

## Abstract

Multi-contracting and Risk Management require a higher commitment in form of time and resources for the planning of an offshore wind project from the developer.

However this front-loaded approach and investment will pay back several times due to the projects reduced uncertainty and enhanced cost transparency.

## Objectives

### Investment Needed

#### Multi-contracting:

- Higher developer/owner involvement, no overall responsible contractor
- Interfaces and risks are managed by the developer/ owner
- Focus on scheduling and early optimization

#### Risk management:

- Developer needs effective risk management in order to handle project engineering and construction phase

#### Expertise Needed for use of Best Practice:

- Optimal project execution requires using real life lessons-learned from several wind projects.
- The project can be fast-tracked by utilizing experienced specialists who have implemented wind projects or witnessed contracts turned into construction to avoid pitfalls and delays

#### Recommended team setup:

- Risk Manager
- Package managers feeding the risk manager with input and being responsible for their part of the project
- Contractors to participate and comment on risks

## Methods

### Effective Risk Management

#### What:

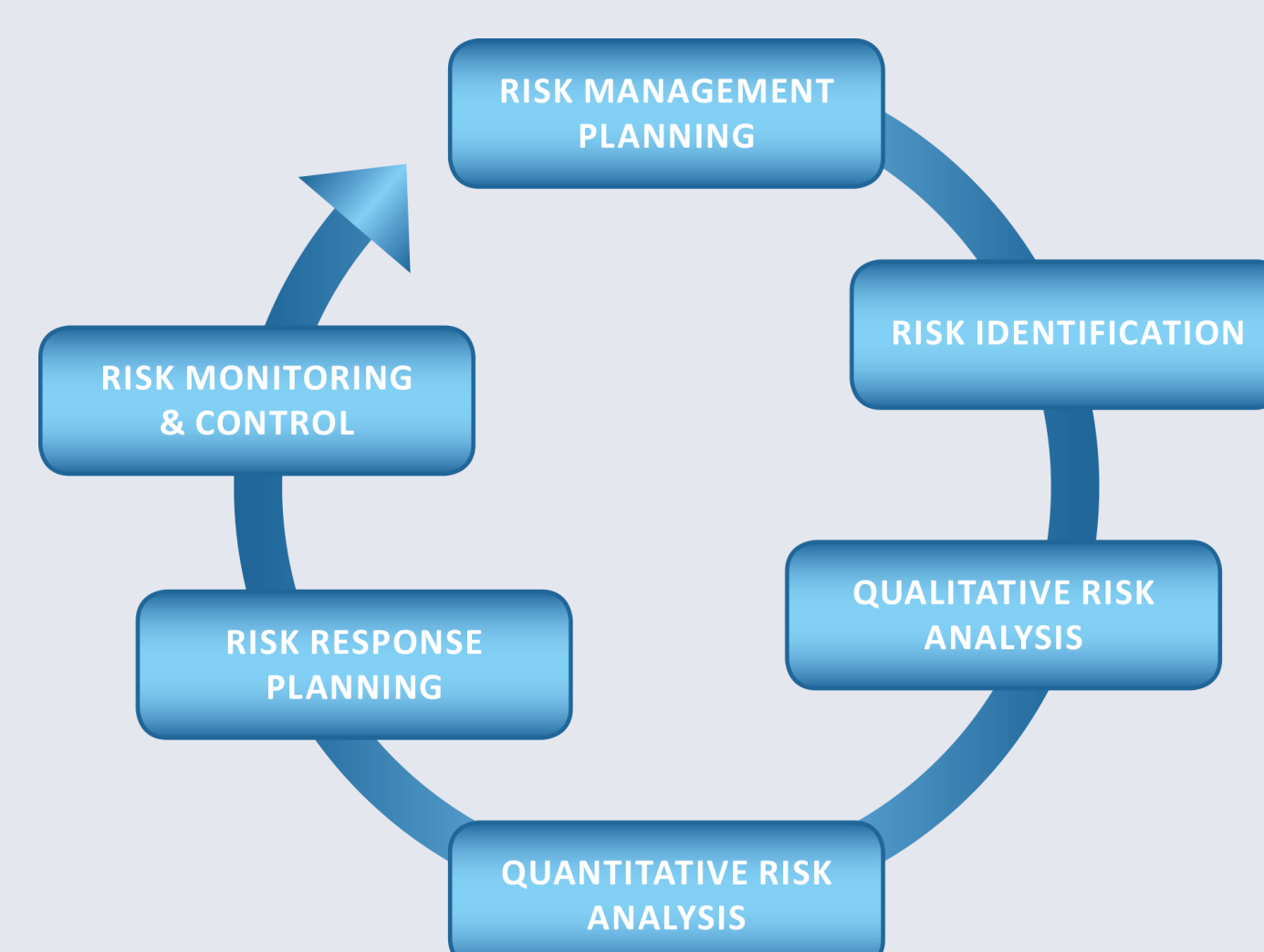
- Define the specific interface and/or risk
- Identify, prioritize, mitigate, and track the progress of each risk identified

