# Environmental Innovation and Sustainable Business Performance Among SMEs in Kyrgyzstan

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**Abstract**

Small and medium-sized enterprises (SMEs) account for the bulk of employment and value added in the transition economy, but their environmental footprint and opportunities for environmental innovation have not been explored outside the context of the OECD. This article develops a conceptual framework and proposes a research methodology for studying environmental innovations, including processes, products, and organizational aspects. Building on Porter's hypothesis, the firm's natural resource-based vision, and the literature on determinants of environmental innovation, the paper synthesizes existing theoretical and empirical research to produce a set of testable propositions that link the implementation of environmental innovation to the firm's financial and non-financial performance, driven by access to finance and innovation. regulatory pressure. The article examines these proposals in the institutional context of Kyrgyzstan, including the Green Economy Development Program (2019-2023) and donor-supported green finance tools. Instead of reporting the results of an initial survey, the paper suggests a differentiated cross-sectional design of the study, operates with appropriate constructs, and identifies an appropriate analytical strategy for future empirical testing. The discussion examines the obstacles that Kyrgyzstan expects from SMEs-limited capital, information gaps, and weak executive capabilities - and leads to the implications of the initial policy. This paper presents a context-sensitive conceptual model and a recurring methodological roadmap for future firm-level research on environmental innovation and SME performance in Central Asia.

**Keywords:** environmental innovations; SMEs; sustainable development; green economy; Kyrgyzstan; Central Asia; resource efficiency

## 1. Introduction

Small and medium-sized enterprises (SMEs) form the backbone of most transition economies, accounting for a significant portion of employment, gross domestic product, and entrepreneurial activity outside of mining and large-scale industry. In the Kyrgyz Republic, SMEs are widely recognized by national authorities and international financial institutions as a central part of economic diversification, but their environmental performance and ability to implement sustainable innovations receive relatively little systematic and rigorous attention in the academic literature. This gap is notable because the impacts of environmental pressures, including water stress, air pollution, energy density, and climate-related shocks, are increasingly recognized as structural challenges for the Kyrgyz economy (UNECE, 2024).

Over the past decade, the Kyrgyz Government and its international partners have implemented a number of policies and financing tools aimed at promoting environmentally sound practices at the firm level. The Green Economy Development Program of the Kyrgyz Republic for 2019-2023 identified seven priority sectors as targets for environmentally oriented investments, including green energy, green industry, and Waste management (Government of the Kyrgyz Republic, 2019). In parallel, the European Bank for Reconstruction and Development (EBRD) has funded several phases of the Kyrgyz Sustainable Energy Finance Facility (KyrSEFF), helping local banks to invest in credit lines in energy efficiency and resource efficiency, climate change resilience, and environmental pollution reduction (EBRD, 2025). These initiatives suggest that SME greening policies are gaining momentum; it is unclear whether environmental innovations will actually lead to better business performance for the firms that implement them.

The international literature on environmental innovation, often referred to as ECO-innovation, provides a rich but mostly Western European and East Asian evidence base on the determinants and consequences of green innovation at the firm level (Horbach, 2008; Horbach, Rammer, & Rennings, 2012). However, Central Asian SMEs operate in a special environment: smaller domestic markets, relatively undeveloped green finance ecosystems, and regulatory regimes are still being strengthened following the implementation of national green economy strategies. The relationships identified in OECD studies — for example, between technological ECO-innovations and cost savings, or between product ECO-innovations and market differentiation-retention in the context of SMEs in Kyrgyzstan- were an open empirical question, and the author's knowledge was regularly tested at the firm level.

