



**CLEANERGY
SOLUTIONS**
NAMIBIA

Project Development: Procurement Re-Electrification and Construction

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Ohlthaver and List Group of Companies















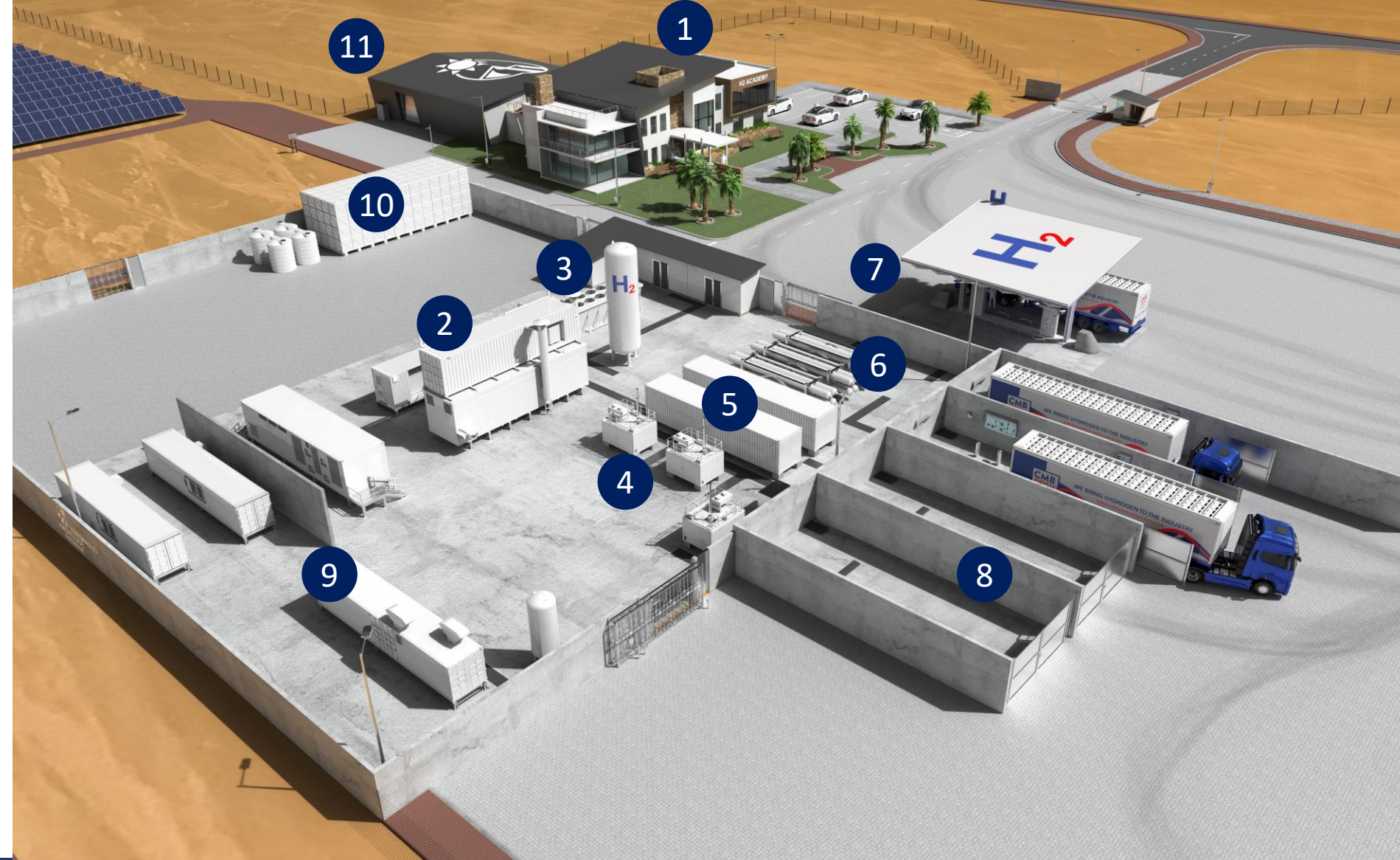
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H₂ production plant

