

PROBLEM SOLVING AND DECISION MAKING

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Decision Making and Problem Solving Questions and Answers

EXAMS DAILY

Problem Solving



Decision Making

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Introduction

The United Kingdom is in the midst of a major power crisis as a result of diminishing fossil fuel sources, the closure of coal mines, and the decommissioning of ageing nuclear power units. During the next winter months, there will unquestionably be instances of "power outages" in some regions of the UK. The United Kingdom is having trouble keeping up with the tremendous demand for energy and there is a real possibility that supplies may run out as early as the winter of 2015 (Cardinale, 2022). Energy is in low supply despite the fact that its demand has grown due to increasing use. According to studies conducted by the International Monetary Fund (IMF), the effect of the energy crisis on family budgets in the United Kingdom is far greater than in any other country in western Europe. In addition, the gap in financial strain that exists between families with high incomes and those with low incomes in the United Kingdom is far wider than it is in other countries (McWilliams et al., 2022). The reason for this is that gas prices have surged as a consequence of Russia's involvement in Ukraine, and the United Kingdom depends significantly on gas to heat homes and produce electricity. As a result, this has led to an increase in the cost of living in the United Kingdom. And of all the nations in Western Europe, the United Kingdom is the one with the least energy-efficient housing stock.

SWOT analysis of energy sector in UK

The supply and distribution networks of the power industry include all of the following: natural gas, coal, nuclear power, wind power, solar power, and electricity. The organisational structure of the power sector is the same everywhere in the globe, despite the fact that the kinds of fuel that are used for the generation of electricity and for ultimate consumption vary from place to region. The manner in which utilities respond will be contingent on a number of factors. These factors include the nature of the industry's regulatory framework, the state in which the utility operates, the composition of its asset portfolio, the rate at which customer demand is changing, the state of the economy, and the level of sophistication of the technology that the utility needs to implement (Adedoyin and Zakari, 2020). There are numerous hypotheses floating about regarding what the future holds for the global electricity market, but one thing can be said with absolute certainty: the sector is on the cusp of a major shakeup. An examination of the power industry's internal and external components is subjected to a SWOT analysis, which categorises factors such as strengths, weaknesses, opportunities, and threats.

Strengths	Weakness
• The investment in renewable energy sources is increasing. • Existing structure as a baseline • Adoption of technical solutions that are both more sophisticated and more effective.	• The ever-increasing need for authoritative control • There has been an increase in the cost of electrical grids. • Disengagement of workers
Opportunities	Threats
• Large tax breaks for fuel-efficient and environmentally friendly vehicles • The number of daylight hours available becomes steadily longer as more time passes. • The limits imposed by regulatory agencies on drilling in offshore waters have been abolished.	• Regulations, as well as the repercussions of failing to comply with them. • Lack of clarity in policy and fluctuating prices for carbon. • Price swings experienced by several commodities.

PESTLE analysis of Macro factors

Political factors

It is abundantly evident that politics may have a significant influence on the future of energy, bringing with it both opportunities and dangers for existing and upcoming tidal projects. However, the acts taken by the government of the United Kingdom are not totally within their control; rather, they are impacted by politics on a global and European scale (Peter, 2018). The United Nations has convened a variety of advisory bodies in order to work toward the realisation of its objective of "sustainable energy for everyone." The primary objective of these boards is to increase people's access to power while simultaneously pushing for the development of ecologically sustainable energy sources like renewables. In the same way, politics are not united inside the United Kingdom, with regional governments in England, Scotland, Wales, and Northern Ireland each executing their own policies in their own regions.

Economic factors

There is a diverse variety of economic stuff to think about when it comes to the energy business. A lack of financial resources was recognised by stakeholders as the "biggest hurdle" to the energy industry, and addressing this problem is essential to any development that may be made in the future. According to the theory that underpins the low-carbon economy, the global economic downturn might be the root cause of investors' hesitation (Grubb, 2022). The long-term survival of the energy business is already in jeopardy as a result of technical advancements; the ongoing unpredictability of the economies of both the UK and the rest of the world further adds to the risk.

Social factors

If developers do not take into consideration societal issues at the beginning of a project, there may be major repercussions; for instance, tidal developers have had to cope with unhappy stakeholders who have, on several times, slowed down or even stopped their work. Groups in Powys, in which Britain's largest-ever public enquiry is taking place over the installation of wind turbines with a total capacity of 500 megawatts (MW), provide as an excellent illustration of the prospect of socially driven delay (Popescu and Orindaru, 2021). Collisions are the primary cause of accidents that occur when marine energy projects are located too close to shipping lanes or popular sailing areas. Developers of marine energy, and especially tidal energy, need to coordinate closely with those involved in commercial shipping and recreational boating to reduce the risk of collisions.

Technological factors

The United Kingdom (UK) has access to a piece of technology that has the potential to have a significant impact on the country's overall energy generation: the capability to capture some of the world's most abundant tidal energy. This technology could have a significant impact on the total energy generation of the country (Malinauskaite et al., 2019). However, due to the fact that the technology for tidal energy is still in its infancy, there is still a significant amount of risk in the development stage; this is one of the primary reasons why banks have not yet invested in the technology. It's possible that prospective investors will find the greatest allure in the real estate developer who has the highest production power and efficiency rating.