This document does not provide new primary data; rather, it performs a narrower, but necessary, previous function. The aim of the paper is to develop a conceptual framework that links environmental innovation to sustainable business performance among Kyrgyz SMEs and to propose a reliable, reproducible research methodology that can test this framework as soon as primary data collection becomes possible. In particular, the article aims to: (1) synthesize theoretical foundations related to environmental innovation and efficiency relations; (2) review the determinants of environmental innovation and known productivity effects, focusing on evidence from SMEs; (3) positioning the base within the framework of Kyrgyzstan's green economy policy; and (4) launching structures and creating a future firm offer a sample, toolkit, and analytical strategy for the level survey.

The rest of the article is structured as follows. Section 2 reviews the theoretical and empirical literature on environmental innovation and sustainable functioning, focusing on the institutional conditions of SMEs in Kyrgyzstan. Section 3 suggests a research design that includes a sampling strategy, variable operationalization, and an analytical strategy. Section 4 discusses expected relationships based on the literature and examines their policy implications. Section 5: Conclusion.

## 2. Literature Review

### 2.1 Conceptualizing Environmental Innovations

Environmental innovation is usually described as the introduction of new or significantly improved products, processes, organizational practices, or marketing approaches that reduce environmental damage compared to appropriate alternatives (Renning, 2000). The OECD Oslo Guidelines place environmental innovation in a broader taxonomy of innovation in products, processes, organizations, and marketing, while emphasizing that the hallmark of environmental innovation is its environmental outcome, not technological innovation (OECD, 2005). Based on this taxonomy, the literature generally identifies three categories relevant to firm-level analysis: technological ECO-innovations (e.g., energy-efficient production technologies, waste reduction techniques), product ECO-innovations (e.g., environmentally friendly goods and services), and organizational ECO-innovations (e.g., environmental management systems, resource

efficiency (Horbach, 2008). This three-way distinction underlies the conceptual model proposed in section 3.

### 2.2 Theoretical basis: competitiveness compared to the price of conformity

Two competing theoretical perspectives define the expected relationship between environmental innovation and firm performance. The first is related to Porter and van der Linde (1995), who argue that well-designed environmental regulation and voluntary environmental innovation can drive efficiency gains, reduce resource losses, and open up new markets, thereby increasing rather than reducing competitiveness-a proposition commonly referred to as the Porter hypothesis. Second, based on the neoclassical costs of regulatory compliance, environmental investments divert capital and management attention away from core production activities, especially burdening small firms with limited Slack resources. An additional perspective, the firm's natural resources-based vision (Hart, 1995), suggests that opportunities built on pollution prevention, product management, and sustainable development can eventually become a source of competitive advantage, but the realization of this advantage depends on additional organizational capabilities. These three points of view are not mutually exclusive: further empirical work has shown that the impact of environmental innovation is heterogeneous by type of innovation, sector, and firm size - a model relevant to the SME-specific proposals developed below (see, for example, evidence for heterogeneous effects considered in the study of different shades of green ECO-innovation).

### 2.3 Determinants of environmental innovation in firms

Empirical studies of drivers of environmental innovation, most of which are based on data from innovation research in the German community, identify three broad clusters of determinants: regulatory push / pull factors (current and expected environmental regulation), technology push factors (R & D opportunities, previous innovation experience, knowledge capital), and market factors. engagement factors (consumer demand for eco-friendly products, cost savings due to resource efficiency) (Horbach, 2008; Horbach, Rammer, & Rennings, 2012). Regulatory pressures have been found to be particularly important for emissions-and hazardous substance-oriented innovations, while the motivations for market engagement and cost savings seem to be more obvious for resource efficiency and energy efficiency innovations (Horbach et al., 2012). It has been shown that perceptions of customer interests and regulatory threats together shape the likelihood that a firm will introduce environmentally friendly product innovations (Kammerer, 2009). Partnerships with suppliers, customers, or research institutes further increase the likelihood of environmental innovation, and firms with limited internal R & D, unique to SMEs, may rely disproportionately on external sources of knowledge (de Marchi, 2012).

