

# Analysis of Economic for Global Energy Strategic Management

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The strategic management process is the full set of decisions, commitments, and activities required for policymakers to attain strategic competitiveness for global energy management. The initial step of the process is investigating the external environments to determine the opportunities and threats. The objective of this study is to scan and analyse the economic segment of the external environment. The strengths, weaknesses, opportunities, and threats analysis is applied to identify factors that have a direct effect on global energy management. The research results are required for the decision-makers to understand the critical factors in the economic segment and their implications for selecting and implementing the appropriate strategies.

## 1. Introduction

Energy is a futuristic criterion of economic and social development that influences living standards (Lijó et al., 2019). Fossil fuels are used to provide nearly 85 % of global energy needs (Bessel et al., 2020). Rapid global economic growth and excessive use of fossil fuels have caused serious environmental problems, particularly global warming, air pollution, acid deposition, ozone depletion, deforestation and radioactive emissions (Yuksel, 2020), which have had a negative impact on public health and the climate (Zeinalnezhad et al., 2020). As a result, climate change and greenhouse gases in countries around the world have been concerned (Tabrizian, 2019). Other concerns about energy sustainability include fossil fuel reduction and price volatility. Health problems caused by rampant use of fossil fuels have become the concern of society today because of the concentration of greenhouse gases in the atmosphere (Lijó et al., 2019). This deficiency was remedied by a roadmap a comprehensive master plan and a strategic plan method for future technologies (Chofreh et al., 2017), a comprehensive management plan (Chofreh et al., 2014), a master plan for the implementation of sustainable enterprise resource planning systems (Chofreh et al., 2016), and a strategic plan for future renewable energy technologies (Chofreh et al., 2019).

Energy and sustainability have become an important aspect and current topic in the world. Energy is important to maintain economic growth and create national wealth. Ecological research involves the results of the use of resources, and technological systems must move toward sustainable development. In addition to global warming, there are many environmental issues related to power plant production, such as air pollution, acid rain, ozone depletion, deforestation and radioactive material emissions. To achieve a better future than the energy with the least environmental impact, we must address these issues at the same time (Ishaq and Dincer, 2020). The global energy system must be managed using strategic management in relation to the production and consumption of sustainable energy. The concept of strategic management for global energy determines where the global energy transition should go, why this transition should take place when we should go there, and how we should get there (Chofreh et al., 2019). For this purpose, Policymakers must have a long-term plan that includes decision-making processes at all levels, including the world, the region, the country, the country, the region, the region, and the sector. This requires a way in which the process of designing strategic management for global energy.

The primary stage of the strategic management process is to examine the internal and external environment. An organisational environment includes internal and external factors. The environment must be analysed to determine the development and prediction of factors that affect the success of the organisation. Environmental analysis refers to the possession and use of information about situations, patterns, trends and relationships in an internal and external environment. This helps managers make decisions about the future direction of the organisation. The scan should identify threats and opportunities available in the environment.

Environmental scanning techniques commonly used by experts include:

- Strengths Weaknesses Opportunity and Threats (SWOT) analysis
- Political, Economic, Social and Technological (PEST) analysis
- Environmental Threat and Opportunity Profile (ETOP) analysis
- Quick Environmental Scanning Technique (QUEST) analysis

SWOT analysis is a strategic planning tool that enables managers to verify the state by identifying exterior occasions and threats, and internal strengths and weaknesses, to develop practical plans (Yang, 2010). Because energy planning involves strategic decisions that are important, there are several uses of SWOT analysis in the literature for this type of problem. Jaber et al. (2015) analysed the recruitment of renewable energy using SWOT and problem analysis. Okello et al. (2014) using SWOT and the Analytic Hierarchical Process AHP process and an approach of optimal functions to evaluate the evaluation of biological options. In another study, Zare et al. (2015) proposed a SWOT framework for analysing the power supply chain using the combination of AHP with fuzzy-TOPSIS. Bas (2013) proposed an integrated framework for the analysis of the power supply chain using the integrated SWOT fuzzy TOPSIS method with AHP.) Terrados et al. (2009) used SWOT analysis to create a renewable energy program and strategic goals. They used the best methods presented in the literature to design and develop a powerful/flexible framework to solve the problem of energy planning.

