

Evaluation of Hinkley Point C Project



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1. Introduction

Hinkley Point C is a major nuclear power facility in Somerset, England, operated by EDF Energy. This ambitious project incorporates the construction of two nuclear reactors with a combined capacity of approximately 3,200 gigawatts, with the objective of supplying a considerable amount of low-carbon electricity to the UK grid.

This report delivers a discussion of the most significant aspects that a project such as this one owns, as well as an evaluation of the project based on the initial preparations and current updates on factors such as the project's scope, budget, timeline, quality, stakeholders and risk.

2. Evaluation of the Project

2.1 Scope

The description of the scope explains why the project has to be done, describes the major outputs, and specifies measurable goals. The project's scope has to be well-defined and detailed. The project's scope defines the tasks that must be completed in order to produce the outcome and consist of only the activities necessary to achieve those goals (Mirza, Pourzolfaghar and Shahnazari, 2013).

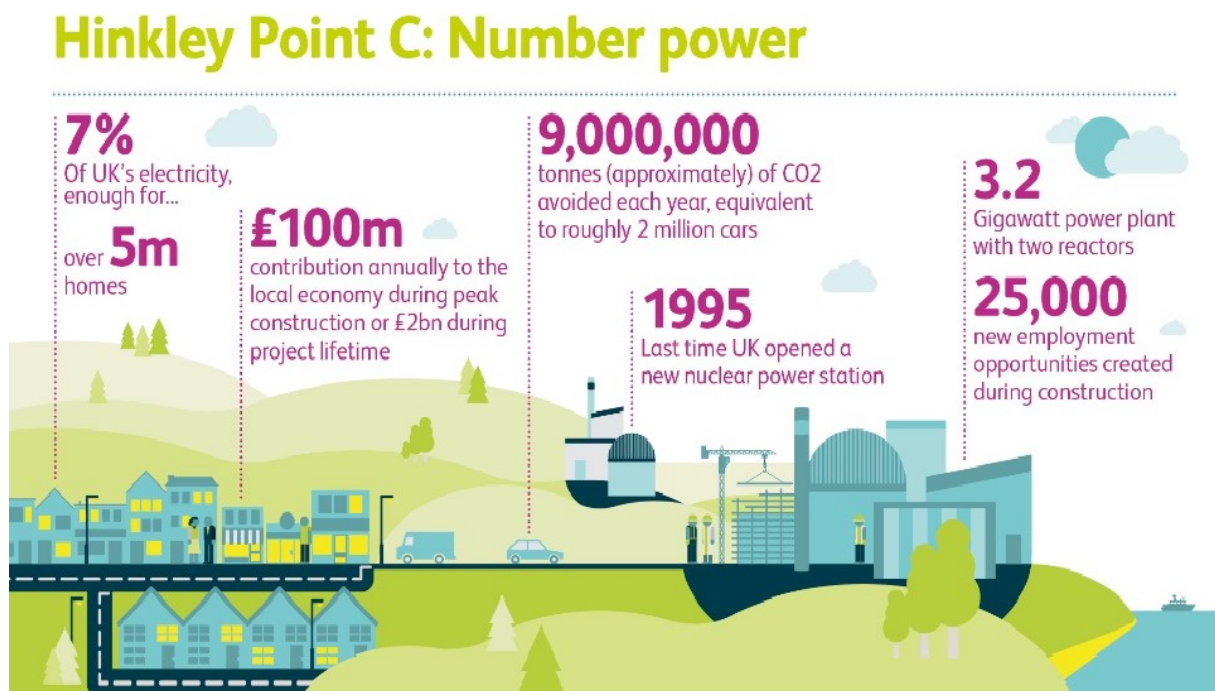


Figure 1 EDF Infographic about Hinkley Point C project (Department of Energy & Climate Change, 2013)

The primary objective of the Hinkley Point C project is to meet 7% of the demand for power in the United Kingdom. This will offer low-carbon electricity to about 6 million homes. Additionally, the power that is generated by the twin unit will compensate for approximately 9 million tonnes of carbon dioxide each year, as well as roughly 600 million tonnes of carbon dioxide during the infrastructure's lifespan of 60 years (EdF, 2015).

