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Financing mechanisms for renewable energy projects: a systematic literature review

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Introduction :

In the face of the climate emergency and the need to reduce dependence on fossil fuels, renewable energies are emerging as an essential solution for ensuring a sustainable energy transition. However, technological advances aside, one of the major challenges facing renewable energy projects remains their financing. These projects, which are often capital-intensive at the outset, require appropriate, innovative and sometimes complex financial mechanisms, involving both the public and private sectors. Against this backdrop, this systematic literature review aims to explore in depth the various financing mechanisms mobilized to support the development of renewable energy projects worldwide. To ensure the scientific rigor of this analysis, the present study adopts a systematic approach, relying on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. Articles were collected from two scientific databases renowned for their quality and reliability: Scopus and Web of Science. The aim of this review is to highlight the dominant trends, emerging approaches and persistent gaps in renewable energy financing, in order to fuel academic reflection and guide decision-makers towards more effective financing strategies.

Results :

- An analysis of the selected articles has identified several financing mechanisms frequently mobilized for renewable energy projects, including green bonds, public-private partnerships (PPPs), public subsidies, tax incentives, specialized investment funds (climate funds, green funds, etc.) and blended finance mechanisms.
- Recent publications highlight a gradual shift away from predominantly public funding towards more market-oriented solutions, particularly with the rise of green bonds and ESG-oriented private funds.
- A number of studies point to conditions that are conducive to the effective mobilization of financing: good governance, a stable regulatory framework, a high ESG rating, or the presence of a moderate perceived risk.
- Despite these efforts, a number of obstacles remain, including a lack of bankable projects, weak private-sector involvement in certain contexts, and insufficient standardization in the assessment of environmental risks and impacts.

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Conclusion:

This systematic review shows that renewable energy financing mechanisms are varied, with a growing interest in market-based tools such as green bonds. However, their effectiveness is highly dependent on the institutional and economic context, underlining the importance of a favorable environment for sustainably mobilizing the capital needed for the energy transition.

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