

The Nuclear Power Plant project Hinkley Point C



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Background of the Project- Introduction

Hinkley Point, situated on the coast of Somerset, is presently the largest construction site across Europe. According to *H. Watt* in "*The Guardian*" (2017), the UK's initial nuclear power plant project in over two decades is currently being developed on a 430-acre area inhabited by cranes and diggers surrounded by muddy fields. Hinkley Point C is set to become the world's costliest power station when it is finished. Before achieving that, a multitude of complex issues related to finances, politics, and technology need to be resolved. The project was delayed for almost 40 years due to constant resistance from politicians, academics, and economists, leading to a slow-paced progress. Critics have raised doubts about the functionality of the nuclear reactor in Hinkley Point C project. Aiming to produce environmentally friendly electricity for around 6 million homes, create numerous job openings, and establish long-lasting benefits for the UK. Our objectives include generating 25,000 jobs, providing 1,000 apprentice roles, and boosting the local economy with 64% of the construction value staying within the area.

Based on the information given and research, a critical analysis will be created, Project Management Body of Knowledge, Time, Scope, and Quality to be identify and key points to state if the project it will be whether a success or a failure.

Critical analysis and PMBOK

Project Integration Management It is deemed necessary to have a thorough understanding of the project to compile relevant information, such as the project's history, underlying motivation, goals, and reflective capabilities. Prior to choosing the start and end dates, it is crucial to take pre-planning steps like market research, feasibility analysis, and making sure potential risks are considered. This method aids in identifying potential issues that might cause delays in lengthy projects, such as EDF Energy's oversight of the Somerset nuclear power plant's construction. More than 50% of the project's construction value will most likely be granted to businesses in the UK. The company is working with local authorities to address the increase in demand for housing infrastructure and an additional 3,000 workers are needed on top of 6,300 already, leading to strain on existing accommodation arrangements. The construction start date was in March 2017, the end date being delayed until 2036, after original date 2025. The Hinkley Point C CEO stated that the pandemic caused disruptions leading to a delay and increased cost of £3bn for the new nuclear power station. Due to the pandemic, EDF had to reduce its on-site staff, which resulted in a loss of more than 500,000 crucial workdays in 2020 and 2021.

What went wrong?

The project planning lacked a robust foundation from its inception due to its focus on the anticipated benefits of the nuclear plant, which was projected to operate for a duration of 60 years. Insufficient attention was given to the potential drawbacks such as the possible occurrence of risks and delays in determining the project's start and end dates, as well as identifying appropriate resources and workforce necessary for its construction.

Project Time Management. Proficiency in organizing and utilizing available time resourcefully is an indispensable factor for the successful execution of a project. This refers to the prudent allocation and management of commencing and halting time intervals, in addition to identifying and alleviating possible hazards. Moreover, the oversight of contributors' time-tracking in a project holds significance since it allows for the identification of target deadlines for specific projects and facilitates a meticulous comprehension of the extent of time mandatory for any task. Seasoned project management experts acknowledge that comprehending time constraints and requirements for diverse tasks is crucial in achieving effective and organized project delivery. Referring to the start time has been set once in October 2013 the agreement for construction site of Hinkley Point C Nuclear Power Station followed by 2015 October when the estimating cost has been set at £18 billion and construction date has begun in March 2017. The end date initially was 2025, getting delayed because of Covid19 to 2026 and in May 2022 EDF energy has announced that the new expected time will be in June 2027, when this year 2023 news boards has

informed that it will be 11 years delay and push the projected end time estimating now to 2036.

What went wrong?

Regarding time management, numerous factors may contribute to delays or causing project failure. In the case of the Hinkley Point C project, significant delays of up to eleven years occurred. Recently obtained information indicates that insufficient experience in project management may have contributed to disregarding essential time requirements for specific tasks. Internal or external elements, such as worker fatalities or accidents, were not taken into consideration in the project timeline. The COVID-19 pandemic played a pivotal role in exacerbating project obstacles, as many qualified workers lost their employment, leaving remaining workers to multi-task and work at a reduced pace. Despite experiencing 11 years of delays and undergoing a 20-year construction process, the final product is ultimately destined to function for only a 60-year lifespan, thereby suggesting its failure.