### 2.4 Environmental innovation and firm performance: mixed evidence

The relationship between environmental innovation and reliable performance is not so positive in the empirical literature. Research conducted using panel data at the level of German firms shows that environmental innovation is associated with employment growth in some technology sectors, but not in others, and these productivity effects differ depending on the type of environmental innovation and the sector in which the firm operates (Horbach & Rennings, 2013). This heterogeneity warns against considering environmental innovations as a single undifferentiated construct when modeling their impact on productivity and supports processes, products, and organizational environmental innovations considered separately in the framework proposed in Section 3.

### 2.5 loophole in SME and eco-innovation resources

SMEs face structural disadvantages compared to large firms in implementing environmental innovations: limited internal R & D budgets, limited access to long-term financing, weak management

capabilities in environmental regulation, and weak bargaining power with suppliers and certification bodies. These constraints help to understand that blue environmental innovations often depend more heavily on external factors-supplier and customer relationships, industry associations, and, more importantly, specialized green financial institutions-than on large internal resource firms (de Marchi, 2012). This consideration applies directly to Kyrgyzstan, where donor-supported credit lines are clearly intended to fill the funding gap that restricts environmental investment at the KyrSEFF SME level.

### 2.6 Transition to a green economy in Kyrgyzstan

Over the past decade, Kyrgyzstan's policy of greening economic activity has made significant progress. The 2019-2023 Green Economy Development Program sets priorities in seven sectors, including green energy, green agriculture, green industry, low-carbon transport, sustainable tourism, waste management, and green cities (Government of the Kyrgyz Republic, 2019). Complementing this domestic policy architecture, the EBRD country strategy for the Kyrgyz Republic is to expand green finance programs for SMEs and households, manage climate risks, and support investment in resource savings (EBRD, 2024), while Kirseff's sequential steps aim to assist in financing through local banks. Resource efficiency and adaptation to climate risks (ETTB, 2025). In the United Nations Economic Commission for Europe, the third Review of Kyrgyzstan's Environmental Performance (2024) documents institutional progress — such as the introduction of automated air quality monitoring and the establishment of a climate finance center- and current structural challenges, including high energy density and dependence on imports. Energy mix (UNECE, 2024). Taken together, this institutional context shows that there are prerequisites for environmental innovation at the SME level in Kyrgyzstan-policy signaling and special financing-but firms remain open to whether these enabling conditions translate into accepted innovation and whether adoption is associated with increased productivity. An empirical question that motivates the proposed research project is given below.

### 2.7 Economic profile of SMEs: scope, structure, and limitations of financing

Official statistics on the economic weight of SMEs in Kyrgyzstan vary significantly depending on the definition and reflect a methodological point relevant to the current framework. Using a narrow definition restricted to officially registered small and medium-sized enterprises, the World Bank's independent assessment group reports that such firms accounted for only 4% of employment and 12-13% of GDP between 2013 and 2021.less than 800. National medium-sized enterprises-just 0.1% of registered enterprises-represent a net "missing middle" in the distribution of enterprise size (IEG World Bank, 2023). Using a broader definition that includes individual entrepreneurs and peasant farms, the National Statistical Committee of Kyrgyzstan reports that a significant contribution was made: small and medium-sized enterprises gross value added amounted to 664.6 billion kg in 2024, equivalent to 43.6% of GDP, and the sector's share in official relations increased even more, to 51%, in early 2026 (Akchabar, 2025; Kabar, 2026). As of 2024, the National Statistics Committee registered 18,139 small businesses paying taxes, employing about 585,000 people across the country, while private entrepreneurs accounted for about 65 percent of agricultural output and 26 percent of industrial output, and small and medium-sized businesses accounted for about 80 percent. Chui region (Central Asian period, 2024). This urban concentration is directly related to the regional stratification proposed for the sample range in Section 3.2, as this means that a proportional regional sample may underestimate the activities of SMEs in Osh and Southern oblasts compared to their significance for development.

