**Stakeholder Analysis**

In general, there are six main stakeholders/groups that can be identified for nearly every wind farm.

- Owner-Operator
- Local Population
- Governing Authority
- Environmental Groups
- Grid Operator
- Supply Chain

Early engagement of all relevant stakeholders is essential to wind farm project success. Each of the abovementioned groups has a unique stake in the development process and could affect the progress of the project not only during the original construction but also in repowering. This is the reason why it is important to understand their roles and positions in the process and how their opinions affect the decision-making process.

Stakeholder analysis carries over to the SWOT Analysis.

**SWOT Analysis**

A SWOT Analysis is a structured planning method used to evaluate the strengths, weaknesses, opportunities and threats of a project. It is often used in participatory planning approaches, but it is only a tool and it has to be based on a sound knowledge of present situation and trends.

**Methodology – RSPM Framework**

In general, repowering can be split into two main activities; Decommissioning for Repowering (DR) of the old wind farm and construction of the new wind farm, where the former precedes the latter, and following the same logic, the repowering project has two main sub-projects.

With a deliberate repowering strategy, the transition between these sub-projects and the existing and new wind farm is done in the most time-efficient manner.

**Vision – Optimal EOSL Solution**

The owner-operator has two options at the wind farm’s end-of-service life (EOSL) and the choice between these options has to be in accordance with the social responsibility towards the stakeholders.

Since the decommissioning outcome is established (secured) through governing norms, in order for repowering to become the optimal EOSL outcome, a mission for continuing production and repowering the wind farm would have to be made and the appropriate repowering strategy would have to be formulated, planned, and implemented to ensure its execution. In other words, repowering would have to be deemed feasible and profitable to be pursued, and the underlying assumption is that if these conditions are satisfied, the owner would pursue this option.

Given that both outcomes require dismantling and management of used wind turbines, the term Decommissioning for Repowering (DR) is introduced for the decommissioning outcome wherein the wind farm is repowered. Having decided to pursue repowering, the most fundamental decision the owner has to make is to determine the type of repowering. This paper focuses on two main types: partial and full repowering.

**Identification of Alternatives**

With a completed strategy analysis that assessed the internal and external forces characteristic to the wind farm and its repowering strategy, the next step is to identify all of the possible alternatives with the aim of selecting the optimal one. These alternatives have been split into four broad groups of considerations that generally encompass all of the decisions the owner-operator is faced with.

- Site Area Considerations
  - Expand the site area
  - Keep the same site area

- Wind Turbine Selection
  - Use bigger wind turbines
  - Use similar wind turbines

- PPA Considerations
  - Keep the same installed capacity
  - Increase installed capacity

- Foundation Considerations
  - Use/upgrade existing foundations
  - Lay foundations for new WTs in different coordinates

**Wind Farm Program Timeline**

The best case transition period is achieved when the initiation and planning phases of the repowering project are carried out during the existing wind farm’s service life. Figure 4 illustrates the wind farm program and suggests six key milestones in the repowering project life cycle.

- Milestone 1 – Beginning of wind farm program
- Milestone 2 – O&M warranty expiration date
- Milestone 3 – Halfway point of the existing WF operations
- Milestone 4 – End of initiation and start of planning phase
- Milestone 5 – EOS and start of execution phase
- Milestone 6 – Repowering project closure, new WF operation

**Conclusions & Recommendations**

This research demonstrates the applicability of fundamental strategic and project management methodology on repowering and suggests tools and concepts that can aid the decision-makers. Given the study’s theoretical nature, the RSPM framework needs to be tested for an existing wind farm, preferably two, with one being onshore and the other offshore to compare the differences in strategy development and implementation. The distinct contribution to the body of knowledge lies in identifying the potential in viewing repowering from an innovative perspective, rather than a solely engineering one.

**References**

