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How Logistics is a Major but Underestimated Contributor to Project Risk

Based on our experience consulting for large, complex industrial projects globally, we find that logistics is a major source of disruption to projects, while not being identified as such in most risk assessments and project organisations. In this White Paper we investigate this issue, why it is underestimated, and what can be done to address effectively this risk area.

Risks related to logistics in industrial projects

In our experience, there are roughly two different categories of logistics risks: loss and damage during transportation to site, and on-site logistics driving erection productivity.

Loss, damage and delays during transportation to site

Loss and damage during transportation is much more prevalent than generally considered. In a dozen years' experience as project consultants on major industrial projects, we can't count projects that have been put in jeopardy (or have been very closely jeopardised) because of ships sinking, containers being lost at sea, lifting mishaps, out-of-size convoy trailers encountering bridges and other obstructions... resulting in the damage of key pieces of equipment requiring long durations for replacement. The consequential impact of such events on projects can be significant, orders of magnitude more than any compensation by insurance of the actual event.

More insidious damages can also happen through lack of proper packaging or damage due to vibration caused by transportation e.g. remote sites may only be accessible through dozens of kilometres of unpaved roads.

Loss or damage during transportation may require substantial rectification and replacement effort prior to on-site readiness for erection. Transportation mode or packing issues may also be a common cause of damage for large quantities of equipment and material, resulting in substantial delays to the project and additional cost (this reinforces the need to check on the condition of all received packages as soon as possible).

Substantial delays can often happen at customs in particular if the importation process is made special for this particular type of investment.

Finally, lack of proper preservation during storage on-site may also cause damage, although this aspect is generally better apprehended by projects.

On-site logistics and productivity

Worksite logistics from lay-down and prefabrication areas to erection areas is a major driver of on-site productivity.

While in this case damage appears to occur less frequently, the general organisation of logistics on the worksite is often under-analysed resulting in major project impacts in terms of erection productivity and schedule. Often, the erection teams are blamed for productivity shortfall while the issue may actually be more due to the logistics arrangements that create bottlenecks or do not deliver material in a way that is easily usable by erection teams. Productivity issues during erection where large teams are mobilised on site have very significant impacts on project cost and schedule.

How to improve logistics for large industrial projects – transportation to site

Proper planning, risk assessment and mitigation planning

The field of logistics is made complicated to influence by the fact that multiple service providers are involved in the logistics chain, and it may be difficult to ensure that each link of the chain is aware of the precautions that need to be taken.

Still, it is essential to devote sufficient focus on setting out a comprehensive logistics plan that can be analysed for risks so that mitigation actions can be

taken. Those may include:

- Ordering additional spare equipment,
- Diversifying logistics routes or spreading deliveries over time to avoid common cause of loss (e.g. not putting everything on the same ship),
- Hiring a competent overall freight forwarder and relying on a comprehensive tracking system,
- Increasing the scope of identified reliable transporters even if more expensive overall,
- Increasing budget and precaution on packaging,
- Substantial on-the-ground presence at major logistics rupture points between transportation modes,
- etc

Early nomination of a logistics manager with sufficient resources

To support this process, we recommend the early nomination of a logistics manager with relevant experience to plan the logistics activity. that the logistics manager also

Increase the level of attention on logistics issues by mobilising experienced professionals early in the project and providing them with the means to effectively control the key critical points in the project logistics setup.

needs to have sufficient resources to effectively control the most critical steps in the logistics chain so that essential requirements to preserve project equipment are actually implemented. Logistics often falls under procurement or supply-chain management and may not get the proper attention from the project procurement manager. What is important here is to draw on the relevant experience early in the project (planning and contracting phases) and then ensure that the right level of resources are actually mobilised at the critical points of the logistics chain during execution. This is particularly important if the project is built in an unfamiliar country or environment, as this will require more effort in the planning, probably site visits as well as recovery of relevant lessons learned to ensure a smooth execution.

Logistics is an underestimated area of project performance risk, and it comes to play much more frequently than estimated in large, complex, international industrial projects.

strongly recommend projects to internalise a strong logistics coordination team with the authority to drive the priorities and manage interferences. Therefore, as part of the construction management team, the construction site coordinator should have a strong worksite logistics management team with adequate authority (and budget) to enforce the logistics arrangements that will benefit the project the most. Contractors should then only provide additional supporting logistics resources. Also for contractors, it is recommended that they internalise this key function to ensure adequate productivity.

How to improve logistics for large industrial projects – onsite logistics

Proper construction site planning

It is the duty of the construction manager to plan the construction site and the material flows to ensure the intended productivity. It will be part of an overall strategy including in particular a target in terms of prefabrication versus on-site construction. This plan also needs to account for site specifics such as exiguity, access restrictions etc. Position and size of lay-down areas is critical. Key equipment candidates for possible bottlenecks include overhead crange arrangements and elevators, that need to be properly planned in view of the expected flow of material and dimension of pre-fabricated modules.

In brownfield projects it is essential to separate as much as possible the flows of material and people between the ongoing operation of the site and the new facility worksite, if possible through a dedicated access gate and procedure.

Internalise logistics planning and coordination

One of the recurring debates concerns the coordination of logistics on sites involving multiple contractors. Their scope often includes worksite logistics, but this is the source of possible coactivity and potential claims. We

Summary

Logistics is an underestimated area of project performance risk, and it comes to play much more frequently than estimated in large, complex, international industrial projects. This applies both to off-site logistics and to on-site logistics feeding erection. As logistics is considered a secondary function it often does not receive adequate attention during the planning and risk mitigation assessment stage. Our recommendation is to increase this level of attention by mobilising experienced professionals early in the project and providing them with the means to effectively control the key critical points in the project logistics setup.

Read the Industrial Projects Practical Owner Guide

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