The financing conditions facing SMEs in Kyrgyzstan represent another structural feature related to the field of environmental innovation. The ratio of domestic private credit to GDP rose from about 16 percent in 2013 to 28 percent in 2020-a marked improvement, but still below the 43 percent average seen in middle-income countries-while informal economic activity exceeds 30 percent of GDP (World Bank). IEG, 2023).

The relatively shallow formal credit market, partly combined with a large informal sector operating outside of business registers and tax-related statistics, has two effects on the current framework: first, it reinforces the theoretical expectation that external, dedicated (section 2.5) green finance tools such as Kirseff plays a big role in internal profitability or traditional loan capital well-banking Second, it is the restriction on public recognition in Section 3.6, implying that a case-based structure built solely on official business records (Section 3.2) excludes businesses that regularly operate informally.

Table 1 summarizes these economic indicators along with the baseline and annual ones, clearly showing differences between the economic weight of a narrow (officially registered) and broad (including individual entrepreneurs and peasant farms) SME sector.

***Table 1.*** *Selected economic indicators-SME sector in Kyrgyzstan*

| Indicator | Indicator value / | Period source |
|---|---|---|
| share of officially registered SME GDP (narrow definition) | 12-13% (Aug 2013-2021) | World Bank IEG (2023) |
| share of SMEs in official employment registration | ~4% (avg. 2013-2021) | World Bank IEG (2023) |
| medium-sized enterprises (number/share of all enterprises) | <800 firms; 0.1% (2013-2021) | World Bank IEG (2023) |
| SMEs Gross value added, broad definition (GDP % ) | 43.6% (2024); 51% (early 2026) | Akchabar (2025); Kabar ( |
| 2026), registered 18,139 (2024) Small enterprises-taxpayers in Central Asia (number) | 18,139 (2024) | Central Asian Time (2024), |
| employment in Central Asian SMEs based on NSC, broad definition | ~585,000 people (2024) times (2024), | Central Asian SMEs: Geographical concentration |
| (Bishkek + Chui) | ~ | 80% of all SME periods in Central Asia (2024), |
| domestic private GDP credit | 16% (2013) → 28% (2020) | World Bank IEG (2023) |
| Informal sector, share of GDP | > 30% (2015 estimate) | Izvorski et al. (2020), to the World Bank IEG (2023) |

*Note: the "narrow" figures apply only to officially registered small and medium-sized enterprises; The "broad" figures include, among other things, individual entrepreneurs and peasant (farm) farms, which significantly increase the contribution of small business activity to GDP. Two sets of numbers are not directly comparable and should not be combined without matching definitions in subsequent empirical work.*

## 2.8 Energy structure and ambient pressure indicators

Since the ECO-innovation process in the proposed framework (Section 3.3) focuses heavily on energy efficiency and resource efficiency, the structural features of the Kyrgyz energy system are directly relevant to the context. Fossil fuels accounted for 72% of Kyrgyzstan's total energy supply in 76-2022, while oil and coal together accounted for more than 65% of the energy mix, although hydropower provided most - about 85-86% - of electricity generation (UNECE, 2024). Seasonal fluctuations in river flow lead to a compensatory increase in coal-fired generation, which has reached approximately 13 percent of electricity, especially during the winter months (UNECE, 2024). Kyrgyzstan also remains highly dependent on liquid fuel imports: more than 90 percent of petroleum products and natural gas consumed domestically are imported mainly from the Russian Federation and Kazakhstan (IEA, 2022). According to the national development strategy 2018-2040 (UNECE, 2040), the goal is to increase the use of renewable energy sources to 10% of the total energy supply by 2024. These structural features — the lack of electricity use, the impact of imports, and the dependence on fossil fuels for seasonal supply fluctuations-make the process of environmental innovations related to energy consumption (for example, insulation modernization, efficient boilers and engines, and renewable generation) particularly significant for Kyrgyzstanis. Estimated cost-effectiveness of environmental innovations in section 4.1 for SMEs compared to firms operating in countries with cheaper or more sustainable energy supply.

