



GH2 Masterclass →

**EPC Contracts, key issues and lessons
learnt**

November 2023

Who is Zhero?

- **Zhero** is a green energy company that is focused on developing and implementing:
 - i. large-scale renewable energy plants and utility scale storage,
 - ii. production of green hydrogen and derivatives,
 - iii. electricity interconnectors.
- **Zhero** has a geographic presence in United Kingdom, Europe, Southern Africa, Middle East and the United States.
- **Zhero** first investment was in **TES** which is developing a green energy import and production hub in Germany.
- **Zhero** business model is to focus on **large scale initiatives** and replicate proven solutions on a global basis.
- **Zhero** will always seek lower cost of energy production in an effort to promote development of new infrastructures whilst at the same time constantly driving down costs

zhero

M. Alverà



Co-founder & CEO

P. Padmanathan



Co-founder & Vice Chairman

A. Pasini



Co-founder & President

E. Vitali



Co-founder

Zhero's Growth Roadmap

 **2022/23**

1° FID (TES)

11 GW identified leads

~20/30 FTEs



 **2026/30**

5GW FID by 2026

~10GW near term dev.

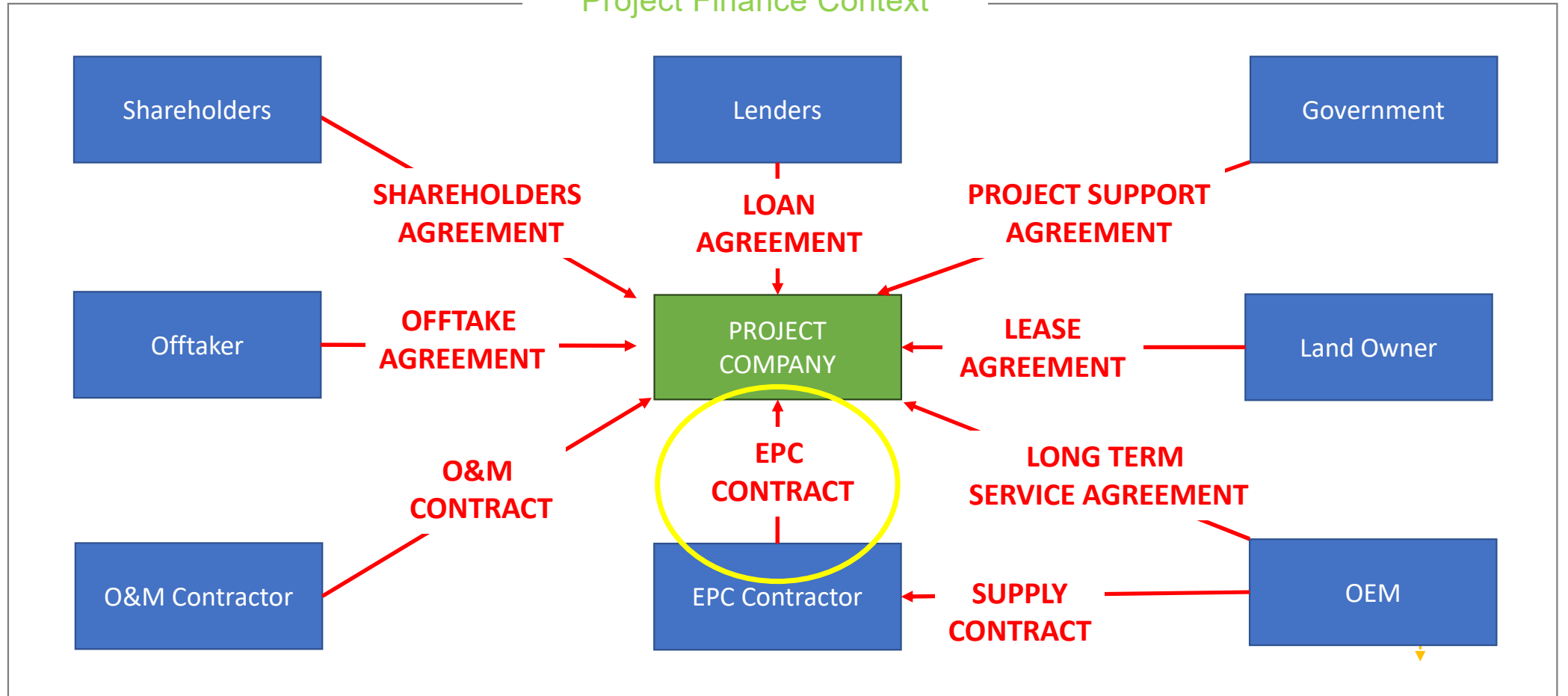
~ 10/15GW LT dev.

