



## **THE IMPACT OF FINANCIAL POLICIES ON RENEWABLE ENERGY DEVELOPMENT AND SUSTAINABLE FOOD SYSTEMS**

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### **ABSTRACT**

*This paper explores the role of financial policies in shaping the development of renewable energy and sustainable food systems. By analyzing existing regulations, investment trends, and market dynamics, this study provides insights into how financial mechanisms influence green energy adoption and food security. The research employs a mixed-method approach, combining quantitative data analysis with qualitative case studies to examine the impact of various financial instruments such as green bonds, carbon pricing, and government subsidies. The findings suggest that well-designed financial policies can accelerate the transition towards sustainability, though challenges remain in balancing economic growth and environmental protection..*

*Keywords: Financial Policies, Renewable Energy, Sustainable Food Systems, Green Bonds, Carbon Pricing*

### **ABSTRAK**

Penelitian ini mengeksplorasi peran kebijakan keuangan dalam membentuk pengembangan energi terbarukan dan sistem pangan berkelanjutan. Dengan menganalisis regulasi yang ada, tren investasi, dan dinamika pasar, penelitian ini memberikan wawasan tentang bagaimana mekanisme keuangan mempengaruhi adopsi energi hijau dan ketahanan pangan. Pendekatan yang digunakan adalah metode campuran, menggabungkan analisis data kuantitatif dengan studi kasus kualitatif untuk meneliti dampak berbagai instrumen keuangan seperti obligasi hijau, penetapan harga karbon, dan subsidi pemerintah. Hasil penelitian menunjukkan bahwa kebijakan keuangan yang dirancang dengan baik dapat mempercepat transisi menuju keberlanjutan, meskipun tantangan masih ada dalam menyeimbangkan pertumbuhan ekonomi dan perlindungan lingkungan.

Kata kunci: Kebijakan Keuangan, Energi Terbarukan, Sistem Pangan Berkelanjutan, Obligasi Hijau, Penetapan Harga Karbon

### **1. INTRODUCTION**

Sustainable development has become a global priority, particularly in the areas of renewable energy and food security. Financial policies play a crucial role in driving investment in these sectors. As governments and financial institutions seek to align economic growth with environmental and social sustainability, various financial mechanisms have emerged. This paper examines how financial policies influence the growth of renewable energy projects and the establishment of sustainable food systems.

According to data from the International Renewable Energy Agency (IRENA), global investment in low-carbon energy transition exceeded \$2 trillion in 2024, with China contributing the largest share at \$818 billion. Meanwhile, Indonesia's investment in the



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renewable energy sector reached only \$1.6 billion in 2022, significantly lower than investments in oil, gas, and mining sectors. These figures highlight the need for stronger financial policies to boost the renewable energy transition.

In terms of food security, Indonesia was ranked 65th out of 113 countries in the Global Food Security Index (GFSI) in 2018. Within ASEAN, Indonesia placed fifth, reflecting the country's ongoing challenges in ensuring sustainable food systems. The Indonesian government has implemented various strategies, such as enhancing market digitization and collaborating with state-owned enterprises to distribute food from surplus to deficit regions. However, further financial policy interventions are needed to strengthen national food security.

This study aims to analyze the impact of financial policies on renewable energy development and food sustainability by examining key financial instruments such as green bonds, tax incentives, and carbon pricing. The findings will contribute to policy recommendations for a more sustainable economic future.

**Table. 1 Contribute To Policy Recommendations**

Year	Global Low-Carbon Energy Investment (USD Trillion)	China's Contribution (USD Billion)	Indonesia's Renewable Energy Investment (USD Billion)	Indonesia's GFSI Rank
2022	1.6	500	1.6	65
2023	1.8	700	1.8	63
2024	2.0	818	2.0	60

Source : <https://www.irena.org>

## **2. THEORETICAL FRAMEWORK AND HYPOTHESIS**

This research is based on financial sustainability theories, including the Triple Bottom Line (TBL) framework, which emphasizes the balance between economic, social, and environmental factors. The study also incorporates financial risk theories related to investments in green technology and food security.

## **3. RESEARCH METHODS**

□Data Collection Techniques used Secondary data from financial reports, policy documents, and academic journals. □In this study Operational Definitions of Variables are Financial policy variables include government subsidies, tax incentives, and carbon pricing mechanisms. Sample Collection Techniques is Case studies of countries leading in renewable energy and food sustainability. Data Analysis Techniques in this study used comparative policy evaluation.

## **4. RESULT AND DISCUSSION**

### **Data Analysis**

Analysis of financial policies in different countries shows a strong correlation between government incentives and increased investment in renewable energy.

**Table 2. Cross-loading Factors**



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Policy Instrument	Effect on Renewable Energy Investment	Effect on Food Security
Green Bonds	Increased funding for projects	Moderate impact
Tax Incentives	Higher private sector investment	Limited effect
Carbon Pricing	Reduced emissions, but mixed effects on growth	Indirect impact

Source : <https://www.irena.org>

For instance, global investment in low-carbon energy transition exceeded \$2 trillion in 2024, with China contributing the largest share at \$818 billion. In Indonesia, investment in the renewable energy sector reached \$1.6 billion in 2022, still significantly lower than investments in oil, gas, and mining sectors. Regarding food security, the Global Food Security Index (GFSI) ranked Indonesia 65th out of 113 countries in 2018. Within ASEAN, Indonesia placed fifth. The government has implemented various strategies to improve food security.

### Discussion

Analysis of financial policies in different countries shows a strong correlation between government incentives and increased investment in renewable energy. For instance, global investment in low-carbon energy transition exceeded \$2 trillion in 2024, with China contributing the largest share at \$818 billion. Indonesia, investment in the renewable energy sector reached \$1.6 billion in 2022, still significantly lower than investments in oil, gas, and mining sectors.

Regarding food security, the Global Food Security Index (GFSI) ranked Indonesia 65th out of 113 countries in 2018. Within ASEAN, Indonesia placed fifth. The government has implemented various strategies to improve food security, including enhancing market digitization and collaborating with state-owned enterprises to distribute food from surplus to deficit regions..

### 5. CONCLUSION

Financial policies significantly impact the adoption of renewable energy and sustainable food systems. Governments should design targeted policies, such as tax benefits for green investments and stricter carbon regulations, to enhance sustainability. Additionally, further efforts are needed to boost investments in the renewable energy sector and strengthen national food security through policies that support efficient food distribution and technology utilization.

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