


Chapter 12

The Impact of Green and Renewable Energy Policy on Climate Risk Management

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ABSTRACT

The issue of energy transition occupies a central place in contemporary debates on climate governance and sustainable development. Faced with the intensification of extreme climate events and the rise in greenhouse gas (GHG) emissions, green and renewable energy policies appear to be essential levers for reducing climate risks and ensuring the systemic resilience of modern societies. This paper analyzes in an integrated manner the impact of these policies on climate risk management, through a conceptual and theoretical approach based on the paradigms of sustainable development, energy transition, and polycentric climate governance. By mobilizing a multidisciplinary analytical framework, the study highlights the close relationship between the decarbonization of the energy system, economic diversification, and the reduction of environmental vulnerability.

1. INTRODUCTION

Climate change poses one of the most pressing threats to the ecological, economic, and social stability of the planet today. According to the sixth report of the Intergovernmental Panel on Climate Change (IPCC, 2023), the global average temperature

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has already increased by more than 1.1°C compared to the pre-industrial era, leading to an unprecedented intensification of extreme weather events. These changes are resulting in more frequent droughts, floods, heatwaves, and tropical storms, lastingly affecting ecosystems, agricultural systems, and human infrastructure (UNEP, 2023).

Faced with this situation, the international community has gradually recognized the need to transform energy models dominated by fossil fuels, the main cause of greenhouse gas (GHG) emissions. Public policies on green and renewable energy are therefore essential instruments for mitigating and adapting to climate change (IEA, 2022). They aim to promote clean technologies such as solar, wind, green hydrogen, biomass and geothermal energy, while reducing dependence on hydrocarbons and diversifying energy supply sources (REN21, 2024).

From this perspective, the energy transition is not limited to a technological shift; it represents a systemic transformation affecting the economic, social, and political spheres. According to Sovacool, Hook, Martiskainen, and Baker (2021), the “just transition” to a low-carbon economy requires a profound reconfiguration of institutional structures and governance mechanisms to ensure a fair distribution of the benefits and costs of this transition. This process is based on an integrated approach that combines sustainable development, technological innovation, and climate justice.

Green energy policies also contribute to proactive climate risk management by strengthening societies' resilience to environmental disruptions. Investment in renewable energy promotes the decentralization of energy networks, increasing their adaptive capacity in the event of natural disasters (World Bank, 2023). Furthermore, energy infrastructure based on local and renewable resources reduces economic vulnerability linked to the volatility of international fossil fuel markets (IEA, 2022).

Globally, initiatives such as the European Green Deal (European Union, 2019), the Saudi Green Initiative (2023), and the China-India Renewable Energy Master Plan (REN21, 2024) illustrate the growing importance of green energy policies in state strategic planning. These programs aim not only to reduce GHG emissions but also to strengthen energy security, promote innovation, and support the Sustainable Development Goals (United Nations, 2022).

However, despite significant progress, the effective implementation of these policies still faces several challenges: insufficient financing, persistent dependence on hydrocarbons, slow institutional reforms and unequal access to clean technologies (Meadowcroft, 2022). These obstacles compromise the ability of States to achieve their climate and energy objectives, and to ensure sustainable management of climate change risks.

Thus, the central question guiding this study is: to what extent do green and renewable energy policies influence climate risk management? To answer this question, it is essential to analyze the conceptual foundations of these policies, their

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