>50 FTEs



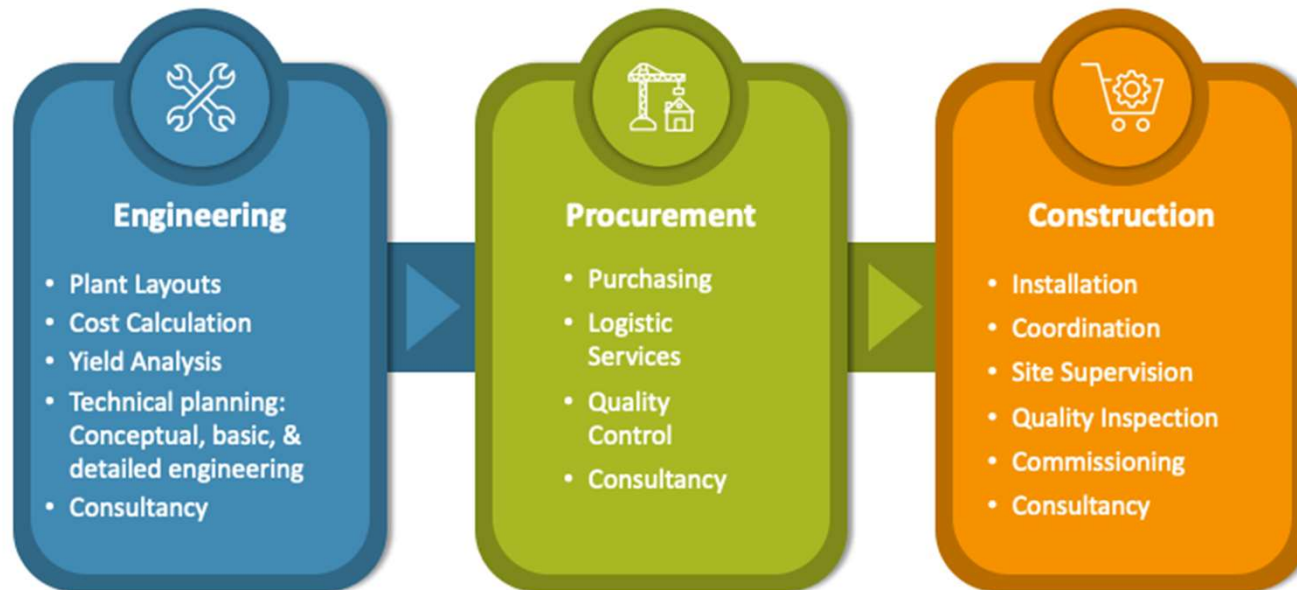
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Project Finance Context



What is EPC?

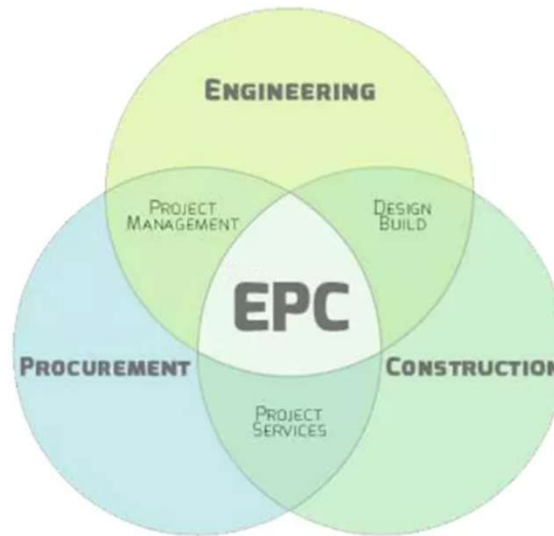
Engineering Procurement and Construction



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Why EPC?

- **Advantages to EPC contracts:**
 - Scope and price is fixed,
 - Interfacing becomes Contractors risk to manage,
 - Construction risk is allocated to one entity (could be JV),
 - Limited involvement from Employer.
- **Disadvantages to EPC Contracts:**
 - Increase in contract price for Contractor to take project risk,
 - Costs to vary scope is normally high unless this is included as a priced option,
 - Limited involvement from Employer.