There is a limited study that focuses on global energy strategy. Economic factors are aspects that should be considered in the development of strategic energy management. The aim of this study is to investigate and analyse the strengths, weaknesses, opportunities and threats of economic factors that may affect global energy management. The motivation of this article stems from the achievement and attention to global energy strategy) The idea behind this article is that the factors associated with the economic aspects of global energy. This study discusses the strengths, weaknesses, opportunities and risks with a focus on the economic perspective for developing a long-term global energy management strategy that has the potential to advance global energy research. Results have contributed to strategic planners and decision-makers in uncovering multiple factors that have a direct impact on performance.

## 2. Related studies

Economic Analysis for Strategic Global Energy Management requires an integrated approach to strategic management and the concepts of planning, technological innovation, and related knowledge in economics. An overview of the studies conducted in the field of strategic management of global energy is presented in the following sections to identify research gaps in this field.

The subject of strategic planning research has been integrated into several sustainability studies, as shown in Table 1. Rahman (2016) examined a plan to achieve urban sustainability in Bangladesh and analysed the social aspects of the current plan and found that the existing plan adopted the concept of the strategic plan. However, this plan does not meet the urban sustainability criteria. Barreto and Drummond (2017) evaluated strategic planning device for the management of protected areas in Brazil. They suggested improving the existing strategic plan to achieve better performance. Another study presented by Malekpour et al. (2017) proposed a model that integrates short-term and long-term into the strategic urban planning process. Pereverza et al. (2017) used a method to develop a scenario in strategic planning for sustainable heating systems. This method uses a morphological approach and scenario development principles to understand more heating systems in cities (Chofreh et al., 2019).

Löfgren et al. (2018) noticed that the sustainable transport planning process does not perform strategic vision evaluations. They proposed an integrated idea that included evaluating a strategic perspective in the strategic planning process. Jaeckel (2020) examined the current strategic plan of the Oman Sea Organization and identified several gaps that could be included in the strategy for future environmental management. Krog and Sperling (2019) proposed a framework for Danish energy conversion planning in the field of energy research. This framework offers a variety of dimensions to consider the design of strategic energy plans. Vecchiato (2019) analysed the Shell's scenarios for the Russian Federation's energy market. He pointed out that current scenarios undermine the planning of strategic aspects of the external environment and help senior managers make decisions. The weakness of these scenarios is that they do not include the anticipation of several major issues in the energy market. Villicaña-García and Ponce-Ortega (2019) created a model for the strategic planning of

natural gas energy systems. This model uses an optimisation strategy for interlinking sustainability dimensions. There are extensive studies focusing on strategic planning in areas of sustainability, especially in the field of energy. However, little attention has been paid to the study of strategic planning for future renewable energy technologies. The present study addresses this issue by providing a method for strategic planning to make decisions about appropriate renewable energy technologies.

*Table 1: A review of strategic planning studies*

Reference	Research area
Rahman (2016)	Urban sustainability
Barreto and Drummond (2017)	Environmental management for protected areas
Malekpour et al. (2017)	Urban water
Pereverza et al. (2017)	Sustainable heating systems
Löfgren et al. (2018)	Sustainable transport
Jaeckel (2020)	Deep seabed mining and marine environment
Krog and Sperling (2019)	Framework for strategic energy planning
Vecchiato (2019)	Scenario planning and strategic investment
Villicaña-García and Ponce-Ortega (2019)	Sustainable strategic planning for energy system
Wu et al. (2019)	Energy from household-consumption perspective
Chen and Chen (2011)	Energy consumption in the world economy
Ulucak et al. (2020)	Financial globalisation and environmental degradation
Fischhendler et al. (2017)	The political economy of global energy sanctions
Chen and Wu (2017)	Energy for the globalised world economy

Wu et al. (2019) take a new perspective on household consumers' understanding of global energy consumption, which helps complement existing accounting frameworks and also lays the groundwork for future work such as time series analysis that aims to examine how consumer behaviour behaves. Domestic consumers affect energy consumption in countries (Chofreh et al., 2019).

