Chapter 16
Challenges of Stranded Assets in the Fossil Fuel Sector Within Green Financing and Economy

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ABSTRACT

Stranded assets in the fossil fuel sector represent investments that lose value as economies transition towards sustainability, driven by climate change policies and green financing. This shift is intensified by global efforts like the Paris Agreement, which aims to limit global warming by reducing reliance on fossil fuels. Financial institutions face increasing risks as fossil fuel assets become less profitable due to carbon pricing, production restrictions, and subsidy reforms. Stranded assets raise concerns for financial stability, pushing investors and banks to adjust portfolios and lending practices to mitigate climate-related risks. The Task Force on Climate-related Financial Disclosures (TCFD) framework, faces criticism for insufficient data, complicating risk assessment for financial institutions. The chapter will explore the challenges posed by stranded assets within the context of green financing, examining regulatory responses and financial strategies.

INTRODUCTION TO STRANDED ASSETS

The transition to a global low-carbon economy involves rapid and profound structural changes that pose significant challenges for economic adaptation worldwide (Semieniuk G. C.-F., 2021). One major challenge is the swift phase-out of fossil-fuel production, which will require writing off substantial capital assets and reserves currently listed on the balance sheets of fossil energy companies. Despite over 100 studies examining the early retirement of fossil-fuel facilities under various scenarios (Fisch-Romito, 2021), there has been limited analysis linking this retirement to financial ownership. Consequently, stress

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tests of the financial system often start from hypothetical shocks to financial assets rather than addressing the real assets themselves (Battiston, 2017). This leaves a gap in understanding how financial ownership and exposure to loss are distributed.

Asset stranding occurs when the anticipated future profits from invested capital (the asset) diminish due to disruptive policy and/or technological changes (Van der Ploeg, 2020). This devaluation of fossil-fuel assets affects investor perceptions of enterprise value and market prices, including stock market indices where applicable. Such price corrections lead to wealth losses for the ultimate owners of these assets, and these losses can extend to other entities through interconnected financial networks (Caldecott, 2017).

Asset stranding becomes a societal concern when it disrupts financial markets, leading to adverse effects on pensions and government finances (Monasterolo, 2020). Although premature obsolescence of capital stock is a common feature in dynamic, capitalist economies, typically associated with the transition from old industries to new ones, the rapid pace of change needed to meet climate goals of 2°C or 1.5°C presents significant transition risks (Bolton, 2020). The rapid decline of fossil-fuel industries poses a unique risk compared to more gradual shifts observed in the past (Programme, 2020).

The global financial exposure to stranded oil and gas assets is traced from equity ownership perspectives. This involves assessing potential losses from extraction sites through corporate headquarters and their immediate shareholders—including banks and fund managers—to the ultimate owners, such as governments and individual shareholders, for oil and gas extraction companies worldwide. The findings indicate that the distribution of exposure to wealth losses is more geographically balanced than the distribution of oil and gas production assets might suggest. Thus, private investors in affluent countries hold a greater stake in continued fossil-fuel production and face a higher exposure to stranded assets than previously indicated by the literature (Semieniuk G. H., 2022).

This chapter offers a comprehensive examination of the financial hazards that a transition to a low-carbon economy presents to OECD financial institutions. However, it is crucial to recognise a few limitations. The analysis predominantly adopts a developed-country perspective, specifically that of OECD nations, to account for the fact that most available data originate from these regions. This focus inherently excludes the perspective of developing countries, where data scarcity remains a significant constraint, and financial institutions are less exposed to transition risks due to their lesser role in global climate finance. The chapter also focusses on the consequences of the Paris Agreement's non-binding nature for financial institutions, looking at possible effects on banks' balance sheets and their susceptibility to stranded assets. The sector-specific nuances of green finance and sustainable financial products are not addressed, nor is the potential impact of local practices or community requirements on climate finance at the micro level investigated. In contrast, the chapter's methodology is concerted on the highest-level financial consequences, with a particular emphasis on the potential impact on global financial systems that may result from the rapid transition to green policies, particularly in the Global North. The financial and transitional risks to the banking and financial sectors in developed economies

Figure 1. Ownership chain of stranded assets by OECD/non-OECD geography and major institutional categories (Semieniuk, 2022). are intentionally emphasised, while sociological considerations and the direct impact of climate change on societies are deliberately excluded by this narrow lens.