It is essential to isolate and nurture the required information in order to develop technological advances that may change the game. Additionally, it is important to identify a supply chain that can produce the necessary components and systems. Scottish Enterprise has just established a

website in order to make it easier for developers to identify the many links in their supply chain. It is common practise to over-engineer designs, which may make it more difficult and expensive to bring such concepts to market. It is essential to carry out a detailed technological and economic analysis in order to lessen the impact of this risk (Poudyal et al., 2020). It is possible to carry out this review by learning from the mistakes made in other industries, such as the industry of onshore and offshore wind energy. In light of the hostile environment and the restricted scope of intervention, it is absolutely necessary for developers to exert a significant amount of work in order to meet the availability and reliability criteria.

Legal factors

The legislation and regulations that are now in place to regulate marine and tidal energy devices are rather complicated. The Department of Environment, Food, and Rural Affairs (DEFRA) has recognised the need to simplify them in order to lower the legal risk that is faced by entrepreneurs. In this section, we will take a more in-depth look at the various legal rules that are now in existence in the United Kingdom that influence tidal energy devices. This will be done in preparation for the possibility that the suggested simplification will be implemented (Murphy et al., 2022). The United Nations Convention on the Law of the Sea "lays down a complete framework of law and order" in order to establish laws that will control usage of all oceans and seas on a global scale. As a result, the convention grants the sovereign state the authority to exercise jurisdiction over the seas up to 200 nautical miles off its shore.

Environmental factors

The government of the United Kingdom has made a commitment to meeting the climate change goals set by the European Union (EU). Marine energy devices may be able to assist with this goal by supplying electricity while reducing harmful emissions of greenhouse gases, air pollution, and acid rain, but only if they are properly maintained. It is a common fallacy that developers are already making a significant contribution to the environment by lowering their use of fossil fuels. As a consequence of this assumption, developers may neglect to address other environmental challenges (Ali and Almeida, 2022). However, those in charge of the development of the project must always keep in mind the bigger picture, since the actions they take at any point in the process might have unintended consequences for the surrounding environment. The term "environment" refers to everything that surrounds the device, both on the exterior and on the inside.

The Environmental Impact Assessment Directive and the Strategic Environmental Assessment Directive were both established by the European Commission as a means of assisting with the monitoring of environmental unpredictability that is caused by marine energy devices (Yasmeen et al., 2022). Both of these were designed to make certain that environmental repercussions are taken into account before any decisions are made, and they are activities that are required to be carried out for each individual project and piece of equipment due to the "unique complex" of effects that may be produced.

Recommendations

If the energy sector were taken over by the government, then electricity would be transformed into a marketable commodity. When thinking about how to organise and control the energy sector, it is essential to first identify whether energy is seen as a commodity or a service. Only then can one effectively organise and govern the industry (Kocic et al., 2021). People currently pay their energy providers for the services that the energy delivers, such as the capacity to cook food, heat a home, or operate technology gadgets. These services include the ability to cook food on a stove, heat a dwelling, or run technological devices. If energy providers saw what they do as a service rather than a product, they would make delivering the electricity that is required for day-to-day activities their main priority.

Decision making matrix

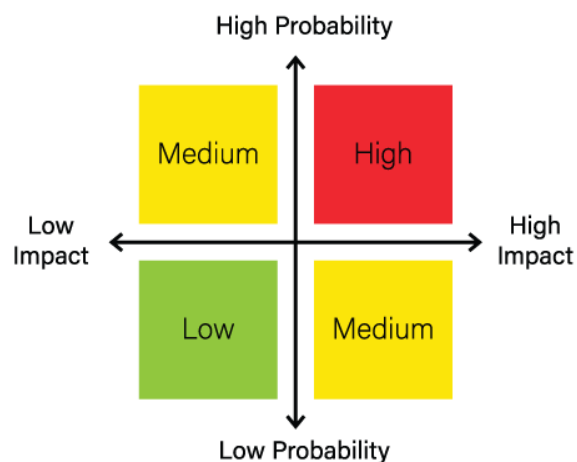


Figure 1 Decision making matrix

Both on land and at sea, there is a tremendous lot of potential for the United Kingdom to generate clean energy by using wind, solar, and tidal sources. This is a really exciting development. Wind and solar farms that are located on land take the least amount of time to build, and their prices are competitive with those of natural gas. The ever-increasing cost of gas is exacerbating both the financial burden of living and the ecological disaster that is faced (Latif et al., 2020). Gas is the principal form of heating for over eighty percent of the residences in the United Kingdom. Even when our electricity is produced by renewable sources that are more efficient from a financial standpoint, it continues to follow the trend of the price of fuel.

Review of implementation

The UK is vulnerable to the energy crisis caused by Russia's invasion of Ukraine even if they don't use Russian petrol. UK gas prices are strongly connected to those on the continent, and European gas shortages influence the UK (Ramos et al., 2022). Russia provides 40% of EU gas. Russia may shut off all petrol supply this winter after invading Ukraine. Supplies are down roughly 50% this year.

Conclusion

Reform of the energy market, expansion of the UK's energy supply with extra renewables, nuclear power, and domestic gas production and storage, as well as reduction of energy usage via insulation, are all possible long-term methods for resolving the energy conundrum.

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