Chen and Chen (2011) for the First World Economy reviewed energy consumption through coded energy analysis based on direct and indirect energy based on an input simulation of system output. Ulucak et al. (2020) explored how financial globalisation affects environmental degradation in emerging economies using the destructive effects of the environment as a proxy for environmental degradation. Fischhendler et al. (2017) pointed to the lack of a precise and focused analysis of energy sanctions in the current literature and provided a longitudinal and quantitative analysis of economic energy sanctions from a global perspective. Chen and Wu (2017) provided an overview of the global energy profile based on the merger of 2010 statistics, using an energy analysis system.

### 3. Methodology

SWOT analysis is used in this paper to identify all relevant factors. From internal and external perspectives, these factors can then be divided into strengths (S), weaknesses (W), opportunities (O) and threats (T). SWOT analysis is a strategic approach to assess internal and external risky organisational factors. This technique concludes the optimum strategy combination, which can maximise the strengths and opportunities, and minimise the weaknesses and threats, so if used properly, it provides a good foundation for strategy development. Although SWOT analysis has been extensively used, the fundamental drawbacks of SWOT analysis is that it cannot quantitatively measure the significance of each factor in decision making. The disadvantage of SWOT analysis is to determine how to sort strategies and factors objectively (Cayir Ervural et al., 2018).

The SWOT analysis commonly consists of two fundamental stages:

1. SWOT matrix creation; which consists of two stages:
  - Identify the main internal strengths and weaknesses.
  - Identify the main external opportunities and risks.
2. Strategies definition through the SWOT matrix.

SWOT matrix is created according to the mixtures of the identified factors of strength, weakness, opportunity and risks, which are reflected in four strategies of SO, ST, WO and WT (Hill and Westbrook, 1997):

- In the SO, the optimum usage of inner strengths and outer occasions are set.
- In the WO, using external opportunities will reduce or removes internal weaknesses.
- In the ST, the use of internal strengths reduces or entirely removes external risks.
- In the WT, the decrease of external threats will be achieved by taking internal weaknesses into account.

The SWOT analysis matrix presents four categories of strategies that are structured as Table 2.

Table 2: SWOT analysis matrix structure

		Internal Factors	
External factors	Opportunities (O)	Strengths (S)	Weaknesses (W)
	Threats (T)	SO strategy	WO Strategy
		ST strategy	WT strategy

Figure 1 illustrates the process of the study.

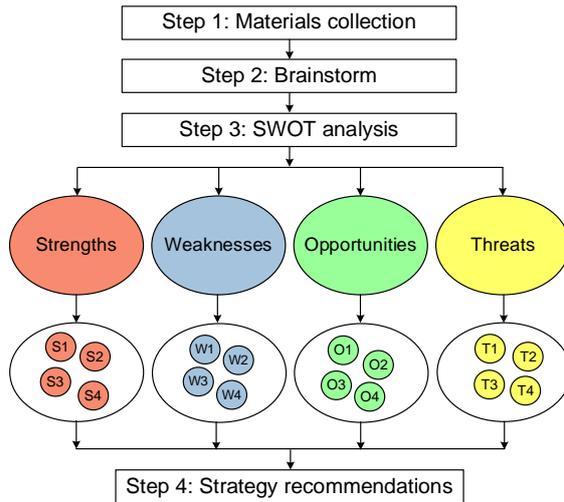


Figure 1: Research process

#### 4. Results and Discussion

The results of SWOT analysis related to the internal factors for the Strengths (S) include rising investment in energy globally, decreasing the rate of manpower unemployment, increasing the rate of the entrepreneur in the energy industry, great governments support, adequate funding for research, economies of scale from access to more customers and markets, economies of scale in production and distribution, use another country resources, extend the lifecycle products (older product can be sold in lesser developed countries), and lower marketing costs. The results of SWOT analysis related to the internal factors for the Weaknesses (W) include growing demand for non-renewable energy, lack of economic planning on energy preferences, lack of trained manpower, lack of economic corporation and coordination among international energy companies, lack of funding for research and development activities, poor economic feasibility. The results of SWOT analysis related to the external factors for the Opportunities (O) include increased tax incentive for global energy-efficient, potential foreign investment, increased regional and global cooperation, increasing energy efficiency, growing markets, growing new demand, growing international cooperation, supporting the development of renewable energy, promoting effective investment, looming supply-demand gap, global economic community (AEC) building, incentives for local and foreign investors, donors to fund projects, create new jobs, saving fossil fuels, protecting the environment, revenue from saving energy, revenue from saving discount, and more job opportunities. The results of SWOT analysis related to the external factors for the Threats (T) include commodity price volatility, being open to outside interventions in economic, the high rate of import dependence, monopolisation of energy markets in the world, instability inflation rates, a different currency for trading, fragmented energy markets and networks, nationally focused energy security paradigm, prevailing fossil fuel subsidies, global energy systems can be costly, weak management of the funding, and low level of participation. The summary of the results is shown in Figure 2.

