# Chapter 2
# The Importance of Green Finance on Climate Risk Management in the Case of Saudi Arabia

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## ABSTRACT

*This paper explores the role of green finance as a strategic lever for climate risk management in Saudi Arabia, a country undergoing a major economic transformation driven by Vision 2030. Despite its historical dependence on hydrocarbons, the Kingdom now aims to diversify its economy and strengthen its resilience to climate change. Through a review of current dynamics, this paper highlights the gradual development of a green financial ecosystem: green bond and green sukuk issuances, state initiatives such as the Saudi Green Initiative, and the rise of ESG investing. However, these dynamics remain hampered by major challenges: a lack of standardization of ESG criteria, the risk of greenwashing, weak local institutional capacities, and high upfront costs of sustainable projects. Despite these obstacles, green finance offers significant opportunities: attracting foreign capital, fostering the energy transition, developing new financial markets, and strengthening the management of climate-related physical and transition risks.*

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## 1. INTRODUCTION

Climate change is a major global challenge today, not only because of its environmental impacts melting ice, rising sea levels, and extreme weather events but also because of the risks it poses to economic systems, infrastructure, and financial stability (Guesmi et al., 2025; Madouri, 2025). In this context, the financial sector is increasingly emerging as a key player in mitigating greenhouse gas emissions and adapting to climate risks, through the financing of clean technologies, infrastructure resilience, physical risk management mechanisms, and transitions.

Among recent dynamics, the OECD and the GCF report that incentive regulatory frameworks including green taxonomy, climate reporting obligations, or standards for "green bonds" are spreading, but that current financing often remains insufficient to meet adaptation needs, particularly in regions subject to severe water constraints, extreme temperatures, or vulnerable ecosystems (Adeyemi et al., 2025; Al-Harbi, 2025; Madouri, 2025).

Saudi Arabia presents a profile distinguished by several characteristics related to climate, economy and national strategies (Bouzidi et al., 2024):

- Climate and physical risks: extreme heat, water stress, desertification, risks to agriculture, water resources, and biodiversity.
- Dependence on hydrocarbons: Oil and gas remain pillars of the national economy, both for government revenue, exports, and energy production. However, this dependence exposes the country to risks associated with the energy transition and global demand for cleaner energy.
- Vision 2030 and national strategies:
    - The commitment to achieve carbon neutrality by 2060 through the Circular Carbon Economy model.
    - The goal of reducing greenhouse gas emissions by 278 million tonnes per year by 2030 compared to the base year (2019).
    - The Saudi Green Initiative (SGI), launched in 2021, which combines several components: emission reduction, afforestation, land and marine protection (SGI, more than 77 initiatives for ~ $186 billion investment)
    - The Green Financing Framework, published by the Ministry of Finance in 2024 as part of the Financial Sector Development Program, aims to encourage public and private green investments and align financing with international standards such as the Green Bonds Principles.

These dynamics, however, leave several open questions regarding the real effectiveness of green finance as a lever for managing climate risks in Saudi Arabia. More specifically (Hussain et al., 2025):