

Analysis of Green Financial Support Strategy Based on Clean Energy Development

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Abstract: With the deepening of global attention to environmental protection and sustainable development, clean energy development has entered a new era, and China's clean energy has entered a stage of high-quality development. This article focuses on the idea of a green financial support strategy with clean energy development as the keynote and puts forward the countermeasures to better meet the financial needs of clean energy development. As a result of the dynamic evolution of renewable energy development and in accordance with the internal logic of clean energy development, a theoretical and practical framework for green financial support is constructed, which clarifies the interactive and cyclical mechanisms between green financial support strategies and clean energy development, and leads to a mechanism for clean energy development as a whole. Through principal component analysis of environmental impact and numerical examples of clean energy projects, this paper examines the impact of green financial support strategies on the benefits, return on investment, and risk assessment of clean energy projects, as well as the impact of different market conditions on the prediction results. It is concluded that green financial support strategies can significantly enhance the investment attractiveness of clean energy projects as well as promote the high-quality development of clean energy sources.

1. Introduction

Clean energy development is one of the main responsibilities of green finance and a general term for achieving sustainable development, which can be divided into renewable energy and non-renewable energy and are composed of solar energy, wind energy, water energy, and biomass energy. Governments have also commissioned financial institutions to formulate and implement green financial policies to promote clean energy development. Since the 21st century, clean energy has become an important key to global development, and green finance has become an indicator of sustainable development. Unlike traditional finance, green finance emphasizes environmental protection, social responsibility, and sustainable development. Therefore, the topic of green finance support strategies has been raised, and clean energy provides new investment areas for green finance. Green finance originates from the concept of sustainable development with environmental protection as its core. Its goal is to achieve a harmonious coexistence of economic growth and environmental protection, and is also a tool for green economic development. Green finance pursues the development of clean energy and realizes the modernization of clean energy through the combination of financial means and technological innovation from the perspective of industrial structure. However, this is only a practice on a global scale. Today, green finance has practiced a unique path of sustainable development. The comprehensive promotion of green finance not only innovates the development model of traditional finance and embodies the social responsibility of finance but also innovates the development track of the global economy and has a profound impact on sustainable development. Therefore, the discussion of green financial support strategies must have a global perspective and pattern. Therefore, the proposition of a green financial support strategy for developing clean energy is put forward. Generally, the green financial support strategy is a necessary condition and guarantee for achieving high-quality clean energy development. Globally, green finance has made progress in promoting clean energy development, but there are also shortcomings. Countries have not yet fully figured out an effective path for green financial support strategies and are still working hard to make

progress. Therefore, the green financial support strategy needs to be continuously innovated, which is not only in line with the needs of global sustainable development but also the responsibility of financial institutions and governments. This article proposes a financial modeling strategy based on renewable energy, aiming to support clean energy development through green finance based on the above background analysis. The investment risks and returns of clean energy projects are solved through theoretical and empirical methods. The main content is the benefit identification of green financial support strategies and the principal component analysis of environmental impacts, which effectively copes with the risks of clean energy development and has important practical significance.

2. Basic Theory of Clean Energy

Clean energy refers to energy that does not produce or retain a very small amount of harmful substances, such as solar energy, wind energy, water energy, biomass energy, etc. They are the key to achieving sustainable development. Clean energy has less environmental pollution in the process of utilization compared with traditional fossil energy, and the total amount of resources is abundant, which will not be reduced by use. The development concept of clean energy is to build an energy system based on low pollution and emissions, which is closely linked to sustainable development [1]. A sustainable development strategy emphasizes meeting current needs and providing adequate opportunities for future generations without causing harm to the environment. Clean energy is the concrete embodiment of this concept. In terms of strategy, the development of clean energy needs to gradually reduce the dependence on fossil energy and increase investment in new energy through energy structure adjustment. Specific measures include increasing R & D investment in clean energy technologies, building corresponding infrastructure, such as solar power stations, wind farms, etc., and encouraging the development and application of clean energy projects through policy guidance.

Clean energy is of great significance for environmental protection and social sustainable development, which helps reduce greenhouse gas emissions and mitigate global climate change, and can improve the safety of energy supply and reduce the impact of energy price fluctuations on the economy, as well as can also promote employment and improve people's quality of life. Therefore, the development of clean energy is an inevitable choice for human society to move towards a sustainable future.

3. Renewable Energy-based Financial Modeling

A financial model is an important tool for developing clean energy, as it is a quantitative method of expressing strategies for financial support. From the perspective of risk management and investment return, economists and environmental scholars have discussed different definitions of financial modeling. Scholars also believe that financial modeling is the extent of clean energy project financing or green financial instruments [2]. It is precisely because financial modeling is more practical to some extent and belongs to financial science to optimize resource allocation. Financial modeling dates back to the late 20th century, and its main activities include cost-benefit analyses of clean energy projects. The concept and practice of financial modeling are closely related to the concept of sustainable development. As a result of financial modeling, clean energy becomes an important responsibility for financial institutions. With the advent of sustainable development, financial modeling theory has made significant contributions to incorporating environmental and social factors into financial analysis and decision-making. As a result, financial modeling concepts initially focused primarily on determining investment risk and return based on standard sustainable development attributes [3]. Financial modeling based on renewable energy is shown in Figure 1.

