

Project Management

LCBB505

Assessment 1

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1. Introduction

In order to evaluate the successful or failure of a project it is required to assess the core knowledge areas which are the main technical elements PMBOK (Project Management Body of Knowledge): project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communication management, project risk management, project stakeholders management, project procurement management.

2. Evaluation of Hinkley Point C Project Management

Project integration management: The project integration management includes seven processes such as developing the project charter, developing the project plan, directing and managing the work for the project, ensuring monitoring and controlling of the required work, performing integrated change control and finalising by closing the project.

Hinkley Point C is the project of a nuclear power plant, which is intended to be the largest in the world. The location of the nuclear power plant was decided for Somerset, United Kingdom (UK) on a vast surface of 175 ha adjacent to existing nuclear power facilities under the name of Hinkley Point A and B which have been decommissioned after less than 50 years. Hinkley Point C will have two reactors and is expected to be commissioned in 2025 with an estimated life of 60 years with projections for 26TWh low-carbon electricity production. This will result in providing electricity for 7% of the UK population. The project itself is challenging and involves an array of resources and it in the UK and worldwide it has not been built a new nuclear power plant in a considerable period of time. The decisions regarding the technology used had selected the installation of two 1,630MW European pressurised reactors (EPR) which require a 7000m² nuclear island housing a reactor building, a fuel building, four safeguard buildings and an access tower, and a conventional island to accommodate the turbine hall and ancillary buildings. Other infrastructure at the plant will

include radioactive waste storage facility, water treatment facilities, transmission infrastructure, staff facilities and administration building (NS Energy, 2023).

The project has received approval in 2016 and has started the ground construction in 2017. Hinkley Point C nuclear power project has been developed by NNB Generation Company, a joint venture of France's state-owned EDF Energy (66.5%) and China's state-owned China General Power (33.5%). The initial proposal of the project has been submitted to the Office for Nuclear Regulation from 2007 for safety revision and in 2011 to the Infrastructure Planning Commission UK. The site licence was granted in 2012 and obtained the Development Consent Order in 2013. The investors have worked towards their agreement from 2015 and finalised the financial details in 2016 when it was approved by the UK Government (NS Energy, 2023).

Project management scope: The scope of this project is to create a source of low carbon electricity for the provision of 6 million households. The nuclear power plant would contribute to the local and national economy with an estimation of 64% to be undertaken by British organisations and will revitalise the nuclear power industry in the UK. The work force required for the construction and the running of the operations would be very high creating more than 25000 jobs (EDF, 2023).

The estimation for the nuclear power plant is to run actively for about 60 years and ensure a guaranteed price of electricity for 35 years which would only be influenced when the inflation rises. This project comes as a solution to the major changes from the energy sector which has registered the most highest increase in price. With a current high figure of £207 per MWh the Hinkley's contract at £106 per MWh seems an attractive offer and suddenly nuclear power does not seem that expensive project anymore and represents good value (BBC, 2021).

Project time management

The timeline for Hinkley C nuclear power plant has been scheduled for a period of almost 10 years. The construction has started in 2017 and it is estimated to be finalised in 2026 and be ready for opening. The building companies are putting great efforts to keep the work on track and are determined to deliver the project within the established timescale (BBC, 2021).

There are various elements to take in consideration for such a big projects with multiple novelty elements and the progress should be carefully monitored especially when the financing is financed entirely by two private organisations owned by different countries France and China and clashes can incur at different levels. Pandemic has also interfered with delays for over six months which involved aspects related to work force, materials supply, transportation. Most current challenges are in connection to the worldwide economy, with the increased cost of living, cost of production which has lead to increase of building materials, but also to aspects specific to the UK like the insufficient number of HGV drivers (GOV, 2023).

Project cost management

The initial cost of the project approved in 2016 for Hinkley Point C was an estimated sum of £18bn, meanwhile cost has gone up and new estimation has been registered considerable increase to £23bn and that can not be certain to be a final figure as the construction is in progress. Specialists are emphasising the fact that if the construction takes longer then the cost will increase, but the settled price for the consumer will not increase as per the 2016 agreement “Strike Price”. In relation to that the British Government had fixed the price of £92.50 MWh which would change only with inflation (BBC, 2021).

According to NS Energy (2023), the entire cost of the project will be finance by EDF and CGNP which involves a total cost of over £45bn for construction, operations, waste management and when

it has to be decommissioned. In 2015 the UK Government has supported the project and has decided to offer £2bn debt guarantee.

The cost of the project will likely increase due to the inflation increase and Power Technology (2023) suggests that based on the inflation indices can reach up to £33bn. This is forcing the investors to pump more capital in the project and that could put the project under serious threats if funding is withdrawn. If one of the investors will potential withdraw its funding then the other one will incur more cost and possible delays. Although it has full support from the UK Government being part of its plans to accelerate the nuclear output in the industry, it is still considered a controversial project, because of potential high price for the electricity that will be produced, for environmental concerns, for national security and for the high financial implications.

Project quality management

The project quality management for Hinkley Point C nuclear power plant has been carefully monitored by various actors who need to ensure that all quality criteria are met for safety and operations and other involve aspects. The design and construction are vital for the successful activity of the plant which is a very costly project. The inspection has identified that some of the quality management systems have failed and are under the standards whilst other areas to not have a consistent implementation system. The Office for Nuclear Regulation (2023) responsible with the permissioning regime for the construction and installation of the facility states that the objectives for the Hinkley Point C project has to ensure it follows the established regulatory strategy put in place by maintaining efficiency and effectiveness of the construction, installation and commissioning and has to document it and keep them informed regularly and in compliance with the safeguarding policies.