#### How:

- Apply lessons-learned from previous projects
- Identification of risks
- Classification of risks (severity)
- Assess design, fabrication, transportation and construction
- Assign ownership
- Commence mitigation process

#### What it takes:

- Frequent risk meetings
- Update regularly (risks in/out)
- Focus on most important (top 10)
- Open risk culture to prevent risk concealing



## Methods - continued

### Risk Matrix as Foundation

	Probability	Financial Impact	Schedule Impact	Technical Impact	Reputation Impact	Health & Safety	Environment
5	Very High	> 70% > \$5M	> 20 days	major damage/ potentially disastrous effect	public / media outrage (demand inquiry)	Several fatal- ities / serious injuries	Major pollution/ environmental con- cern with significant clean up
4	High	50-70% \$1M - 5M	10 - 20 days	large damage / serious effect	public / media concern (civil action)	A fatality, significant injuries	Moderate pollution / environmental con- cern, with some clean up costs
3	Medium	20-50% \$0.5M - 1M	5 - 10 days	medium damage	Adverse external publicity	Moderate injury	Limited levels of pol- lution/environmental concern, manageable
2	Low	5-20% \$0.1M - 0.5M	1 - 5 days	noticeable dam- age or impact	Adverse internal criticism	Minor injury	Minor pollution/envi- ronmental concern
1	Very Low	< 5% < \$0.1M	< 1 day	minor damage or impact	Minimal impact on corporate image	No injury, effect on health	No pollution/envi- ronmental concern
0	-	NA	NA	NA	NA	NA	NA

**What it does:** Identify, prioritize, mitigate and track progress

#### What to assess:

- Probability
- Financial impact
- Schedule impact
- Technical impact
- Other impact
- Mitigation plan
- Mitigation responsibility



#### Also needed:

- Risk management plan
- High level contingency plans

## Results

### Real Life Effects

- Contractors' scope is more precise from early stage onwards
- Desk planning prevents forgetting interfaces
- Contracts are more inter-linked, eliminating double coverage
- Risk register identifies project details to finance and insurance
- Reduced insurance premiums due to enhanced understanding
- Precise owner controlled insurance program (OCIP)
- Experience reduces construction costs

## Conclusions

### Benefits at a Glance

- Active risk management can reduce the costs of offshore wind projects in planning, engineering, contracting and construction
- Experienced managers can fast-track a project

### Influence on:

- CAPEX: lower construction budget, contingencies
- OPEX: spare parts, supply chain, logistics, availability of turbines
- Schedule: shorter construction, tested handover, reduced time contingencies
- Insurance: better understanding of risks, lower premiums
- Finance: easier financial commitments, opens market for more investors
- All elements will be considered and not forgotten
- Prevents project gaps

