

A case study of the delays of dam and channels construction in Albania

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ABSTRACT

The aim of this paper is to discuss and understand the delays during the construction of dam, and Canal projects. Delays in any infrastructure project leads to significant economic and political implications. While the immediate effect is that the public needs to wait for the benefits being delivered by the project, it also leads to many other secondary effects on the economy. Various reasons for these improvement delays, one of the most prominent being issues with land acquisition, followed by under staffing, delays on the part of CWC etc. This research concentrates on the delays in post approval processes related to construction of dam and canals, and this materials are based on the project "Ternova Hydropower", a project of 'Dardania Ndertim' and "Alba American Construction Services" companies that are collaborating with each other. The method being adopted in this study is to make a list of best practices in the industry which helps in reducing the time delays in project execution, and then to check the existence of such practices during the project execution at Albania. Also, the project document available at site has been evaluated to study the issues faced during the project execution stage.

INTRODUCTION

Delay could be defined as the time over run either beyond completion date specified in a contract or beyond the date that the parties agree upon for delivery of a project. It is a project slipping over its planned schedule and is considered as common problem in contraction projects. Stated that delays in construction can cause a number of changes in a project such as late completion, lost productivity, acceleration, increased costs and contract termination.

Almost all Dam and Canal construction projects in Albania are suffering from huge delays in completing the project. This paper concentrates on the delays in post approval processes related to construction of dams and canals and is based on project "Ternova Hydropower", a project of 'Dardania Ndertim' and "Alba American Construction Services" companies that are collaborating in Albania with each other .

The method being adopted by this study was to make a list of best practices in the industry which helps in reducing the time delays in project execution, and then to check the existence of such practices during the project execution at "Ternova Hydropower". Also the project document available at site has been evaluated to study the issues faced during the project execution.

Lack of formal scheduling techniques and failure in effectively monitoring the contractor's performance with respect to the schedule is one of the main reasons for non-performance of

projects. Adding to these is the issues in-competence in the part of Engineers in scheduling techniques and lack of formal risk assessment system etc.

DETAILS OF PROJECTS BEING INCLUDED AS PART OF THIS STUDY

The Ternoves Small Hydropower Project (TSHP) is located approximately 40 km north-east of Tirana, Albania near Bulqiza town. The project benefits from the existence of four lakes located at the top of the Maja e Gjate mountain: "Zi Lake", "Sopove Lake", "Bardhe i Ternoves Lake" and "Bardhe i Valikardhes Lake". In order to increase the effective drainage area of "Zi Lake", a network of channels and tunnels is planned. The Ternove (TSHP) includes a network of seven (7) feeder channels. The feeder channels are strategically positioned and routed in order to catch runoff water from rain and melting snow and convey the water towards various lakes which comprise the Ternoves scheme.

PAST/RELATED WORKS

Various studies have been conducted in the past to study the time delays in completion of infrastructure projects. While some of them concentrated on delay aspects in execution of specific steps involved in the project, others took a more comprehensive view of the project and studied the delay in the all-inclusive conclusion of the project, but it is always a point of disagreement between parties about delays and causes of them, client and engineer trying always to mitigate delays to avoid giving the contractor extra money; on the other hand the contractor trying to impose the delays to get the maximum time and money.

RESEARCH DESIGN

The main purpose of this research is to understand the key attributes involved in the implementation of an infrastructure project, which either leads to successful completion of the project on time, or which leads to excessive delays in completion. Based on extensive research and literature review, the following aspects were arrived up on as the main attributes which make or break a project:

1. Conflict among project Participants
2. Ignorance and lack of knowledge of the Engineers
3. Reluctance in Timely decision
4. Improper or Lack of formal scheduling techniques
5. Aggressive completion at tendering stage
6. Short Bid preparation time
7. Hostile Social and Economic Factors
8. Dispute resolution practices

ISSUES WITH PROJECT SCHEDULING

There is failure in the part of Engineers in identifying the cause of delay in completing the project on time. However after analyzing the data available at site, it was clear that land acquisition

was not the major reason for delay. Moreover in most cases such delays could have been avoided by better scheduling techniques and effective enforcement of such schedules.

In the construction industry in Albania as we noticed, the management of claims and delays is not compliant with international standards and best practices. This may be because the professionals have a limited knowledge in this area, and many contracts have been modified to omit the parts which could help in solving the delays and disputes, especially the delay analysis techniques and acting like delays do not exist.

Employers try to minimize the cost of extra claims by contractors by avoiding the right analysis of the claims, and claims become a negotiation paper more than actually applied. Most contractors are submitting claims to avoid penalties from the Employer, and the same employer puts penalties to avoid the claims.