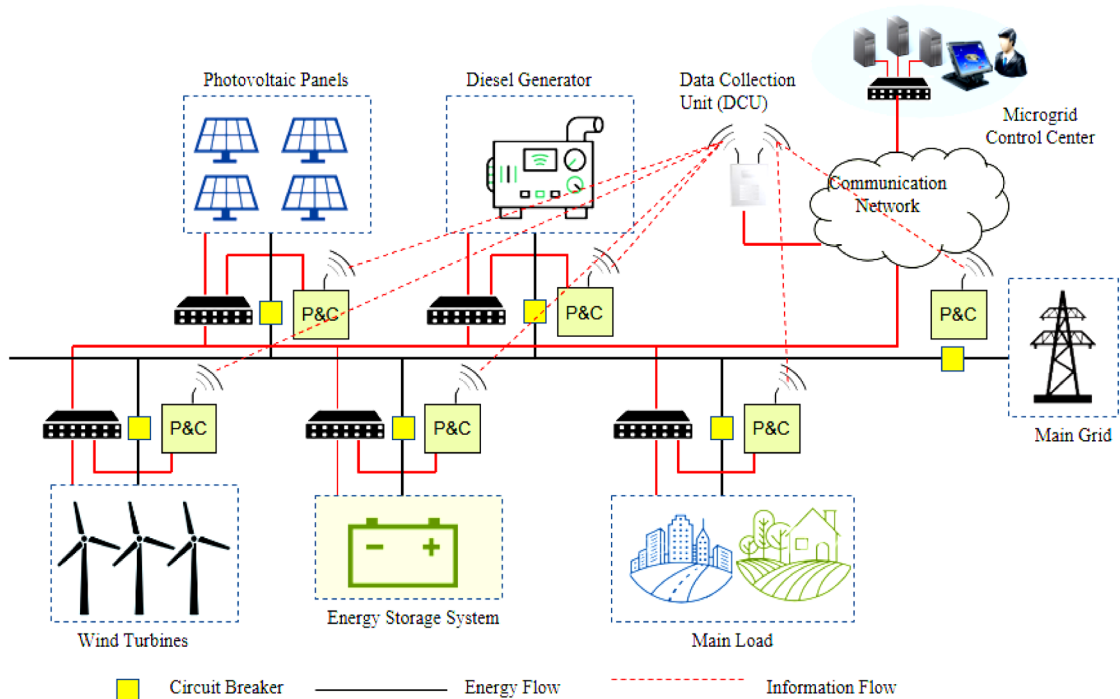


Figure 1 Financial modeling based on renewable energy

4. Green Financial Support Strategy

Compared with traditional financial support strategies, green financial support strategies emphasize the interrelationship between environmental protection and economic development and are sustainable. Although some scholars have questioned the connection between environmental protection and economic development, most scholars contend that green financial support strategies can provide a rational evaluation of sustainable development. Ross et al. proposed a green finance assessment model that includes economic and environmental risk factors. This model has now become one of the most commonly used tools for green finance assessment and a concept for green financing.

These scholars believe that green finance is an instructive and "green investment". Only when financial activities meet environmental protection standards will green finance have a positive effect. Therefore, green finance is the result of the concept of sustainable development. Some scholars have also summarized green finance as a dual-objective model: a green financial model based on environmental protection and a green financial model based on economic development. The former focuses on environmental protection, while the latter focuses on economic benefits, that is, the positive impact of financial activities on the environment [4]. Although green finance has experienced some practical failures, it can promote sustainable development, and the concept of green finance has gradually become the consensus of financial research and practice.

5. Principal Component Analysis of Environmental Impact

The concept of principal component analysis of environmental impact focuses on how to quantify and manage environmental risks. Traditional environmental impact assessment is the application of linear thinking in environmental management. A multi-dimensional environmental impact assessment framework has entered the research field as a new alternative model to overcome the shortcomings of this method. The basic idea of this framework is that environmental impact assessment should ensure the effective realization of comprehensiveness, objectivity, and scientificity. Set professional standards for environmental impact output. Through remote sensing technology, geographic information systems and other technologies and tools to "capture" environmental changes. The environmental impact is measured using a multi-dimensional analysis method [5]. The principal component analysis framework of environmental impact reconstructs the traditional environmental

impact assessment model, emphasizing the need to enhance the systematic, dynamic, spatial, and continuity of assessment.