The scope of Hinkley Point C is substantial and covers several aspects (EdF, 2015):

- ✓ Generation of electricity: Hinkley Point C's primary objective is to generate electricity using nuclear power.
- ✓ Capacity: Both of Hinkley Point C's reactors will have a total power output of 3.2 gigawatts when they are completed.
- ✓ Investment and funding: One of the most extensive and expensive building projects in the UK is the Hinkley Point C nuclear power plant.
- ✓ Job creation: During the construction phase, Hinkley Point C has provided and will continue to provide thousands of regional workers with employment opportunities. Once the power plant is operative, it will require skilled personnel for ongoing maintenance and operation.
- ✓ Long-term operation: Nuclear power facilities, such as Hinkley Point C, have a lengthy operational lifetime, typically spanning from several decades to approximately 60 years.
- ✓ Energy security and decarbonization: The Hinkley Point C project aligns with the United Kingdom's objectives of strengthening energy security by diversifying its energy sources and reducing carbon emissions through the generation of electricity from a low-carbon nuclear energy source.

2.2 Budget

A project's budget is an estimate of all the money that will be needed to complete the work in a certain time frame. It's used to make educated assumptions about how much money will need to be budgeted for the project at certain points. Developing a financial strategy for the initiative is one of the multiple tasks involved in project preparation. Costs associated with labour, materials, and overhead will all be factored into the project's overall estimate. However, it is not a static piece of paper. Multiple times over the course of a project's execution, the budget will be reviewed and updated. (Bridges, 2019).

The original budget for Hinkley Point C increased from an estimated 20.5 billion pounds to 22.6 billion pounds on the project confirmation in 2016, and according to current projections, it will ascent to 32.7 billion pounds by June 30, 2022, based on inflation. Since the initial launch of the project, there have several changes in cost and schedule. As a result, the original budget for Hinkley Point C increased (Cossins-Smith, 2023).

The first of the plant's two units is still scheduled to go online in June 2027, but EDF expressed concern that the start date for both units might be pushed back by another 15 months due to supply chain disruptions caused by government lockdowns and the war in Ukraine (Hernandez, 2023).

EDF stated at the beginning of the project that would power British households starting in 2017, but the Hinkley Point C project has already been delayed for a decade, which indicates that any additional delays will result in an even greater rise in the cost of this project.

2.3 Time

Managing a project's timeframe requires careful consideration of the resources available, as well as the complexity of the work involved. Tasks and resource allocation and management are affected by the time management strategy. Establishing deadlines for the project and its objectives is the concept of project time management. This requires assessing the amount of time spent on each activity and assigning resources accordingly (Adobe Communications Team, 2022).

An agreement between France and the United Kingdom in 2012 established the foundations for the beginning of Project Hinkley Point C. The agreement was finally put to paper on September 29, 2016, after having been through a number of procedures and milestones (Daniel and Daniel, 2019).