BETTER SCHEDULING PRACTICES

The first step in reducing the delay is to adopt an efficient and robust scheduling system. At present Quarterly schedules are being prepared for project, and in almost all cases, the role of department Engineers in the preparation of such schedules are minimal.

There needs to be a more active role by Department engineers in the preparing of project schedules. The schedule needs to be prepared for each week.

In case of lapse in the part of contractor in adhering to the schedule, for reasons attributable to either department or the contracting agency, or external factors, a fresh schedule needs to be prepared, detailing on how the lost time will be made up, or in case it cannot be made up, then what the new scheduled completion time will be. Critical Path Method (CPM) or PERT are two very popular methods that can be used for preparing such schedules.

DEPARTMENT ENGINEERS PROFICIENCY IN SCHEDULING TECHNIQUES

One of the main reasons for delays in the construction of dams and canals has been due to the lack of adequate capacity in part of department engineers in various scheduling techniques.

While almost everyone knew the purpose of CPM or PERT, very few could effectively apply it for arriving at a comprehensive schedule for the project. For effective monitoring of a project, scheduling to the least time interval is the best. However in Albania follows yearly or in few rare cases quarterly and monthly schedules. This clearly indicates an inadequate capacity in the part of engineers in the various scheduling techniques.

Department engineers need to be provided training on the various scheduling techniques. While it is not essential to train them on the scheduling software, it will be useful if they are competent in such software. Preparation of schedule by the Department Engineer becomes all the more important when there are various contractors involved in the completion of a project and coordination between such parties is required. Listed below are few of the activities that need to be included in the schedule created by the department engineer:

- Obtaining permits, submittals for early procurement, and long lead time items.
- Mobilization and preliminary activities.
- Initial site work.

- Specified work sequences, constraints, and milestones, including substantial completion.
- Major equipment design, fabrication, factory testing, and delivery.
- Delivery dates for department-furnished products.
- Site work, concrete, structural steel, architectural features, conveying systems, equipment installation, mechanical, electrical, instrumentation and control, and interfaces with department furnished equipment.
- Equipment and system startup and testing.
- Final inspection and punch list.
- Project closeout and cleanup.
- Demobilization.

ALLOWABLE SOFTWARE FOR SCHEDULING

There needs to be clear guideline on the type of software that can be used by contractor for scheduling purpose. For the projects of magnitude undertaken by 'Dardania Ndertim'' and ''Alba American Construction Services'', is MS Projects and Primavera. Care should also be taken to make use of the latest version of the software so as to avoid any compatibility issues. Taking in to consideration the lack of competence in the part of department engineers in the use of such software, it is highly recommended to hire a consultant who is well versed with the use of such software.

INTERMITTENT PROGRESS AND PACING FOR DELAYS

Intermittent progress is when contractors reduce their crew size or pull a crew off of an activity, in order to perform other work on this project or another. This isn't normally a problem on non-critical activities but should not happen on the critical path.

Owners need to record the crew size and note fluctuations in the crew size, in case there is a later claim for impact, as a smaller crew size may be the reason for activities taking longer than planned. Pacing occurs when there is an unavoidable delay to the critical path and the contractor reduces the crew size or shifts workers off of previously critical activities in order to avoid completing all available work for a specified trade and having to disband the crew. That would result in later inefficiencies as the personnel may not be available later and a reconstituted crew would start with a lower efficiency than the current crew.

Contractors need to notify Owners when they are pacing previously critical path activities, to avoid later charges of concurrent delay. The contractor needs to strictly get the acceptance of the Engineer in Charge before pacing reducing the crew size.

The Department Engineer on the other hand should try and identify other processes in the critical path where this extra crew can be accommodated. Once the cause of delay in the original activity is rectified, then the crew can be pulled back to the original work.

This normally happens when there is obstruction to the construction by the inhabitants of the village, who oppose the construction of dams and canals. In such instances, the contractor will be forced to reduce the crew size so as to minimize the loss due to idling of crew.

CONCLUSION

The main reason for the delay in projects being implemented in Albanian is due to the lack of a robust and efficient scheduling technique. The inadequate capacity in the part of engineers in preparing and reviewing such schedules, and in monitoring the progress of the work based on such schedule is a major concern and needs to be addressed if any improvement in the project timelines needs to be obtained.

A short training for the department engineers on the various scheduling techniques like CPM, PERT etc needs to be taken up. The monitoring mechanism at 'Dardania Ndertim'' and ''Alba American Construction Services'' also needs to be improved by monitoring the progress every week, and in case the project falls behind schedule by more than 2 weeks, then a revised schedule to be requested from the contractor detailing on how he plans to complete the project in stipulated time. The quality of schedules provided by contractor also needs to be improved from a mere formality document to an effective document detailing on each and every aspect of the project including the sequencing of processes.

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