Project Cost Management. The aim is to carry out one's venture within the set budgetary constraints. The optimum utilization of fiscal assets plays a pivotal role in ensuring the efficient execution of the project. In this area of knowledge, one examines the process of determining the expenses associated with individual tasks to consequently estimate the complete project budget. It is evidenced that in 2016, a contractual agreement worth £18 billion was established between the United Kingdom and EDF for the purpose of building the Hinkley Point C nuclear power plant. The United Kingdom's nuclear power plant project, overseen by EDF, has experienced an addition to its financial projection due to amplified construction expenses, resulting in a prospective sum of £32bn (\$38.5bn). EDF has disclosed a revised estimation of its costs in conjunction with its annual report in a presentation. In May, a revision was made to the figures provided by EDF, which outlined an estimated overall cost of £25-26 billion for the construction of the dual EPR reactors located at Hinkley Point. EDF expressed a warning regarding a possible delay of approximately 15 months in the operationalization of the plant, in contrast to its initial deadline of June 2027.

What went wrong?

To create a project budget, most people usually examine the expenses from a comparable previous project. Lack of trained team members and resources can result in delegating tasks to multiple project members, leading to increased consumption of time, money, and resources. Miscalculations, unforeseen events, or subpar materials may lead to errors.

Project Quality Management is the stage where quality is checked to meet the project and customer needs has been compromised as The Cresuot Forge in France was inspected by the ONR last year after false records were found there. Inspection design has identified that some quality management systems lack the necessary quality and are often insufficiently executed. NNB requested Framatome to improve the quality of HPC parts made in recent months. In my view, Framatome St Marcel has met NNB's demands based on the collected intervention data. If the measures are effectively implemented, the potential for sustained quality improvement seems

feasible. Quality management plays a crucial role in the successful delivery of the new nuclear program and achieving commercial success as primarily focused on guaranteeing the safety of nuclear operations. The principles of nuclear professionalism will be utilized to avoid errors and gain knowledge through our learning and corrective processes. The project needs to comply with laws, follow global standards, implement best practices, and meet the expectations of our main customers, stakeholders, and regulators.

What went wrong?

Excessive delays have negatively impacted on the quality of the project. The project was supposed to last 60 years, but estimated completion time was 20 years, which is more than one-third of its lifespan. A 20-year project may not live up to the initial expectations, despite 60 years seeming like a significant length of time.

Project Human Resources Management refers to acknowledging the potential of the team members and delegating tasks according to their skills. Interviewing and welcoming on board new talent skill people. Hinkley Point C organization's main strategic goal is ensuring that all employees possess the requisite competencies, operate with a sense of responsibility towards their tasks, and adhere to the prescribed norms stands as foremost objective, procedures, and methodologies. They shall be trained and committed to carefully observe the nuclear professionalism regulations to avoid any potential mishaps by applying educational methodologies and modifying them based on past occurrences. The project is backed by the expertise gained during the first four years of its development, leading to a strong belief that the effective management of these data can be accomplished. The allotment of resources to boost skill sets through training guarantees various job openings in the imminent future, resulting in a plenitude of benefits for the community. Another focus is to create 15.000 jobs, 36 % of the human resources to be locally recruited, and 4k jobs blooming once the next step of the project is established.

What went wrong?

The failure to account for external factors led to a situation in which a pandemic outbreak resulted in significant job losses as organizations conducted personnel restructurings. This circumstance caused considerable problems as remaining workers were forced to undertake double the workload in efforts to sustain project continuity.

Project Stakeholder Management in September 2016, the contract with an estimated value of £4.5bn (\$5.8bn) was awarded to Areva NP, a company that has subsequently been renamed Framatome. The agreement was made for the design, production, and implementation of two EPR reactors, specifically designated for the establishment. GE was awarded a contract worth £1.5 billion (\$1.9 billion) in September 2016 to supply the power facility with two Arabella steam turbines, current generators, and associated equipment. In October 2015, the contract for the earthworks of the project was granted to a collaborative effort between BAM Nuttall and Kier, with a total value of £210mn (\$268mn). In September of 2016, Balfour

Beatty, as part of a collaborative arrangement with NG Bailey, was granted a contract valued at £477m (\$609m) to provide the electrical elements required for Hinkley Point C. Additionally, in August of 2017, it was also awarded a contract valued at £207m (\$264m) to facilitate the generation of three underwater tunnels with a total length of 9.5 km. In January 2019, the National Grid of the United Kingdom awarded a highly remunerative agreement worth £300m to a distinguished triumvirate comprising J. Murphy & Sons, Balfour Beatty, and Siemens, for the delivery of transmission cables intended for a power station. In February 2020, Bilfinger, a German industrial engineering company, received a contract to conduct the balance of plant (BOP) tasks for the Hinkley C nuclear energy plant, valued at £58m (\$75m). The task comprises the creation and installation of approximately 56km of piping structures.

