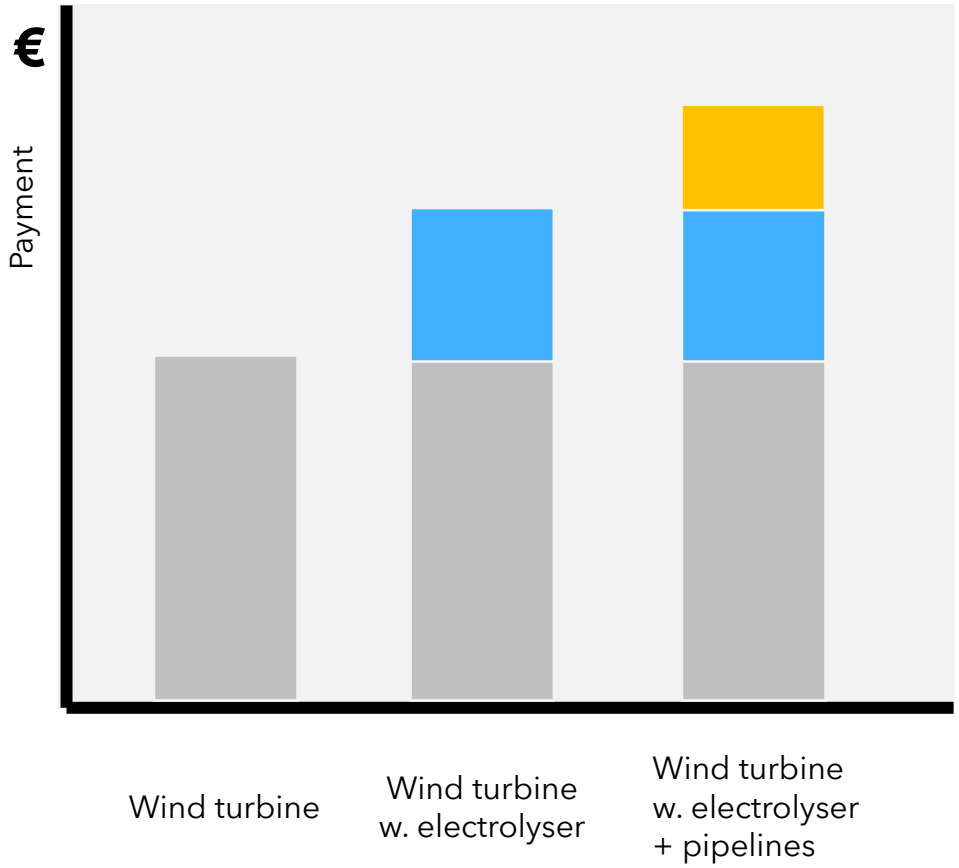
Sources: 1) Vestas Ventures

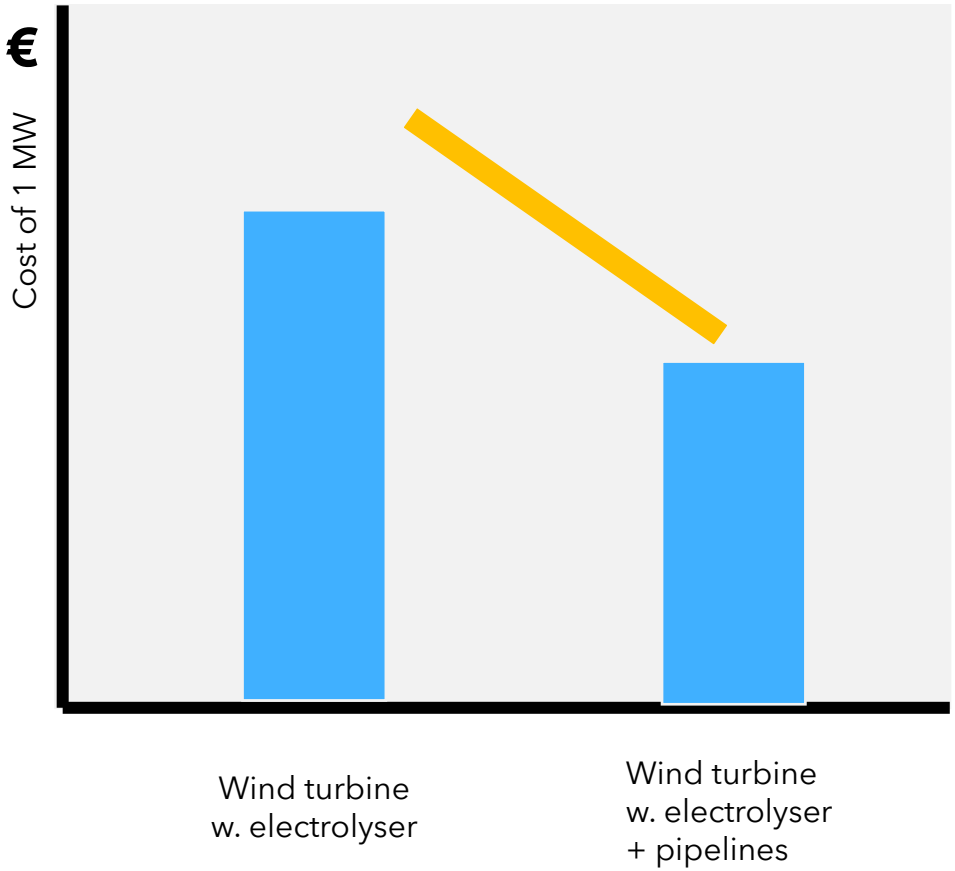
APPENDIX 21 Hysata investment



Vestas Ventures launched in late 2020. Vestas Ventures is now among a handful of other venture firms to have capitalized Australian electrolysis system manufacturer Hysata with AUD 42.5m (EUR 28.92m) in an A series funding round. The proportion of money coming from the Danish company remains undisclosed.

