

GUIDELINES FOR EXAMINATION OF TIME OVER-RUN IN EXECUTION OF HYDRO POWER PROJECTS IN CENTRAL SECTOR

1.0 BACKGROUND

During execution of Hydro-electric projects many bottlenecks and challenges are faced by developers / contractors which causes delay in completion of Projects. The most common reasons are namely, delay in award of works, Land Acquisition issues, delay in getting Environment and Forest clearances, Rehabilitation & Resettlement issues, Natural Calamities, Law & order problem & Local issues, Contractual problems, Geological uncertainties, Difficult Terrain & Poor Accessibility, Funds constraints with Contractor, Force Majeure Risk, Inter-state issues, Court / NGT / NCLT Cases, Teething problems during commissioning, etc.

Time overrun also leads to cost overrun, increases tariff of electricity generated and has an overall adverse effect in the following ways: -

- 1.1 Interest during construction (IDC): - The IDC of the project increases as a result of time overrun. The effect of increase in IDC is more relevant if the project is delayed during advance stage of construction. It has been observed that IDC is the major component of cost overrun in many under construction/ commissioned projects.
- 1.2 General Price Escalation: - The time overrun increases the cost of raw material & labour beyond anticipated values as per contract. In general, the price indices related to raw material viz. cement, steel, aggregate, labour etc. have an increasing trend with respect to time and have an effect on contract value in case of time overrun.
- 1.3 Loss of Revenue Generation:- The developer incur loss on account of delay in generation of electricity due to time overrun.
- 1.4 Loss of Return from Equity: - The equity infused by the developer gets return only after commissioning of the project and time overrun results in loss of return from equity for the delayed period of construction.
- 1.5 Increase in Establishment cost :- The establishment cost of Employer increases due to time overrun of the project.

2.0 APPROVED COMPLETION PERIOD

The approved completion period for the project is indicated in CCEA clearance / Board approval.

3.0 ACTUAL COMPLETION PERIOD

The Actual Completion Period of the project is the “Date of commercial operation (COD) of the last unit” minus “Date of CCEA/Board approval”.

4.0 TIME OVERRUN

In case the actual completion period is more than the approved completion period then the difference between Actual Completion period and approved time period will be the time overrun.

5.0 REASONS FOR TIME OVER-RUN

The main reasons for Time Over-run in execution of hydro Electric Projects are as under:-

- **Delay in award of works:** Delay in award of works may be due to poor participation by bidders, very high / low bids quoted in comparison to estimated value, poor quality of bids submitted, non-submission of PBG, government regulations, etc.
- **Land Acquisition:** Land acquisition is a persistent issue involved in the implementation of hydro projects. Delay in acquisition of land for various locations of the project such as Dam, HRT, Power House, Switchyard etc.; acquisition of quarry / muck disposal sites etc., may delay the project.
- **Environment and Forest issues:** Due to the environmental concerns, Environment and Forest issues need to be addressed properly in a time bound manner. Environment and Forest issues often delay the projects.
- **Rehabilitation & Resettlement:** Dislocation of the people from their houses/fields/workplaces etc. and their resettlement is a sensitive issue and involves a lot of time and money. Many times this issue leads to court cases resulting in delay in project execution/completion.
- **Natural Calamities:** Natural calamities like unprecedented rain / flash floods, cloud burst, earthquake etc. leads to destruction of project components / infrastructure machinery & leads to delay of projects.
- **Law & order problem & Local issues:** Protest by the local people against the construction activities, like blasting, muck disposal, etc. and also for various demands like employment, extra compensation, etc. often create law and order problems and delays the completion of works.
- **Contractual problems:** In some cases, change in scope of work on account of geological surprises leading to change in design/ change in construction methodology may lead to contractual issues. Inadequate mobilization of man and machinery by contractor also delays the project.