20ha at Farm 58 will consist of 5MW_p solar farm, H₂ production area, H₂ dispensing area and H₂ academy

Collaboration to develop strong eco-system

		<p>Finance, build, operate and maintenance of the hydrogen pilot plant</p>
		<p>Shareholder Cleanergy Namibia</p>
		<p>Subsidiary of O&L which will support Cleanergy Namibia on the design, engineering, purchasing and construction of the solar park and battery storage system</p>
		<p>Shareholder Cleanergy Namibia</p>
		<ul style="list-style-type: none"> • Comparison of different technologies for electrolysers and solar parks within Namibian environment. • Optimisation of full plant based on analyses of operational and production data.
		<ul style="list-style-type: none"> • Impact of corrosion on materials of the Pilot Plant. • Education on inspection, maintenance requirements and methodology to enable safe operations of a chemical production plant ("Prueftechnik-methodology")



1. Training centre
2. Electrolyser container
3. 40bar low pressure buffer
4. Compressors
5. 300bar storage
6. 500bar storage
7. 350bar dispensers
8. Trailer bays
9. IA & N2 container
10. Water tanks
11. Dual Fuel workshop

Key components of the 5MW green hydrogen plant

5MW electrolyser will produce up to 220 kt of hydrogen per annum



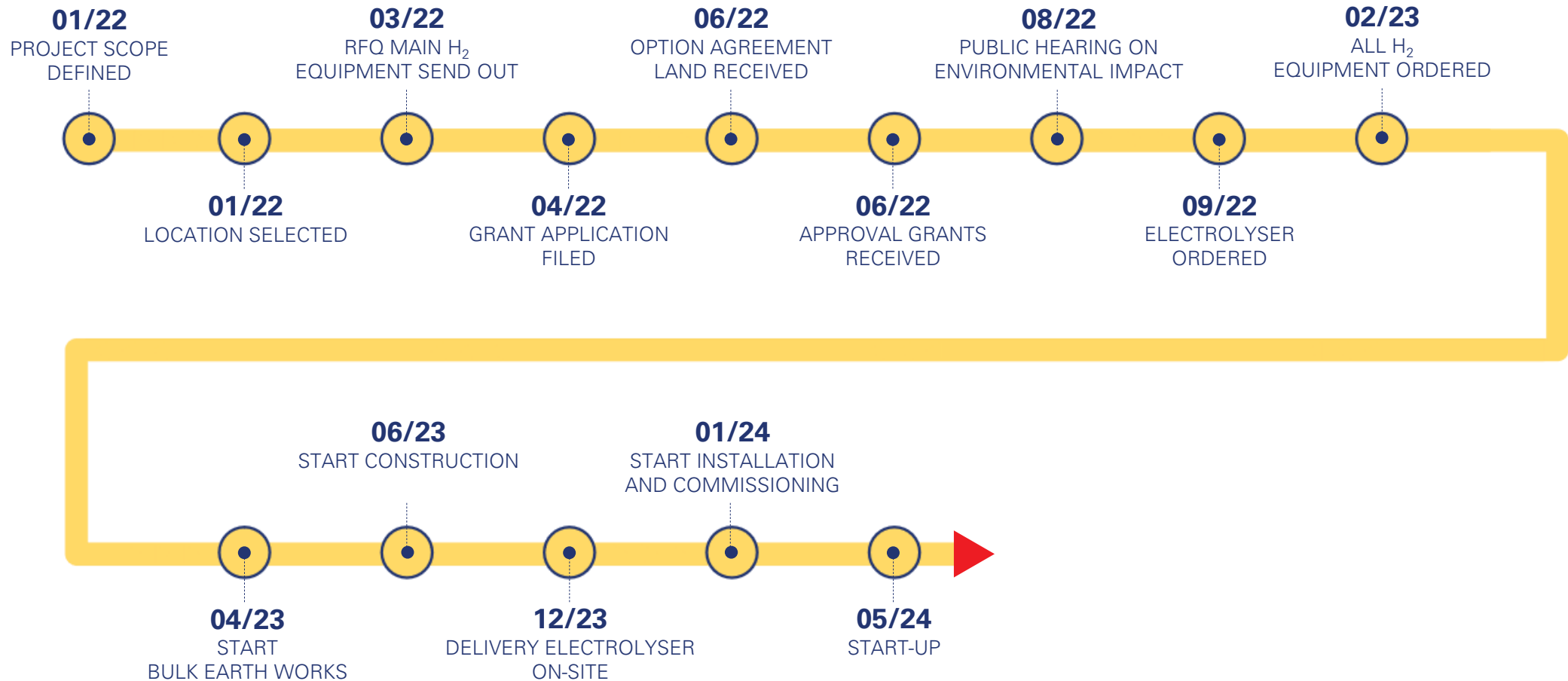
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H2 ACADEMY

