PO.ID 217

EIGHT YEARS OF OFFSHORE WIND PROJECT FINANCE: LESSONS LEARNT THAT LED TO SECURING THE LARGEST OFFSHORE WIND FINANCING IN THE WORLD

Marios Papalexandrou, John B. Porter
Mott MacDonald

Abstract

How do we make sure that lessons learnt from eight years of non-recourse project finance experience are captured for future projects? How do we make sure that problems of the past will not be repeated? Approaches towards risk management may be similar for different offshore wind developers but effectiveness of mitigation measures may differ significantly, especially during project construction. Experience and track record is always the key but how does it fit in the overall picture to deliver a successful project within time and budget?

With appetite in offshore wind finance growing, it is important to capture the lessons learnt from eight years of project finance in offshore wind. This paper examines the lessons learnt from a technical/commercial perspective from the financial close of the first non-recourse financed project Princess Amalia back in October 2006 until the financial close of Gemini offshore wind farm in 2014 as well as trends in costs, technology and risk allocation.

Approach

This presentation is based on work carried out by Mott MacDonald in our role as lender's technical advisor on 16 projects, of which nine have reached financial close, seven are in operation and others are in development stage or did not proceed with non-recourse finance. These lessons are based on the construction and operation experience gained from debt financed offshore wind farms in Europe which have been taken into consideration during our due diligence work that led to attracting and securing a EUR 2.1 billion non-recourse finance for Gemini offshore wind farm in May 2014, the largest in the world to date.

Lessons Learnt

Although each project is unique we have identified a number of lessons from the technical due diligence process we have followed which are provided below:

- **Project participants:**

Competent team to be interviewed and confirmed for its abilities. Small teams seem to collaborate better and keep good communication of what is happening. There will always be something unexpected during project construction and the best risk mitigation is the ability to respond.

- **Design and certification:**

Make sure that design is complete prior to Financial Close and that certification will be achieved by Financial Close or within a few months later but with status and clear timelines confirmed by the certifying body before Financial Close.

- **Contract Structure :**

To be tailor-made to the project company capabilities. Interfaces to be penny perfect detailed in the contract structure before moving to construction.

- **Installation**:

Fully understand vessel capabilities versus weather conditions at site. Actively check vessel back up plans in case of major delays. Always involve the Marine Warranty Surveyor early in the pre-construction stage.

- **Schedule:**

The project installation schedule should be robust enough to resist at least P90 weather conditions plus some slack and the vessel charter period should cover this schedule.

- **O&M strategy:**

Early involvement of O&M team from design stage to take into account long term operability and optimise O&M costs.

- **Permits:**

Proactive approach of the Project Company with involved authorities to resolve potential issues and safeguard permits to be completed prior to Financial Close. Permit matrix being kept alive during construction phase to monitor fulfilment of all permit requirements.

- **Contracts:**

Clear language in weather risk allocation and risk sharing can lead to avoidance of disputes during the construction phase.

Future direction

Technology trends:

- Turbines: 8 MW entering commercial operation but developments still vary between proven technology smaller WTGs and larger coming into the market.
- Electrical: 66kV inter array cables not commercial yet, export cables 220kV AC being established that can be used for larger distance than expected (100+km), HVDC growing in Germany and starting implementation in the UK.
- XL Monopiles are used for water depths up to 40m for less than 5 MW WTGs and for up to 20m water depths for up to 8MW WTGs. Innovative solutions such as suction bucket foundations may be much more cost competitive compared to jacket foundations for >5 MW turbines but they are not yet proven.

Market trends:

- Contractors start taking full weather risk at a premium. Project Companies decide if commercial conditions are satisfactory to accept this premium.
- WTG costs seem to stabilise between 1.3 to 1.6m EUR/MW but there are indications that prices can lower significantly. Also, bigger rotor diameters introduced produce significantly more power so cost per KWh is reduced.
- Energy based WTG availability warranty has been introduced similar to onshore wind projects.