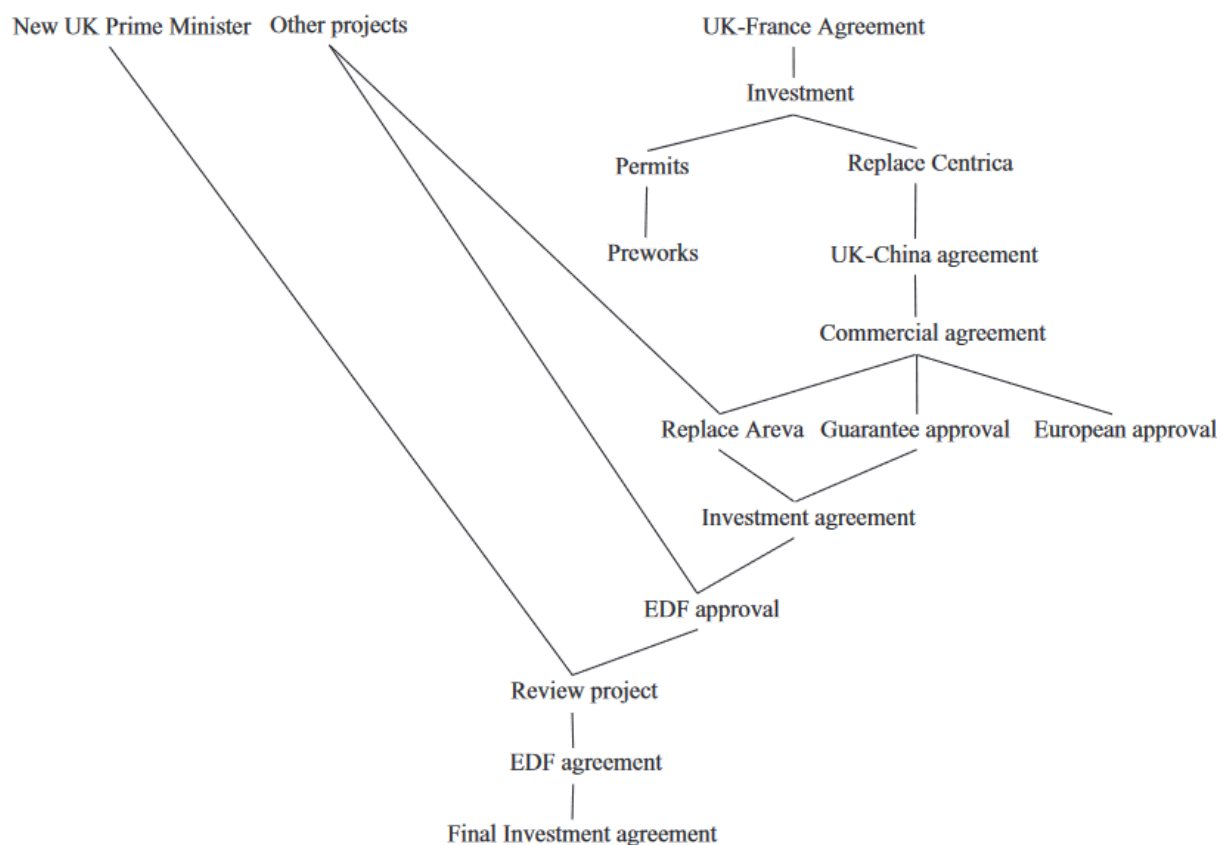


Figure 2 Agreement analysis for the Hinkley Point C project (Daniel and Daniel, 2019)

2012 marked the beginning of the early stages of the Hinkley Project C, while the signing of the final agreements in September 2016 marked the beginning of the real construction work on the project. The primary operations of the project, including excavations, building infrastructure, mechanical, electric, and ventilation, as well as commissioning, site clearing and

landscaping, are spread out over a period of ten years in the timetable for the project (Kovan, 2017).

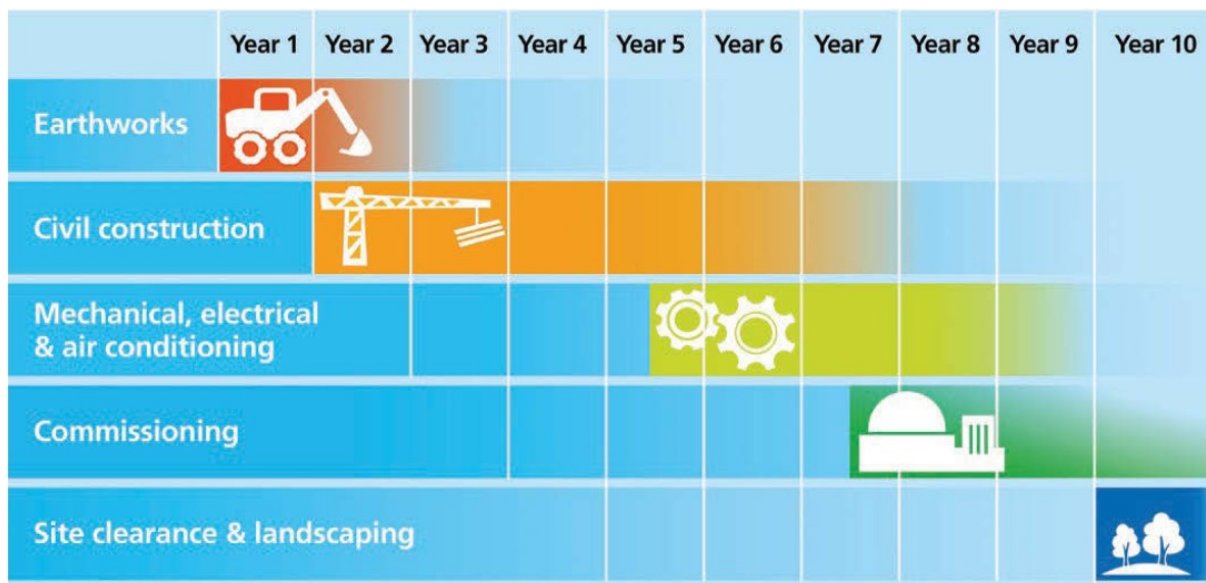


Figure 3 The timeline for Hinkley Point C project (Kovan, 2017)