Risk management. According to the EDF Energy in their “Nuclear Power Plant Hazards Review” The method used by the nuclear industry to manage operational risks is distinctive. The handling of common dangers is impacted by the regulations and safety measures required for nuclear power plant operations. Our sector-best health and safety statistics are self-evident. Throughout the life cycle of nuclear technology, organizations like the IAEA, INPO, and WANO, among others, disseminated knowledge, best practices, and information internationally. It covers everything related to nuclear power plants and other nuclear-powered systems. These establishments enable operators to obtain and distribute information and data.

Observations from nuclear power plant operations are critical for developing effective protocols, avoiding recurrence of past accidents, and offering guidance and advice to other operators beforehand. Unlimited access to this is available. The data category gives more importance to safety and less to commercial interests. Associations use collaborative evaluation procedures to enhance safety norms and mindset within the nuclear industry worldwide. These variables have significantly decreased the risks associated with nuclear power plant operation. Proper regulation of nuclear energy levels is crucial to maintain its benefits and safety standards. The nearby table illustrates how everyday risks can lead to fatal outcomes, as an example of Jason Waring, a 48-year-old man from Nottinghamshire, lost his life in a traffic accident with a construction vehicle on the site. Nuclear power plant operators in the UK are required by the regulatory body to ensure that the biggest risks associated with their operations are minimized to a level where it is less likely to cause harm to the public than getting struck by lightning.

To lower the risk, the management must consider that the nuclear industry prioritizes eliminating hazards by removing potential events from design or implementing preventive designs, Important equipment will have a backup, "Backup can be by different maker ('diversity') and on separate site area ('segregation')." Thus, it avoids the same problems. Regular site visits and inspections guarantee proper function of the barriers and understanding increased, leading to safer designs that remove certain dangers.

Conclusion and Recommendation

The widespread perception is that the United Kingdom must incorporate new nuclear energy sources to meet carbon reduction objectives economically. As a result of the Department of High-Performance Computing's accord, consumers are now associated with a risky and insecure enterprise that offers minimal financial and strategic assurances, resulting in a lack of consumer confidence. Although requiring the developer to assume construction risks is an excellent way to protect taxpayers and users from rising costs, it could result in higher electricity rates for HPC customers if the government had also assumed some liabilities. Nonetheless, this strategy could inspire confidence in the risk management decision-making procedure. Using antecedent scenarios as a guide, the risks mentioned may eventually affect both the public and buyers. This, however, is not a certainty. If the project encounters difficulties, the government may be required to finance alternative resources to assure a consistent supply or to revise the original agreement. This requires a higher degree of confidence. The Department should have adequately considered alternative methods for arranging the structure, demonstrating a lack of confidence.

The project will fail due to the disregard for the project's core elements, the failure to correctly identify, monitor, and control the project's quality, the 11-year delay that caused the initial spending plan to be exceeded, and the ongoing nature of the project, which will necessitate additional funding. If risks have not been incorporated into the calculation and there is no long-term contingency plan, a project cannot be assumed. The findings emphasized the dearth of skills or poor-quality skills, such as time management, financial management, and problem resolution, that contributed to the current situation.

Recommendations

1. To better prepare for various situations, such as the unexpected death of a worker, high inflation rates, or cancellation/postponement of a project, it is important to thoroughly assess the risks, their impact, and potential consequences. This enables the creation of contingency plans, or plan B's, as necessary.
2. Improvement the quality of our work to ensure the long-term success of the project and properly communicate our vision for creating jobs, promoting eco-friendliness, and benefiting the local community.
3. It's important to assign tasks to personnel who have the necessary skills and experience. Who bears greater responsibility for leading and guiding and who is the decision maker.
4. More attention to the budget and consider the factors where budget can be adjusted, as an example, inflation.

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