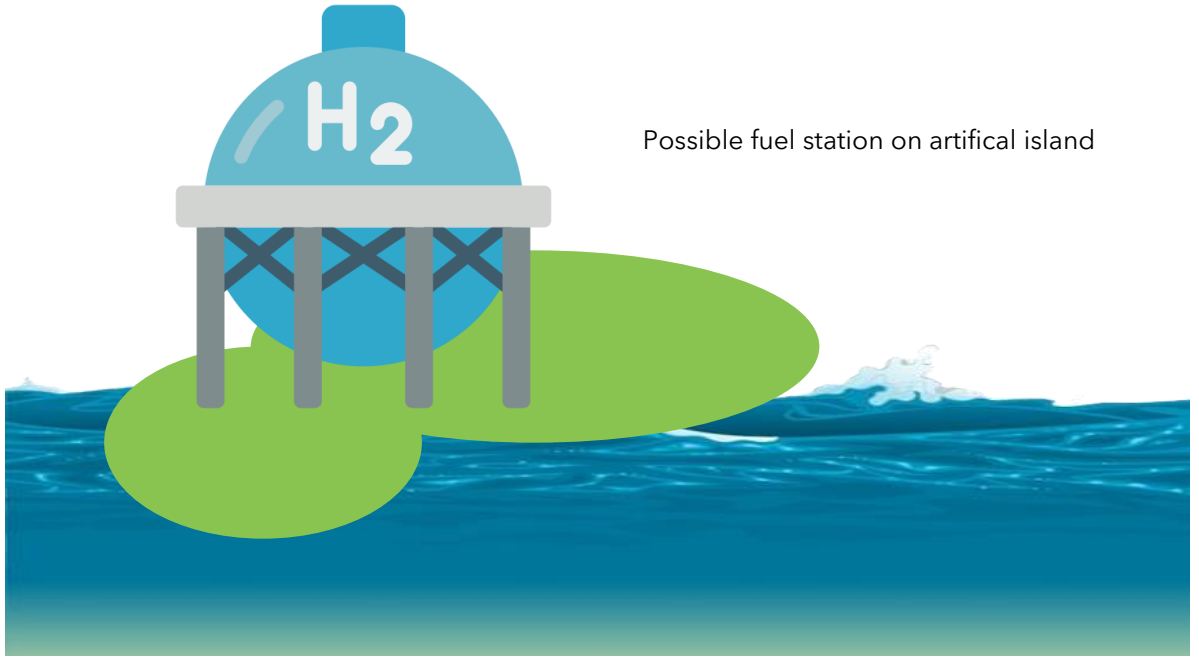
APPENDIX 22 Assumptions for payment of bundle solution of windturbine and electrolyser





Customers will pay more for a more intergrated and effective wind turbine because cost of production will decrease per MWh

APPENDIX 23 Maritime Solution with Mærsk



Possible fuel station on artifical island

As part of its strategy to decarbonize customers' supply chains, A.P. Moller - Maersk (Maersk) has entered a green* methanol Letter of Intent with U.S. based SunGas Renewables, Inc., a spin-out of GTI Energy, and a leader in providing technology and equipment systems for large-scale production of renewable fuels. **This is Maersk's 9th** such partnership to drive the acceleration of global production capacity for green methanol

Sources: 1) Maersk.com

APPENDIX 24 Vestas Hydrogen Service boats as Proof of concept for small scale maritime

As part of its journey towards becoming carbon neutral by 2030, without the use of offsets, Vestas is pioneering innovative solutions to reduce carbon emissions from its own operations. In collaboration with long-term supplier Windcat Workboats, Vestas is launching a pilot program to explore how the world's first hydrogen-powered crew transfer vessel (CTV) can help reduce carbon emissions from its offshore service operations.

However, this is powered by grey hydrogren and must be developed further to be fully sustainable

Source: 1) Vestas.com

GREEN HYDROGEN SYSTEMS

H2energy

Green Hydrogen Systems signs new order of 16 A-Series electrolyser units

Green Hydrogen Systems A/S announces a new order, including supply and service agreement of 16 A-Series pressurised alkaline electrolyser units with a combined capacity of 7.2 MW which is the Company's largest order to date. A majority of the electrolyser units are targeted for delivery in 2023, and the remaining part in 2024.

H2 Energy orders a 1GW Power-to-X (PtX) plant in Esbjerg from American Plug Power. When installed, the electrolyser will be the largest capacity electrolyser installation in the world to date, and will play a central role in the Danish energy supply chain

Sources: 1) Greenhydrogen.com, 2) Investindk.com

APPENDIX 26 What does an offshore electrolyser look like?

Scale will depend, but can vary from 5-10 MW (Ramboll). These will grow significantly in the future