

# Chapter 13

## Technological Innovation and Financialization for the Environment: The Case of Pakistan

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### ABSTRACT

*This chapter examines the asymmetric link between technological innovation and financialization in Pakistan for the period 1980-2019. The non-linear autoregressive distributed lag (NARDL) model proposed by Shin et al. is applied to achieve the research objective. The numerical estimates based on annual data explain that an asymmetric relationship exists between financialization and environmental degradation and between technological innovations and environmental degradation in the long run. An increase in financialization and regression in technology stimulates environmental degradation while a decline in financialization and progress in technology improves environmental quality in Pakistan. Based on empirical evidence, the research emphasizes the suitable channelization of financial institutions towards environmentally friendly projects and formulation of those policies that encourage energy-efficient technologies.*

## INTRODUCTION

Environmental degradation and its threatening effect on natural world and human life has become a challenge for policymakers and researchers worldwide. Environmental changes and global warming occur due to burning of fossil fuels and deforestation. Governments are highly conscious to reduce the adverse effect of environmental pollution without compromising economic development. The solution of devastating effect of environmental pollution has even become more important for developing economies. Rapid expansion in energy demand and relax environmental regulations in these economies are deteriorating the already overwhelming situation of environmental pollution. Now, it has become a universal agenda to reduce the emissions of toxic pollutants in the environment. In this regard, sustainable development goal 13 and Paris agreement (2015) are important steps to reduce the emissions of greenhouse gases at global level.

To control environmental pollution, the major structural changes are required in production and consumption. There is more likely that nations have to sacrifice the upward trends in economic development to improve environmental quality. In this situation, a well-developed financial system is required that adjust lower growth rate and support industrial re-structuring. Financialization has appeared to be a major economic factor in the past few decades. However, in the present research, the impact of financialization on environmental degradation is discussed. Financialization can impact the environmental degradation through four different channels (Yuxiang and Chen, 2011).

1. *Capitalization Effect*: According to this, financialization can improve environmental quality if investment is made on environmentally friendly projects. However, the same effect can deteriorate environmental quality when funds are transferred on energy intensive projects (Kong, 2021).
2. *Technology Effect*: This effect has both favorable and harmful effects on environmental degradation: favorable because financialization encourage innovations to promote green technologies and harmful because new technologies can increase the demand for energy.
3. *Income Effect*: Financialization helps to increase the income of households that in turn is spent for the purchase of environmentally friendly products and as a consequence environmental quality may improve. However, income effect can also deteriorate environmental quality due the usage of energy consuming products.
4. *Regulation Effect*: Regulated banks granted more loans to invest in green technologies can help to improve environmental quality. Empirically, the role of financialization in environmental deterioration has been mostly discussed after the global financial crisis. It is indicated in literature that financialization has both positive and negative effect on environmental degradation (Shahbaz and Hoang, 2019; Amin *et al.*, 2020; Lahiani, 2020; Destek and Manga, 2021; Kong, 2021).

Now a days, technological progress is considered to be a prerequisite for improving environmental quality. Torras and Boyce (1998) stated that technological progress supported commercial activities that in turn reduce environmental degradation. The use of new innovative technology in energy sector can reduce environmental pollution by encouraging the consumption of renewable energy sources (Vukina *et al.*, 1999). However, developing countries have limited access to high-cost environmental technology due to fund constraint. As a consequence, developing economies are still dependent on production structure that is based on non-renewable energy sources. On contrary, developed economies are using environmentally friendly technologies in production processes because they can easily obtain necessary funds through

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