INTERNAL FACTORS		EXTERNAL FACTORS	
<b>STRENGTHS (S)</b> <ul style="list-style-type: none"> <li>• Rising investment in energy globally</li> <li>• Decreasing the rate of manpower unemployment</li> <li>• Increasing the rate of entrepreneur in energy industry</li> <li>• Great governments support</li> <li>• Adequate funding for research</li> <li>• Economies of scale from access to more customers and markets</li> <li>• Economies of scale in production and distribution</li> <li>• Use another country resources</li> <li>• Extend the lifecycle products- Older product can be sold in lesser developed countries</li> <li>• Lower marketing costs</li> </ul>	<b>WEAKNESSES (W)</b> <ul style="list-style-type: none"> <li>• Growing demand for non-renewable energy</li> <li>• Lack of economic planning on energy preferences</li> <li>• Lack of trained manpower</li> <li>• Lack of economical corporation and coordination among international energy companies</li> <li>• Lack of funding for research and development activities</li> <li>• Poor economic feasibility</li> <li>• Lack of professional expertise in technical and economic appraisal of some projects</li> <li>• Bureaucracy in the implementation of licensing procedure that results in delays and frustration of investors</li> <li>• Inadequate incentives that may attract investors</li> <li>• Lack of public financing resources</li> </ul>	<b>OPPORTUNITIES (O)</b> <ul style="list-style-type: none"> <li>• Increased tax incentive for global energy efficient</li> <li>• Potential foreign investment</li> <li>• Increased regional and global cooperation</li> <li>• Increasing energy efficiency</li> <li>• Growing markets</li> <li>• Growing new demand</li> <li>• Growing international cooperation</li> <li>• Supporting the development of renewable energy</li> <li>• Promoting effective investment</li> <li>• Looming supply-demand gap</li> <li>• Global Economic Community(AEC) building</li> <li>• Incentives for local and foreign investors</li> <li>• Donors to fund projects</li> <li>• Create New jobs</li> <li>• Saving fossil fuels, thus protecting environment</li> <li>• Revenue from saving energy</li> <li>• Revenue from saving discount</li> <li>• More job opportunities</li> </ul>	<b>THREATS (T)</b> <ul style="list-style-type: none"> <li>• Commodity price volatility</li> <li>• Being open to outside interventions in economic</li> <li>• The high rate of import dependence</li> <li>• Monopolisation of energy markets in the world</li> <li>• Instability inflation rates</li> <li>• Different currency for trading</li> <li>• Fragmented energy markets and networks</li> <li>• Nationally focused energy security paradigm</li> <li>• Prevailing fossil fuel subsidies</li> <li>• Global energy systems can be costly</li> <li>• Weak management of the funding</li> <li>• Low level of participation</li> </ul>

Figure 2: Summary of the research results

## 5. Conclusion

This study identifies a set of strategies based on global energy economic aspects: strength-opportunity (SO) strategy, weakness-opportunity (WO) strategy, strength-threat (ST) strategy, and weakness-threat (WT) strategy. The SWOT analysis shows the low desire, and the limited capacity of national and international governments will increase the implementation of global energy projects, and well-designed strategies and related actions will help the world achieve a green energy composition of more than 40 %. International energy companies can promote cleaner use of fossil fuels, using renewable energy and energy efficiency programs equally, gradually increasing energy subsidies, strengthening international integration and energy connectivity, transferring current energy patterns to more global security perspectives. Facilitate energy and increase the implementation of practical projects. Each of these strategies ultimately requires sustainable leadership, political trust, and the actual actions of shareholders, in particular, governments and international organisations. It is recommended to perform a case study on this subject by the interested researches in future.

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