- **Geological uncertainties:** Many projects in Himalayan regions are affected by poor geology & other unforeseen site conditions entailing change in design or change in construction methodology which delays the completion of project and also sometimes leads to contractual disputes.
- **Difficult Terrain & Poor Accessibility:** Difficult terrain & poor accessibility of the hydro project site takes lot of time & money to develop / maintain the infrastructures like road, establishments, etc.
- **Funds constraints with Contractor:** Presently most of the major civil contractor viz., HCC, Patel, Gammon, Coastal, etc. are facing cash flow constraints which is affecting the progress of works.
- **Force Majeure Risk:** The Hydro Power Projects may suffer due to force majeure events such as earthquake, windstorm, flood, severe icing conditions, drought, lightning, and strikes & labour disturbances.
- **Issues related to Quarry / Crushers Plants:** Non-availability of quarry in the vicinity of project, clearances related to quarry & crusher plant operation etc often delays the project.
- **Inter-state issues:** Water is a state issue and thus a project on a river flows through more than one state invariably involves resolving of inter-state issues which often delays the project.
- **Court / NGT / NCLT Cases:** Court / NGT / NCLT Cases having stay on construction activities delays the project.
- **Teething trouble during commissioning:** There may be some teething troubles during commissioning of the project, e.g., vibration in the machine, high bearing temperatures, governor setting problem, leakage from HRT, leakage from Diversion tunnel gates, leakage from penstock, etc.

6.0 Developer shall furnish to CEA the following data / details required for calculation of time over-run:-

- i) Government approval / Board approval for the project
- ii) TEC letter
- iii) LoA / Contract agreement
- iv) Original approved schedule for all major contracts (Level-2)
- v) Revised Construction schedule (Level-2)
- vi) Actual construction schedule (Level-2)
- vii) Time extension letters for all major contracts
- viii) Liquidated Damages, if any
- ix) Hindrance Registers (for various sites)
- x) Relevant correspondence with contractors & other stakeholders
- xi) COD declaration letter

7.0 ANALYSIS OF TIME OVER-RUN

- The approved construction schedule needs to be superimposed on the actual construction schedule and package-wise delays to be identified
- Overlapping delays to be counted only once.
- Package-wise delays critical for the commissioning may only be accounted for calculation of time overrun.
- The time overrun would be cross checked with the periodical progress review reports and minutes of meetings of CEA.
- Periodic review of time overrun for under construction projects: The commissioning of the project is to be reviewed by the developer every year during preparation of MoU documents. If there is a change in commissioning from the previous year then reasons for time overrun have to be submitted & got vetted by CEA.

8.0 LIMITATIONS

It has been observed that quantification of some delays as detailed below is not feasible. The developer may estimate giving proper reasons for these type of delays.

- Delay due to cash crunch with the contractor
- Delay due to change in scope of works
- Delay due to heavy rains
- Delay due to quarry issues

Further, the critical path of the project changes from time to time during the tenure of the project construction period. The delays in non - critical activities (having float/margin) ideally does not affect the commissioning of the project. It is some time difficult to assess the critical path / activities during the entire construction period of the project.

Hence, exact quantification of time overrun is very difficult.

9.0 LESSON LEARNT / IMPROVEMENTS NEEDED

- Project execution often involves some mistakes / shortcomings during execution. For each project, the developers should compile the difficulties (technical & managerial) faced during execution and methodology adopted to mitigate the difficulties. The mistakes / shortcomings should be shared within the sector / organization so that the same is not repeated by other developers, e.g., It has been observed that the diversion structure (Dam/Barrage) of many hydro projects get delayed due to frequent over topping of coffer dam during monsoon. The developers should do a cost benefit analysis and if found feasible, plan river diversion system for tackling higher inflows so that frequent over topping of coffer dam is avoided.

- The hindrance register & time extension letter to contractors should form part of MIS / ERP system.
- Bid / Contract document formulation and evaluation of contract should be given utmost importance, because the shortcomings in the contract lead to disputes and delay the project.

10.0 A provision of 30 Calendar days are being made for vetting of the time overrun by CEA after submission of proposal & all relevant details justifying time overrun .