According to New Civil Engineer (2018) few years after the construction started the Office for Nuclear Regulation has discovered false documentation at Cresuot Forge in France at the key

supplier Areva, which currently is Framatome. Therefore it has been questioned if the supply chain management is fit for the project and further quality control has downgraded the overall rating to amber. Improvement programs have been put in place but the parties and progress has been registered and procedures has been improved.

Project human resource management

Hinkley Point C nuclear power plant is a complex project which involves multiple parties that are currently involved in the designing and construction of the station and who will be employed to run the operations when the facility will be functional. The length of the project is estimated to be over 10 years and the project has gone through different stages where the work force has been diverse depending on the project needs. For example according to the Office for Nuclear Regulation (2023) a key stage of the project represents the bulk installation of mechanical and electrical components in the nuclear island. For the unit 1 nuclear island only will be required a number of 4000 workers on the site who will need specialised set of skills and knowledge. The role of human resource management is to ensure that the right people are assembled in order to have the desired results.

Project communication management

The large scale investment projects involves various actors that needs to be kept informed at all times to achieve performance. The project communication management is crucial and it can have a great impact on the course of the project. The regulatory bodies needs to be kept informed at all times, providing evidence and ensuring policies are adhered. UK Government is another major actor that effective communication has to be constant.

Effective communication has to be managed considering that there are a high numbers of participants who need to be in agreement and ensure cooperation.

Project risk management

This project for building a new nuclear power plant after decades in the UK has been considered risky and controversial for many parties from different reasons, high cost, high impact on the environment, high length of the project, high number of external impacting factors. According to the National Audit Office (2017) despite that the nuclear power plant has been seen as a lower cost solution to decarbonisation, from the value-for-money considerations the project has been situated at the limit economically and with high levels of uncertainty. These assumptions have been based mostly on the cost of the station which are and continue to be very high.

The project delays have pushed the proposed date for opening and it has increased significantly the cost of the project. These aspects are generating increased risks for the project to be successful. UK Government is considered to be part of the project and it had provided support, but it has reduced control over the project strategies. The risk of the construction cost to overrun is most likely due to both internal and external factors that have impacted the progress of the project. The economy worldwide has been disrupted by the pandemic and it continues to have a slow recovery. Many organisations have suffered loss from these reasons or others and last financial reports had shown a weaker position of EDF.

The National Audit Office (2017) has suggested that alternative approaches could have helped with the increasing cost of the project, but it is not specified if that would have impacted the electricity price for consumer. As the project is not finalised it is discussed that NNB Generation Company Limited might even need financial support from the Government in defiance of the contractual agreement. That is why the Department plans are considering development of alternative solutions to produce energy and reduce risks. Even at this point it can not be provided a conclusive result of the project and evaluate if the project represents value for money, but it is imperative to manage the right arrangement to maximise the project value for consumers and tax payers.

Project procurement management

Hinkley Point C nuclear power plant is a project that requires different expertise for construction and for running the operations. The project has different needs and it involves a various number of contractors and subcontractors, from design to realising the construction, builders, crane operators and so on to transportation, HGV drivers to specialists for installing equipment and technology. Previously discussed Areva company was one of the key supplier for designing the reactor. According to NS Energy (year) Areva which is now Framatome, had negotiated a contract of £4.5bn to manufacture and install two EPR reactors for the station. Another contractor for the project was GE with a £1.5bn contract to supply Arabelle steam turbines and other associated equipment. In 2013 a joint venture BYLOR has been awarded the same amount for services related to civil engineering and construction. An impressive amount of £210m has been awarded to BAM Nuttall in joint venture with Kier for the earthwork operations. For the electrical services it has been contracted Balfour Beatty in joint venture with NG Bailey for almost £500m contract in 2016 and in 2017 has been awarded around £200m for the three Maine tunnels. In 2019 Technology Services has been awarded a six-year contract to provide the communications and IT infrastructure. Other contractors have been responsible for pipping, for building the water storage tanks and vessels, for designing the back-up plan, for building training centre, warehouse, cooling systems, sampling systems, Recycling systems, Secondary Effluent Treatment system (TEU), emergency diesel system, developing a power transmission structure, mechanical pipework and equipment installation contractor. Some of the contractors and sub contractors have realised a joint venture in order to realised the required work for utilities construction. Other contractors have been responsible with the heating, ventilation and air conditioning.

Project stakeholders management

Stakeholders Map

INTEREST			
		<u>HIGH</u>	<u>LOW</u>
P O W	<u>HIGH</u>	*Shareholders *ONR *UK Government *Contractors	*Media *Environmental activists
E R	<u>LOW</u>	*Consumers *Competition *Employees	*Employees Unions TUS

3. Conclusion and recommendations

This report has evaluated the project management for Hinkley Point C nuclear power plant. It has been assessed every component of PMBOK and it can be concluded that taking in consideration the large size of the project it has been expected that initial expectations would change from some reasons or other. The major changes in the external environment worldwide did not help either. The pandemic led disruptions have shaken economy worldwide and has impacted activity of many organisations. Political tensions had also influenced at some levels the markets. Lately in the United Kingdom and other countries the cost of energy has risen and the cost of living has increased. The higher levels of inflation is influencing the price established by the Government for the fixed deal with Hinkley Point C.

Recommendations relate to a better use of resources, more effective management and in more detail oversight of the project.

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