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Realized by:
**CMB
TECH**

The Demo Plant will be commissioned during Q1 / 2024



Role of Procurement in GH2 Project

- Direct Impact on the overall success, efficiency and sustainability of these initiatives
- The significance of procurement can be understood from various perspectives:

Technology Procurement

Renewable Energy
Procurement

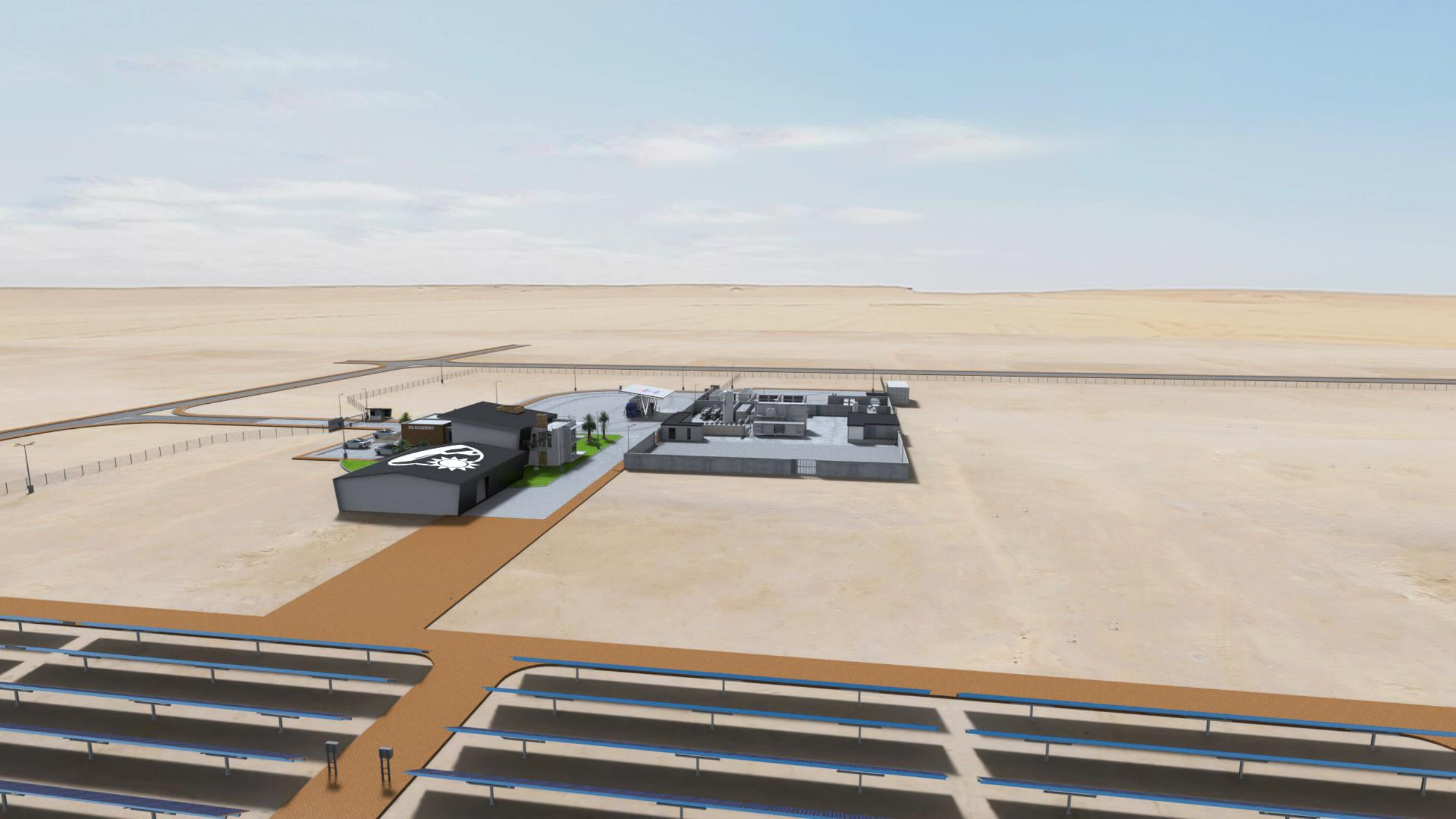
Raw Material
Procurement

Infrastructure Procurement

Economic and Financial
Considerations