*Table 2. Energy and environmental context indicators-Kyrgyzstan*

| Indicator | Indicator value / | Period source |
|---|---|---|
| fossil fuels, share of total energy supply | 72-76% (2022) | UNECE (2024) |
| hydropower, share of electricity production | 85-86% (2022) | UNECE (2024) |
| coal, share of electricity production | ~13% (2022, Winter peak) | UES (2024) |
| dependence on petroleum and natural gas imports | >90% of domestic consumption | IEA (2022) |
| non-renewable energy target | 10% of the total energy supply | National Development Strategy for 2040 2018-2040, in UES (2024) |

The figures reflect the latest year (mainly 2022) for which cross-validated data is available, which is being compared at the time of writing, and should be updated to match the main national statistics before applying for logging.

## 3. Proposed Data and Research Methodology

This section outlines a research project designed to launch the conceptual framework developed in Section 2 and test it empirically in subsequent studies. Primary data has not yet been collected; the design is presented here to create a transparent and repeatable stylistic roadmap.

### 3.1 Research Approach

Following a deductive approach, in which suggestions derived from the literature on environmental innovation (section 2) act as testable hypotheses, a quantitative, cross-sectional study design is proposed. Given the lack of available firm-level panel data on environmental innovation for SMEs in Kyrgyzstan, a cross-sectional design is appropriate as the first step of the study; panel expansion is defined in section 5 as a pathway for future research.

### 3.2 Population and recommended sampling strategy

The target population includes registered SMEs in Kyrgyzstan, differentiated by two parameters: sector (manufacturing and agro-processing; trade and services; Construction) and region (Bishkek City, Osh City, and Osh Oblast, with the remaining provinces grouped as "other regions"), reflecting the concentration of registered SME activity in two major urban centers. A differentiated random sampling approach is proposed based on the national register of small and medium-sized businesses, which is supported as a sampling structure by lists of members of the state Tax Service and/or the Chamber of Commerce. We propose a target sample of approximately 350-400 firms that support multivariate regression or partial structural Least Squares equation modeling (PLS-SEM) with the number of implicit constructs specified in Section 3.3, while allowing for the expected survey. 30 to 40 percent of failures are typical for SME research in the region.

### 3.3 Operation of structures

Table 3 summarizes the proposed structures, their dimensions, and the basis for their measurement, adapted to the indicators of environmental innovation and firm performance set out in the literature, discussed in section 2.

***Table 3.*** *Construct Operationalization*

| Construction of production | Measurements/indicators | Fundamentals of measurement/indicators |
|---|---|---|
| Process | Introduction of environmentally innovative energy-saving technologies; emission reduction practices; | water and material efficiency adapted from Horbach (2008) and horbach, Rammer, and Rennings (2012), environmentally innovative |
| Product type classification | Introduction of environmentally friendly products/ | Kammerer (2009) product ECO-innovation measures |
| Adapted from organizational eco-innovation environmental management systems, reforming to reduce environmental impact; | Personnel environmental education; supplier environmental screening | adapted from Horbach (2008), organizational innovation measure |
| Sustainable job performance | Financial: revenue growth, profitability; non-financial: up to SMEs with eco-innovations, moderation efficiency research | Multi-element scale of self-message processing- |
| Moderation | of access variables to green finance variables, moderation of variables (for example, use of the KyrSEFF credit line), regulatory perception pressure, and firm size | and firm characteristics in the sector and financing source of objects specific to the institutional context of Kyrgyzstan |

*Source: Horbach (2008), compiled by the author on the basis of Horbach, Rammer, and Rennings (2012) and Kammerer (2009).*

### 3.4 Recommended Data Collection Tool

Five-point Likert scales offer a structured survey containing closed-loop elements measured for attitude constructs and practice acceptance, supplemented by categorical and constant elements for firm characteristics (sector, size, age, location, ownership structure) and for the self. Financial indicators are reported. The tool is translated into Kyrgyz and Russian, translated back for consistency, and tested with a small convenience sample consisting of 15-20 SME managers to assess accuracy, response load, and face validity before full deployment.