The delivery time can be influenced by many factors, including regulatory approvals, funding, and the progress of construction and also because of the complexities and challenges that are associated with the construction of such a large-scale infrastructure project. The project's timeline has been updated and extended several times since its initial approval and now is expected to be finalised on June 2027.

2.4 Quality

It is vital to have quality management to identify, target, regulate and coordinate the many different aspects of a project, goals, procedures, resources and many others that exist inside the organisation. Therefore, quality management is the process of carrying out particular activities in order to guarantee the delivery of specified goals and enhance the general success of the project (Liepiņa, Lapiņa and Mazais, 2014).

Numerous factors may assist the assessment of Hinkley Point C's potential quality:

- ✓ Safety standards: The quality of a nuclear power facility, particularly in terms of safety, is of the highest priority.
- ✓ Engineering and construction: The engineering and construction quality of the facility is crucial to its long-term performance and dependability.
- ✓ Regulatory compliance: Hinkley Point C must adhere to all applicable laws, regulations and licencing requirements about nuclear safety, environmental protection and handling of waste.
- ✓ Technology: Hinkley Point C's nuclear technology must be of the highest quality.

- ✓ Environmental considerations: The project's environmental impact and mitigation strategies contribute to its overall quality.
- ✓ Project management: Effective project management is required for the successful execution of a project of this scope.
- ✓ Lifespan: Although Hinkley Point C was designed for long operational life, its actual quality will be demonstrated over time by its dependability, energy output, and compliance with safety and environmental regulations during its operational phase.

Large-scale infrastructure projects, such as Hinkley Point C, are complex initiatives involving multiple parties and necessitating strict control to ensure quality. Nuclear power plants are frequently evaluated and their safety and quality are verified by the Office for Nuclear Regulation which also identifies areas where the project should improve (ONR, 2023).

2.5 Stakeholders

A project's stakeholder management is the act of organising, managing, and enhancing connections with all parties that have the potential to be touched by the project (Thomas, 2022). According to Edward Freeman's concept stakeholders consist of virtually anybody who is in some way influenced by an organisation or project in question, Hinkley Point C in this instance, and the way it operates (McGrath and Whitty, 2017).

Being a major nuclear power project in the UK, Hinkley Point C includes multiple stakeholders such as:

- EDF Energy: The principal developer and investor in the Hinkley Point C project is EDF Energy, a division of the French state-owned utility Electricité de France (EDF).
- China General Nuclear Power Group (CGN): Hinkley Point C is partially funded by the Chinese government through the China General Nuclear Power Group.
- Government and regulatory authorities: Multiple government and regulatory organisations have a vested interest in the outcome of the Hinkley Point C project. They ensure that all necessary safety, environmental and licencing criteria are met during the project.
- Local communities: Communities near the proposed Hinkley Point C site are key constituents. Their day-to-day lives, career prospects and the surrounding environment may be drastically altered by the project's development and operation.
- Workforce and unions: Construction workers and their unions have a vested interest in the success of the Hinkley Point C project.
- Environmental and conservation groups: Stakeholders worried about the project's possible impact on the environment and animals include environmental organisations and conservation groups.

- **Energy Consumers:** As the effective functioning of Hinkley Point C will have consequences for the UK's energy supply, cost, and energy security, consumers of energy have a stake in the project.
- **Financial Institutions and Investors:** Banks, other financial institutions and investors that are providing finance for the project have an interest in its profitability.
- **Suppliers and Contractors:** Companies that provide materials, labour, and expertise in the building and maintenance of Hinkley Point C are considered stakeholders.
- **Media and Public:** The public and media are interested in Hinkley Point C because it is a significant energy infrastructure project.

2.6 Risk

According to Nadeem Ehsan, risk management in a project means determining the presence of contributing variables that might have adverse effects on the timeline, expenses and quality goals of the project, as well as a measurement of the effects of possible risks and the application of mitigation strategies to reduce the possible consequences of risk. In addition, risk management in a project requires the development of contingency plans if a risk actually occurs (Srinivas, 2019).