6. Numerical Example of Clean Energy Project

6.1 Benefit Identification Based on Green Financial Support Strategy

The numerical example of a clean energy project is the main application of a green financial support strategy, which focuses on the benefits identification of financial instruments in evaluating clean energy projects. Through numerical examples, the financial feasibility and environmental impact of the project are directly reflected. Some elements of developing numerical examples of clean energy projects are gradually taking shape, such as cost-benefit analysis, risk assessment, and project benefit prediction. These and various evaluation systems have also gradually received attention. However, from a practical point of view, the practice of some numerical examples is still in the theoretical exploration stage, contrary to the logical framework and generation mechanism of green financial support strategies, and the problems of benefit evaluation and risk management are derived.

6.2 The Influence of Investment Value Range on the Income Results in the Sample Library

The construction of a sample database is the basic link of numerical examples of clean energy projects, and also the core embodiment of green financial support strategy from the perspective of investment value range. Therefore, the sample library takes the investment value range as the main generation logic. Investment value ranges are the principal factor affecting clean energy projects as well as the key component of green financial support programs. At present, the green financial support strategy strengthens investment control from the perspective of risk management, and there are three main forms. First, clarify the balance between project returns and risks within the scope of investment value. As a second objective, investment standards, risk assessment standards, and investment standards disclosures must be developed to achieve standardized control over investments. The third is the internal process reengineering of the green financial support strategy. In recent years, clean energy projects have used financial means to improve project efficiency and improve the effectiveness of green financial support strategies. However, the practicality of the current green financial support strategy needs to be further improved compared with the traditional financial support strategy.

6.3 The Influence of Different Policy Support on the Return on Investment Results

The fundamental difference in the return on investment results of different policy support and clean energy projects lies in their effect attributes. The purpose of policy support is to increase the return on investment for clean energy projects and to promote the development of green finance. For the development of green finance, accurate data analysis, scientific investment assessment, effective risk management, and transparent information disclosure are the core values and highest standards [6]. The diversity of current policy support types and the differing effects of their implementation have led to a complex situation in the green finance sector. In spite of the fact that policy support has been somewhat successful in promoting clean energy projects, the policy system is still incomplete, and green finance itself does not have an effective regulatory framework. Therefore, this has produced a “short board ” of policy support, which has affected the overall effect of the green financial support strategy.

6.4 The Influence of Green Financial Support Strategy on Risk Assessment Results

It is not possible for green finance support strategies to provide investors with the necessary information regarding risk and return from a risk assessment perspective. Investors’ satisfaction evaluation of green financial support strategies is the main form, but the strategy lacks transparent relevant information and risk assessment mechanism. The core of this problem may be information asymmetry. In risk assessment, the green financial support strategy is often described as a “risk-benefit” balance tool, and its assessment of project risks directly reflects investors’ expectations of project returns. However, most of the information is about the financial data of the project, and the information on environmental risks is relatively scarce. It is often difficult to obtain or measure environmental risks. The asymmetry of information and the imperfect risk assessment directly hinder

the ability of investors to support green finance strategies.

6.5 The Influence of the Error of Different Market Conditions on the Prediction Results

From the perspective of market condition errors, the accuracy of long-term forecast models has restricted the forward-looking ability of green finance support strategies. Since the 21st century, the evaluation of green financial projects integrating data analysis and risk assessment has reshaped the investment decision-making process through numerical examples. However, the disadvantages of traditional evaluation models still restrict the accuracy of prediction results. Not only due to the limitations of data acquisition, but also due to the uncertainty of market conditions, the prediction model of green financial support strategy needs to be improved. Under the premise of ideal data and assumptions, numerical examples are regarded as a direct way to predict investment returns. However, the adaptability and practical effect of the prediction model based on numerical examples of the actual market conditions remain to be discussed. At the same time, due to the difficulties in the practical application of the prediction model, the green financial support strategy lacks effective error control. Therefore, the prediction model does not always seem to achieve the expected goal. The green finance support strategy does not only face technical challenges, but also practical operational and market challenges.

7. Conclusion

The implementation of green financial support strategies has been deeply integrated into the investment and risk assessment of clean energy projects, posing new challenges for the financial industry and environmental protection policies. In addition to representing the "greenness" of sustainable development, green finance is also an important tool for promoting investment in clean energy initiatives as well as it is an urgent need to preserve the environment and maintain ecological balance. Essentially, it reflects the inherent requirements of green development. Green finance support strategy builds a theoretical analysis framework and practical mechanism based on this concept. In recent years, modern information technologies such as big data and artificial intelligence have promoted the development of green finance. Through data analysis and algorithm optimization, the accuracy and scientificity of investment decision-making and risk assessment are enabled, and its value fits the internal logic of green finance. Therefore, the green financial support strategy based on modern information technology also provides a new path for the sustainable development of clean energy projects. As a result of sustainable improvements and development of green financial support strategies, clean energy projects will be better served and the long-term goal of green development will be reached.

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