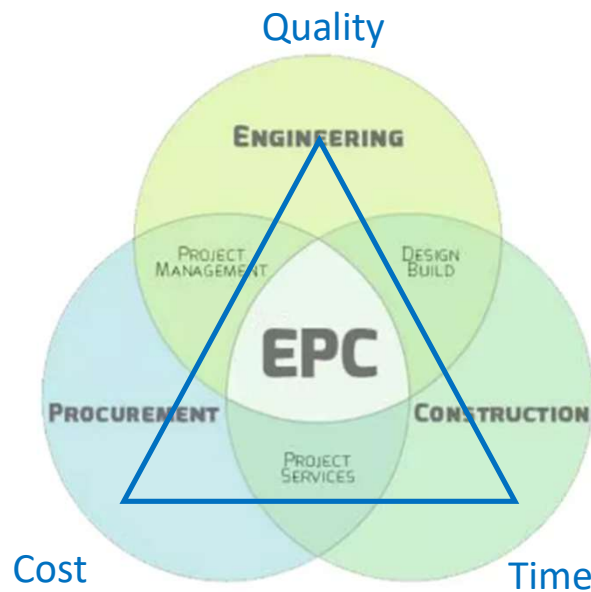


How to compile EPC contracts?

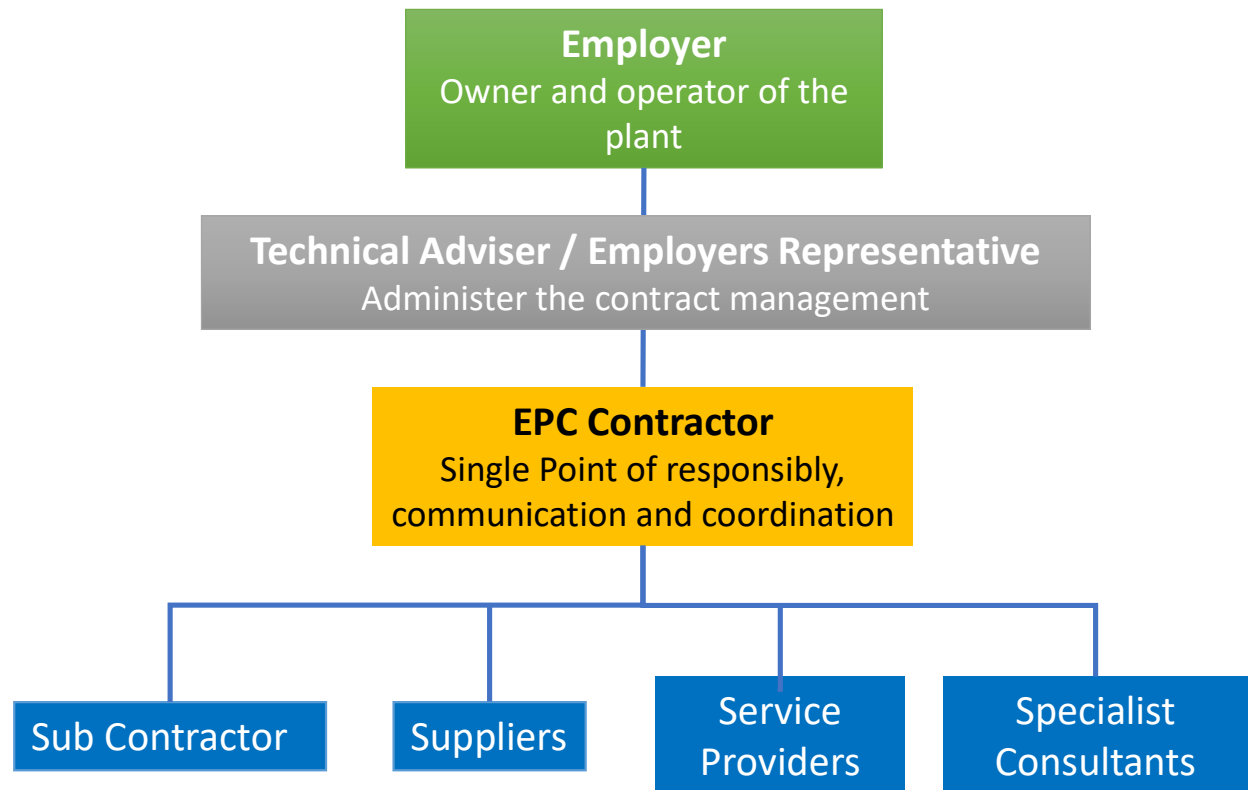
- Decide on whether you use a standard contracting suite or bespoke contract?
- Employer defines:
 - scope description & timelines;
 - overall performance expectations;
 - battery limits;
 - functional specification.
- Contractor provides:
 - fixed price and milestone payment schedule;
 - programme & execution methodology;
 - performance guarantees;
 - any deviations to the specification;
 - list of key staff and personal.