Successful risk management demands proactive preparations to detect and evaluate the risks to accommodate alternatives and the execution of mitigation measures promptly. Constant checking in, reevaluating, talking, writing and working together are also needed (International Atomic Energy Agency, 2023).

Hinkley Point C, such as any nuclear power station, places a high value on safety and risk management for the benefit of workers, the public and environmental protection. During each



Figure 4 Risk management framework (International Atomic Energy Agency, 2023)

phase of a project's lifecycle—from conception to construction to commissioning to operation to eventual decommissioning—strict safety precautions and thorough risk management

techniques are put into place. Hinkley Point C's primary safety and risk management features are as follows (eDF Energy, 2013):

- **Safety culture:** Establishing a robust safety culture is crucial. This involves encouraging everyone working on the project to see safety as their number one concern. Safety awareness may be increased by training, communication, and effective leadership.
- **Design and engineering:** Hinkley Point C's design and engineering include several layers of safety safeguards and redundancy to forestall mishaps and lessen the blow of those that do occur. Assessment, modelling, and verification are performed on the engineering design.
- **Compliance with regulations:** The project must follow all national and international nuclear safety authorities' regulations to the letter. Regulatory agencies routinely check and evaluate businesses' adherence to safety regulations.
- **Risk assessment:** To determine the severity of possible dangers, experts perform thorough risk assessments. All possible outcomes, from everyday operations to catastrophic accidents, must be thought through.
- **Strategy for emergencies:** Comprehensive emergency preparation and response plans have been developed. Collaboration with local authorities, emergency services, and interested parties is essential to the success of these strategies.
- **Radiation protection:** Measures are taken to limit the amount of radiation that members of the public and personnel are exposed to. To keep radiation levels within safe parameters, strict controls and monitoring are in place.
- **Operational procedures:** Clearly defined operational procedures and protocols are designed to guide people throughout ordinary tasks and in reaction to unexpected or emergency events.
- **Security measures:** Nuclear power facilities are considered part of the nation's essential infrastructure, therefore safety precautions are taken to prevent acts of sabotage, terrorist attacks, and unauthorised entry.
- **Continuous improvement:** Learning from previous projects, accumulated operational know-how, and technological advancements all contribute to an ever-evolving culture of safety.
- **Post-operation planning:** Safety and risk management are still important throughout decommissioning and long-term radioactive waste management, even after the plant's operating life has ended.

Safety and risk management practices at nuclear power plants are subject to stringent scrutiny from regulatory agencies and are always developing depending on improvements in technology and industry best practices.

3. Conclusion

The goal of the Hinkley Point C project is to fulfil 7% of the power demand in the UK and supply electricity with a low carbon footprint to 6 million homes. The project addresses a variety of issues, such as energy decarbonization and safety, job development, investment and finance opportunities, capacity for producing power and employment creation, as well as long-term operations. With current forecasts exceeding 32.7 billion pounds, the original budget for Hinkley Point C scaled from 20.5 billion pounds to 22.6 billion pounds in the year 2016. During the project's execution, the budget has been subject to many rounds of revision, and the delivery of the first unit is now anticipated for June 2027. The project has been delayed as a result of problems in the supply chain as well as the conflict in Ukraine, which has led to increased expenditures. The management of time is vital for controlling the completion date of the project, ensuring that resources are allocated, and ensuring that resources are allocated properly.

The construction of the major nuclear power plant known as the Hinkley Project C in the United Kingdom began in 2012 and is scheduled to be finished in June 2027. Since its original authorization, the timetable for the project has been modified on many occasions and made to run for longer. The effective management of quality is essential for assuring the achievement of predetermined objectives and boosting the overall success of a project. The evaluation of Hinkley Point C's prospective quality is affected by many factors, including safety standards, engineering and construction, compliance with regulatory requirements, technology, environmental concerns, project management, and longevity.

Accurately assessing the impact of potential risks and implementing preventative measures are crucial to the project's success. Together, planning, attention to detail and communication are the pillars of effective risk management.

The use of efficient project management strategies for Hinkley Point C is crucial to guarantee the project's financial viability, adherence to schedule, safety standards, quality assurance, stakeholder happiness and compliance with regulatory mandates.

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