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A Literature Review on Sustainable Development of New Energy and Oil Substitutes

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Abstract:
This article aims to provide an in-depth review of the research status of new energy and petroleum substitutes both domestically and internationally, in order to provide comprehensive reference and guidance for scholars and practitioners in related fields. By summarizing existing literature, we can better understand the research achievements and development trends of various countries in the field of new energy, thereby providing more scientific and reasonable directions and strategies for future research and application work. At the same time, this article will also focus on exploring the important significance of new energy and oil substitutes for environmental protection, economic development, and social sustainability. It will replace oil in some fields to attract more attention and attention to sustainable energy.
Keywords: *new energy, Oil; Substitution, Countermeasures, Trends.*

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Ⅰ. Current research status at home and abroad

1.1 Current research status in China

Japan, as a country with relatively scarce resources, has long been committed to the development and utilization of new energy. Lv Chunsheng conducted an in-depth analysis of Japan's development experience in new energy fields such as solar and wind energy, and explored its implications for China. It is proposed that China can learn from Japan's successful experience in new energy policies, technological innovation, and industrial development to accelerate the development of the new energy industry, achieve sustainable development and energy security in China's new energy field.

Against the backdrop of China becoming the world's largest importer and consumer of oil, Kong Yanjie and Sui Lu systematically analyzed the limitations of China's oil resources and environmental pressures, and studied strategic issues focused on China's development of oil substitute products. Emphasized the urgency and necessity of developing alternative petroleum products. The research focuses on exploring the research and application of alternative products, providing important references and suggestions for the formulation of China's future energy strategy.

Xu Hongxing analyzed in detail the current situation and challenges of energy utilization in China, and proposed countermeasures and measures to address the energy crisis. He emphasized the importance of increasing investment and research and development in new energy, while advocating for the adjustment and optimization of energy structure to achieve the goal of sustainable energy development. The proposal of these strategies and measures provides useful reference and guidance for China's future energy development, and is of great significance for responding to energy crises and promoting sustainable economic development.

Yuxuan's research mainly explores the development trends and prospects of future new energy. This article provides a detailed introduction to the characteristics and applications of new energy sources such as solar energy, wind energy, and bioenergy, and delves into the role and position of these new energy sources in China's energy transformation. Through the analysis and outlook of different new energy sources, Yuxuan provides valuable references and suggestions for China's future energy development. These research findings contribute to guiding the formulation and implementation of China's energy policies, promoting the upgrading and transformation of China's energy industry, and promoting sustainable energy development.

In the context of tight oil supply and gradual development of new energy, Yang Li, Zhang Chuandu, and Cao Dashong jointly studied and focused on the opportunities for new energy developers brought about by the shortage of oil resources. The authors analyzed the development prospects and opportunities of the new energy industry in the context of increasingly scarce oil resources. Through in-depth analysis of the

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development trend in the field of new energy, important references and guidance are provided for the innovation and development of small and medium-sized enterprises in the field of new energy. The publication of this paper provides ideas and inspiration for the industry and government departments, promotes the development and application of the new energy industry, and also provides decision-making support for enterprises to invest and layout in the field of new energy.

Yin Jianping systematically reviewed the current situation and trends of alternative oil development in foreign countries. Research has shown that with the increasing awareness of environmental protection and breakthroughs in new energy technologies, alternative petroleum products have gradually been widely applied and recognized in the international market. These emerging alternative petroleum products provide new choices for environmental protection and sustainable energy development, and to some extent alleviate dependence on traditional petroleum resources. In addition, the development of alternative oil in foreign countries has also provided valuable experience and reference for China's energy transformation, which has important reference significance for accelerating the development of China's new energy industry. Yin Jianping's research provides important theoretical basis and practical experience for the formulation and implementation of China's energy policies, and has positive guiding significance for the optimization and adjustment of China's energy structure.

Guo Yang studies the driving effects of new energy replacing fossil fuels on a global scale. Through in-depth analysis of the trends and influencing factors of global energy transformation, the important position and role of new energy in the global energy landscape have been revealed. With the increasing global attention to environmental protection and sustainable development, the development momentum of new energy will gradually strengthen. Meanwhile, the continuous innovation and cost reduction of new energy technologies will also accelerate their application and promotion in the energy field. The emergence of these new energy sources will have a profound impact on the global energy structure and geopolitical landscape, promoting the process of global energy transformation. Guo Yang's research provides theoretical support for the adjustment and formulation of China's energy policies, and provides important reference basis for China's energy transformation and sustainable development.

Forest research focuses on exploring the development prospects and application value of combustible ice as a new energy source. Lin Jian provided a detailed introduction to the geological characteristics, resource reserves, and development techniques of combustible ice in the article. Combustible ice, as a natural gas hydrate, has abundant resource reserves and broad development prospects. Through the analysis of the geological distribution and mining technology of combustible ice, it has the potential to become an important energy substitute. He further analyzed the potential application value and market prospects of combustible ice in the field of energy substitution, and the development and utilization of combustible ice will have a positive impact on China's energy structure and energy security. The research in the forest provides important references for the formulation and implementation of China's new energy strategy, and contributes theoretical support to the sustainable development of China's energy sector.