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Project Management Triangle



EPC Organogram



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Key issues to ensure a successful project

- **Employer perspective:**
 - Appoint the right contractor
 - JV entities should be jointly and severally liable
 - Clear scope of work
 - Manage the scope and scope creep ruthlessly
 - Scrutinise key contractor staff
 - Oversight of the insurance policies for the contract
 - Good performance guarantees
 - Tender and Performance bonds in place
 - Benefit from Defects Notification Period
 - Ensure key milestones and turnaround times are adequate for Employer involvement / comments



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Key issues to ensure a successful project

- **Contractor's perspective :**

- Understand the project from risk perspective
- Include adequate float in the project schedule
- Include a cost contingency in the contract price
- Apply safe engineering margin between actual performance and technical specifications
- Ensure adequate systems and procedures are in place to minimise risk and ensure quality
- Use reputable suppliers
- Ensure that the payment schedule lines up with key payments to suppliers – i.e. manage cash flow
- Employ knowledgeable and experienced staff members

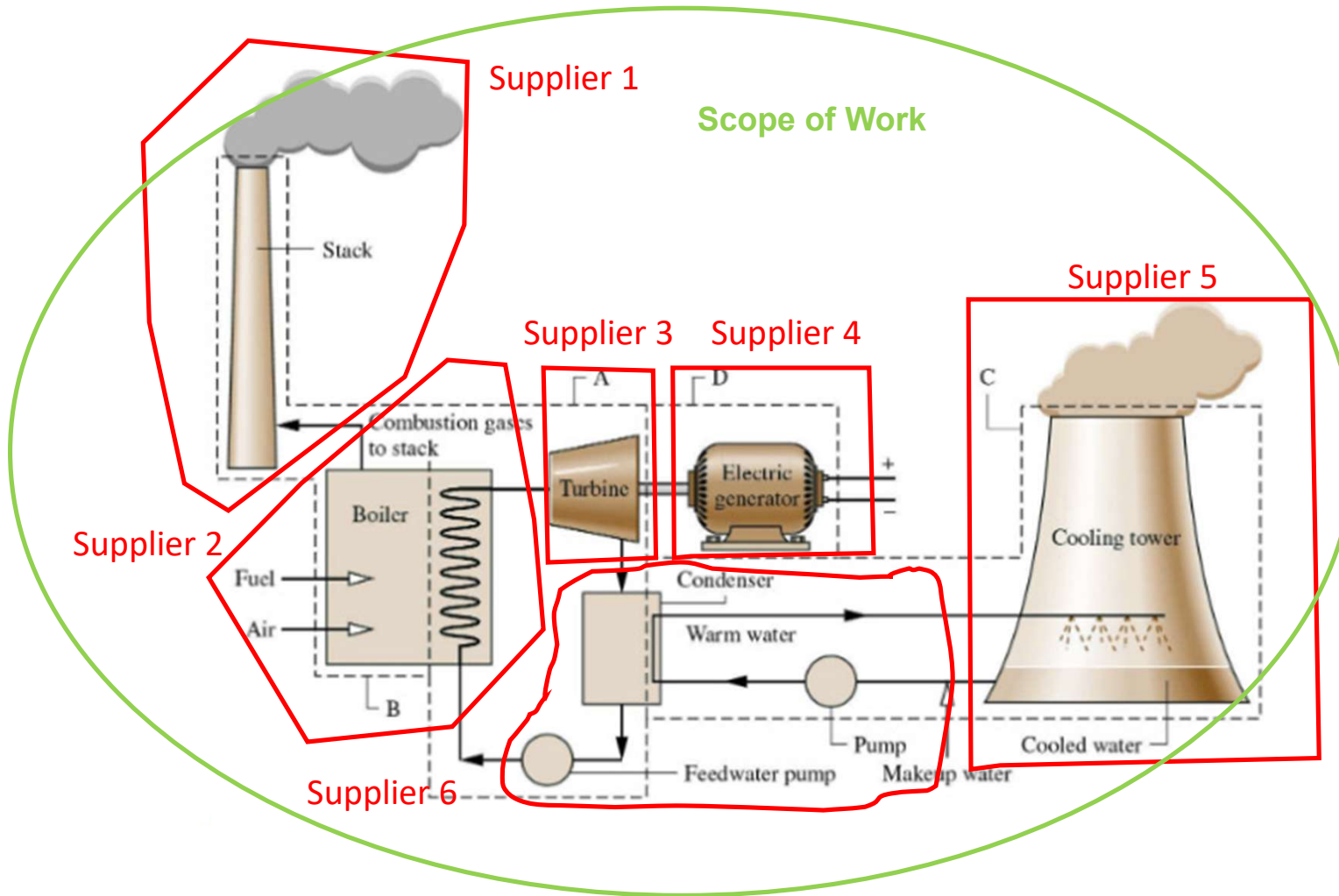


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Example EPC vs EPCM

Interfaces

- road
- tx lines
- central control
- water





Thank you
