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## Planning project closure phase in combined cycle power plant projects

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### Abstract

Project closure is a significant and mandatory process, particularly in mega projects. During the closing phase, mega projects often encounter a number of problems including lack of budget, shortage of required resources, disputes and claims. This paper presents a scientific procedure for performing closing process group in mega projects. This study was conducted on a Combined Cycle Power Plant (CCPP) mega project in Esfahan as a case study. A project planning system has been integrated with a continuous project control system in order to execute and utilize this process group. The aim of this paper is to apply an appropriate planning for implementation of the CCPP project in the closing phase with minimum deviation. The proposed closing process consists of a preliminary phase, transition planning, and four major phases, such as physical, contractual, legal and financial closure. After performing the process group, the results of this project were compared with results obtained from similar projects in term of time. Implementing this process group definitely enabled us to meet projects deadline with minimum deviation.

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## 1. Introduction

The objective of this paper is providing a closing process for projects, especially the CCPP projects that require maintenance and a support after closure. Fainstein<sup>1</sup> investigated new mega projects in New York, London, and Amsterdam and the dissimilarities among them indicated the extent of variability in contemporary property capitalism. Sarfraz<sup>2</sup> provided guidelines for managers by triggering positive psychological behaviour of team members to ensure successful project closures. In this regard, this process is divided into a preliminary phase, and transition planning, along with four major phases including physical, contractual, financial and legal closure. Shepherd *et al.* 2013<sup>3</sup> explored a process by which a project is terminated (delayed and rapid termination). Fourie and Brent<sup>4</sup> proposed a Closure Model based on project management principles to manage the closure process of projects. Han *et al.*<sup>5</sup> evaluated challenges, obstacles, and performances of mega projects and they established a framework to identify the various facets of mega projects. Prior to any elaboration of these phases, a general explanation is provided regarding the closing process, then the above-mentioned phases is discussed in details.

Stephenson *et al.*<sup>6</sup> examined the impact of temporary closure of projects. Marthandam 2015<sup>7</sup> developed and validated an engineering economic model which forecasts the project termination phase from an engineering economic perspective. De 2001<sup>8</sup> analysed the key issues faced by project professionals in terminating projects in Indian industry. Unger *et al.* 2012<sup>9</sup> introduced the concept of project termination quality, analysed its consequences for strategic fit and how it is affected by senior management involvement.

It goes without saying that the first key to success in this phase is the precise completion of prior phases including proper planning of resources, time, and cost along with a thorough and accessible documentation. A recent report indicates that 64% of ongoing mega projects are globally facing cost overruns<sup>10</sup>. An *et al.* 2017<sup>11</sup> assessed the heuristic method that is applicable to mega projects by suggesting a new adjustment method for construction process. Mboumoua 2017<sup>12</sup> analysed the reasons for the development of a mega project in a turbulent political and financial British system. Brookes and Locatelli<sup>13</sup> presented a systematic, empirically-based methodology that employs the Fisher Exact Test to identify the characteristics of power plant mega projects correlating with schedule and cost performance. Storey and Hamilton<sup>14</sup> reviewed some general issues of social-impacts planning through the resource development cycle. Such planning was illustrated by two recent examples of successful mega projects. The second key to triumph is the service or product recipient. Closure process should be provided and mutually agreed on by both parties via a close cooperation with customer service department. This agreement should be documented and signed by senior officials of both sides.

Shepherd *et al.* 2014<sup>15</sup> explored research and development subsidiaries within a large multinational parent organization and generated several new insights: rather than alleviate negative emotions, delayed termination was perceived as creeping death, thwarting new career opportunities and generating negative emotions. It is essential to conclude and finalize a comprehensive agreement between the CCPP project organization and clients. This issue will be discussed in the following sections. Project closure is an exciting and anticipated time for the client and the customer when the project fully meets the due date. If it is assumed that some cases have been ignored or neglected, project closing process will be applied to ensure that the client, end user, project team and contractor have fully regarded all their commitments. Closure may take place either rapidly or within a certain due date. In this process, a closure manager must be assigned by the project manager prior to project completion. Dismissing team members as well as releasing physical equipment should be scheduled and implemented. The transition process and the client acceptance is well-designed and fully documented. The project manager should meticulously archive all project data and documents until the contract closure is announced so that a report can be readily prepared when required. Eweje *et al.*<sup>16</sup> used theories of organizational behaviour, decision-making and program management to investigate the impact of information feed used by project managers on the strategic value delivered by mega projects. The third significant step at this stage is reviewing and assessing appropriate closure records that should be conducted prior to dismissing the project team. One of the most significant factors in the closing process is task transition from the project institution to the client organization. This phase should be documented, signed and verified by both sides through a certain document. In this document, remaining commitments should be identified and their completion date should be specified as well. Although this document differs from the final closing report, it extremely counts as a document which includes the preliminary phases of project transition from execution phase to final phase and client admission. This agreement signifies client acceptance for deliverables and an initiation for task and responsibility transition to client and beneficiary. Jergeas<sup>17</sup> provided a review of recent experiences and challenges in delivering mega projects in Alberta.

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