Certification and Standard
Compliance

Environmental and Social
Responsibility

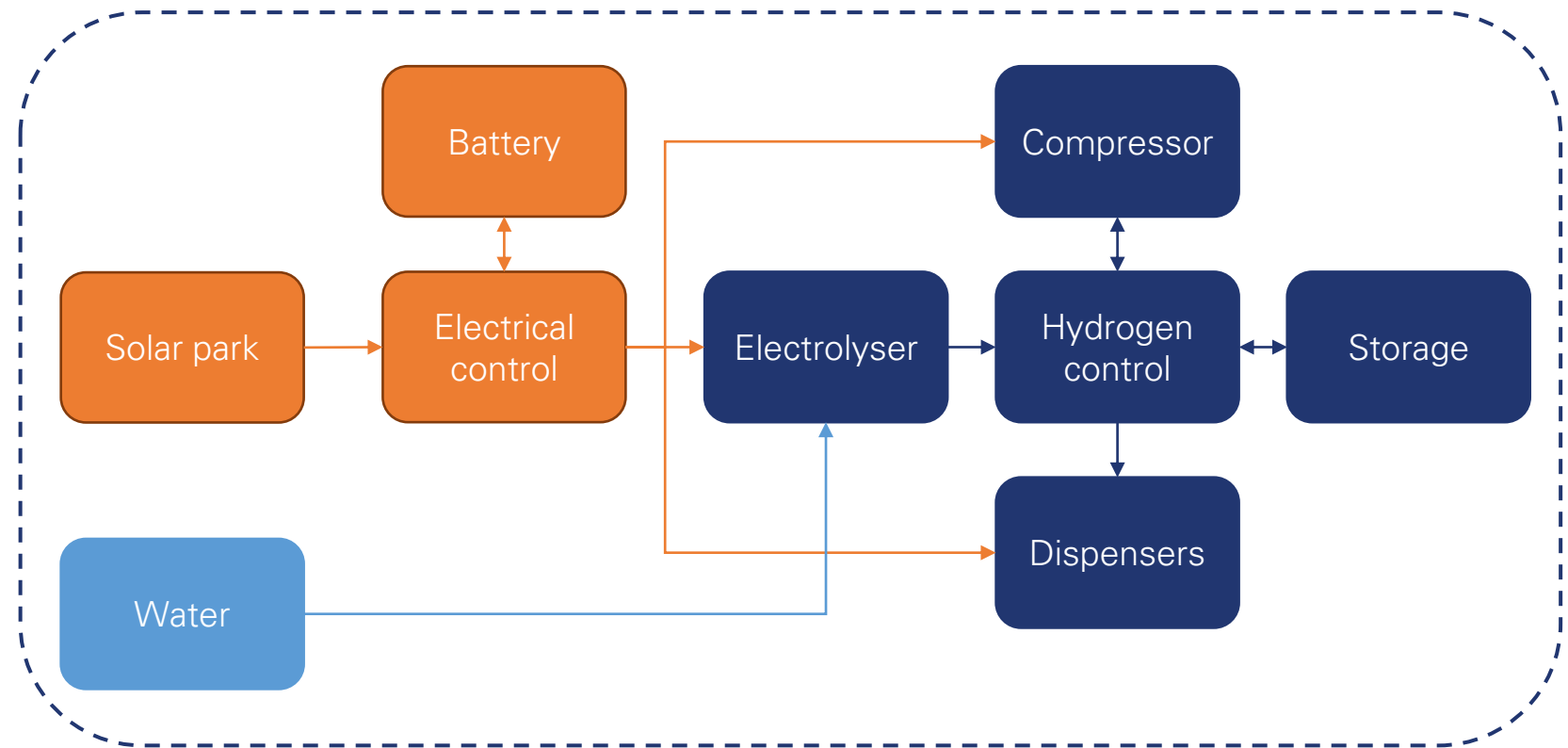


Developing projects includes a lot of third parties

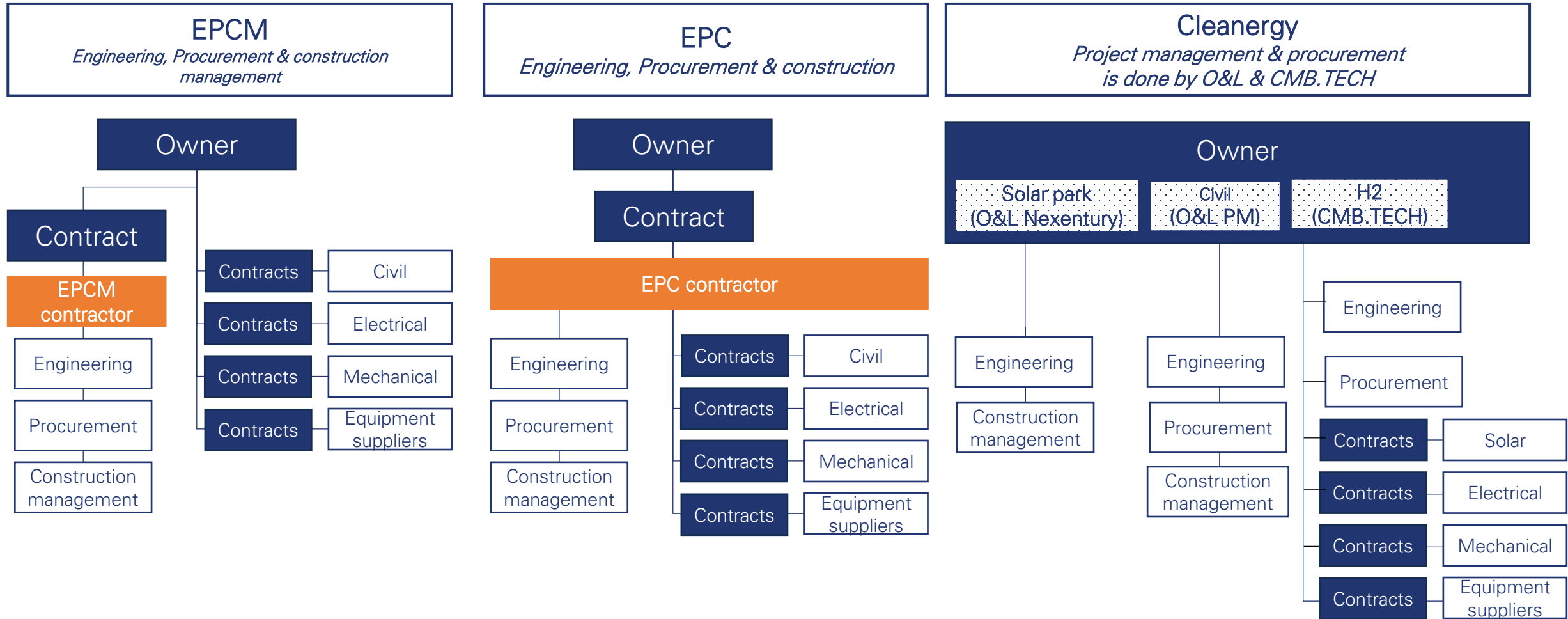
Complex projects involve several disciplines:

- Permitting and stakeholders management
- Health and safety management
- Engineering:
 - Mechanical
 - Electrical
 - Instrument
 - Control strategy
- Civil management
- Legal support
- Financial support

High-level block diagram



Overview of some EPC structures



Factors influence procurement strategy

Type of Project:

- Innovative character: increased risks (technical, timing, ..) can impact EPC quotations substantially and total project cost.
- Can scope be clearly defined?: How sure are you on the technical requirements which needs to be written down in the EPC-contract?
- Location: not all EPC companies want to build small scale chemical plants in Namibia

Project owner:

- Does suppliers and EPC companies believe in your company, and do they want to put effort in your project?
- Can your team drive the project without EPC partner (engineering, procurement, legal, technical,...)?
- What are the main project goals? Gaining experience, timing, reducing risks,...

Financing:

- Is the project financed via equity, banks or subsidies? Every stakeholders can have certain requirements.

Each contracting strategy has its own benefits

	EPCM	EPC
Project risks	<ul style="list-style-type: none"> + Specifications can be modified during the project + Owner has a full financial control over the project - More time consuming for the owner: need to find and interact with the sub-contractors 	<ul style="list-style-type: none"> + Contractor is 100% responsible for the delivery of the project: on time and within budget + Less time consuming for the owner - Higher costs, as the contractor incurs more risks. - It is complex to change the specifications during the project. Project's scope must be well defined since the very beginning.
Project team	<ul style="list-style-type: none"> + Owner has the project team in control 	<ul style="list-style-type: none"> + Owner does not need to find all the contractors - Owner has no control on the choice of contractors
Innovation eagerness	<ul style="list-style-type: none"> + Keener to develop and assist from the early phase of a completely innovative project 	<ul style="list-style-type: none"> - No so keen to develop a completely new/innovative project

Cleanergy is its own EPC contractor

- Cleanergy wants to develop the expertise and skills in house.
- Cleanergy's mission is to upskill its employees during the whole project.
- Cleanergy wanted to choose its suppliers. Focus on Namibian market as much as possible.



Lessons learned – The devil hides in the details

Supplier selection:

- Not all suppliers are interested to delivery in Namibia
- Need to gain the trust of the suppliers: need to show that we are a credible company.
- Contracting discussions: time consuming
- Spotting a trustworthy supplier is a major challenge. Suppliers can promise moon but will they deliver it?



Terms and conditions:

- Finding compromise is time consuming and not always possible but having good T&C will guarantee a good relationship with suppliers.



Warranty:

- Namibia, especially along the coast, has a harsh environment. Suppliers don't always give warranty under these conditions.
- Generally, warranty period starts after the delivery of the equipment. Depending on the agreed **Incoterms**, the warranty period can already start before delivery, the equipment is not yet on site.



Spare parts: Require enough spare parts as not all suppliers have dealers in the South-Africa & Namibia. Lead times to re-order spare parts and correct one might be a challenge. This additional cost is extensive.

Lessons learned – The devil hides in the details

- Payment terms:
 - Suppliers require bank guarantees or upfront payment.
- Delivery:
 - Takes time: +/- 45 days for a container to go from Antwerp/Hamburg to Walvis Bay
 - Lead time vary from 12 months to 48 months
 - Insurance must be in place. You never know what will happen on the ship
 - Some European companies do not accept purchase order from a Namibian company. The purchasing must be done from a European company. This has a cost impact.
- Testing and commissioning:
 - Having the right support during commissioning can be a problem. Commissioning and testing must be planned well in advance to have the right technicians.
- Timeline: Never enough time
- Installation:
 - not always included in contract, must be done at own risk, finding the right skills can be challenging



Bricklaying ceremony took place on 28th of September 2023



The construction works are ongoing





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Thank you

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