Zou Caicai, Xiong Bo, Xue Huaqing, and others have studied carbon neutrality. The research focuses on exploring the important significance and mechanism of new energy in carbon neutrality strategies. By analyzing the position of new energy in carbon neutrality, the key role of new energy in carbon reduction and addressing climate change has been revealed. In the article, China's development strategies and path choices in the field of new energy are proposed, emphasizing the urgency of accelerating innovation in new energy technology and industrial development. The research by Zou Caicai and others provides theoretical guidance for China's energy transformation and the achievement of carbon neutrality goals, and provides important references for the mechanism of new energy in carbon neutrality.

Qi Hua and Song Jiantong's research on the characteristics of biodiesel as a new energy source for automobiles. The research focuses on the characteristics and application prospects of biodiesel as a new energy source for automobiles. In the article, the production process, advantages, characteristics, and environmental benefits of biodiesel were introduced in detail, emphasizing the importance of biodiesel as a renewable and clean energy source. In addition, the development prospects and challenges of biodiesel in the field of automotive energy substitution in China were also discussed.

These studies have conducted in-depth analysis of the current situation, problems, and future development prospects of China's new energy from multiple perspectives, providing rich theoretical and practical support for the formulation and implementation of China's new energy policies. In some fields, the production effect of new energy products can be similar to that of petroleum products, providing important reference and guidance for promoting the healthy development of China's new energy industry.

1.2 Current research status abroad

Corvinus F. proposed a proposal on Malaysia's energy market petroleum substitution strategy. In the current situation of uncertain oil resource supply, it is crucial to develop an appropriate oil substitution strategy to ensure energy security. A series of strategic recommendations have been proposed for the Malaysian energy

market to reduce dependence on oil and achieve energy diversification. These strategies include increasing investment in renewable energy, promoting energy technology innovation, and formulating more flexible energy policies to address the challenges of future energy supply and demand.

Joshi CP and Nookaraju A explored new pathways for producing bioenergy from plants as a green alternative to oil. The production of bioenergy is extracted from plants and is expected to become an important green and environmentally friendly alternative to oil. The technology and feasibility of plant bioenergy production were discussed in depth, and its importance for environmental protection and sustainable development was emphasized. This study provides a new perspective and direction for seeking alternative oil solutions, and provides important theoretical support for the development and application of bioenergy.

A study by Balisteri E J, Al Qahtani A, and Dahl C A on the Armington elasticity estimation of petroleum and petroleum products. A new trade geography method was adopted for estimation to reveal the impact of oil substitutes on the global energy market. Estimating the elasticity of oil and its products helps us understand the market substitutability of different energy alternatives, thereby formulating more effective energy policies. This study provides important data and methodological support for evaluating and formulating global energy policies, helping us better understand the role and position of energy alternatives in the global energy market.

The research by Evanson R and Timmins C on the future of the Asian oil market emphasizes the importance of oil substitutes. "The research and practice of substitutes in the oil market are of great significance for addressing the uncertainty of global oil supply." The article analyzes the potential role of oil substitutes in the Asian energy market and proposes corresponding policy recommendations. This study provides important theoretical guidance and policy recommendations for addressing the limited availability and supply uncertainty of oil resources, and has important reference value for energy strategic planning in the Asian region.

Lin B, Ankrah I, and Manu SA's research on energy efficiency and energy substitution in Brazil. Explored ways to improve energy efficiency and achieve energy substitution, in order to achieve the cleanliness of the national energy system. "Energy efficiency and energy substitution are one of the important ways for Brazil to achieve sustainable development and should be given attention in energy policy formulation." This study provides important reference for policy formulation in the energy sector of Brazil and theoretical support for achieving sustainable development goals.

Ⅱ. Summary

This review provides a comprehensive overview of the current research status on new energy and petroleum substitutes both domestically and internationally. In terms of domestic research, scholars have focused on exploring the challenges and countermeasures of China's energy development. The importance of learning from Japan's successful experience in the field of new energy was emphasized by Lv Chunsheng and others, while Kong Yanjie and Sui Lu's research emphasized the urgency of developing oil substitutes. At the same time, domestic scholars have also explored the current situation of energy utilization in China, the development trend of new energy, and the important role of new energy in environmental protection and economic sustainability.

Foreign research, on the other hand, covers strategic research and market impact on oil substitutes on a global scale. Corvinus F.'s research proposes strategic recommendations for the Malaysian energy market, emphasizing the importance of energy diversification. Joshi CP and Nookaraju A's research highlights the potential of bioenergy as a green alternative. The study by Balisteri E J et al. explored the impact of oil substitutes from the perspective of the global energy market. The research by Evanson R and Timmins C emphasizes the importance of oil substitutes in the Asian energy market. Lin B et al.'s research focuses on the development of energy efficiency and clean energy, and proposes the case of Brazil as a reference.

In summary, these studies provide us with important clues and theoretical support for a deeper understanding of the current development status of new energy and petroleum substitutes. They provide useful insights for the adjustment of China's energy policies and the development of future new energy industries, while also providing reference and inspiration for global sustainable energy development.

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