### 3.5 Recommended Analytical Strategy

The proposed analytical strategy for the next empirical stage includes: (i) descriptive statistics and reliability assessment for multi-element scales (Cronbach's Alpha, composite reliability); (ii) correlation analysis between environmental innovation measurements and performance indicators; (iii) the measurable nature of multiple regression or implicit and multiple structures, partly due to the fact that that most of them are small-square structural equation modeling (PLS-sem), which is well suited to the relatively modest sample sizes typical of SME research; and (iv) the general method is misdiagnosis, based on data reported by one respondent. Sector and region are introduced as control variables, and the moderation analysis checks whether introducing green finance strengthens the relationship between environmental innovation and productivity, which is consistent with the resource gap argument developed in section 2.5.

### 3.6 Limitations of the proposed design

The proposed design is subject to constraints that must be recognized in advance. Self-assessment data cannot establish a causal relationship between the implementation and effectiveness of eco-innovations; an inverse causal relationship (well-functioning firms that are able to invest in eco-innovations) cannot be excluded without panel data or instrumental variable approaches. Using the register of enterprises as a sampling structure may underestimate informally operating micro and small enterprises, which make up a significant part of the private sector in Kyrgyzstan. These constraints drive the agenda for future research outlined in Section 5.

## 4. Discussion: Expected Relationships and Policy Implications

### 4.1 Expected relationship between types of environmental innovation and productivity

Based on the evidence for the heterogeneous effect discussed in Section 2.4, the framework does not predict a single positive relationship between environmental innovation and productivity. The process of environmental innovation (energy efficiency and resource efficiency) is expected to be most closely linked to financial performance through cost savings, which is consistent with the efficiency-oriented logic of Porter's hypothesis. Differences in environmental product innovation are expected to be more strongly related to non-financial, market-oriented performance indicators (perceptions of competitiveness, customer retention), reflecting mechanisms for shrinking the economy instead. Organizational environmental innovation is expected to function as a prerequisite favorable to the other two dimensions, rather than as an independent driver of productivity, which is partially consistent with the emphasis on additional opportunities based on natural resources (Hart, 1995). Table 4 summarizes these theoretically derived, yet untested proposals; the hypotheses that the indicated areas need to be validated or supported by empirical work proposed in section 3 are the results that have not been reported.

***Table 4.*** *Hypothetical Eco-innovation-productivity relationships (theoretical, untested)*

| **Type of Eco-innovation** | **Primary mechanism** | **Expected productivity channel** | **Support the theory process** |
|---|---|---|---|
| ECO-innovation costs | and resource efficiency | financial indicators (cost reduction, margin improvement) | *Porter and van der Linde (1995)* |
| market differentiation of eco-product innovation | ; without customer benefit | -financial performance (market share, customer retention) | *Kammerer (2009)* |
| Building organizational ECO-innovation | capacity; | indirect coordination / Hart impact of product processes and channels | *(1995)* |

*Note: Directions and channels are theoretical suggestions from the literature discussed in section 2; they are not statistical assumptions and must be tested against the primary data before they can be considered as results.*

### 4.2 The moderator's role in access to green finance

Given the resource constraints typically documented for small and medium-sized enterprises (section 2.5), access to specialized green financial instruments, such as KyrSEFF, is expected to soften attitudes towards environmental innovation and productivity: firms that can use preferential or guaranteed green credit lines should better adapt to the introduction of capital-intensive technological innovations (such as green loans). as energy) - efficient equipment) No penalty for execution related to the interest in unique domestic capital. This proposal, if supported by future data, will provide an evidence base for continuing or expanding the direction of green financial facilities in Kyrgyzstan to SMEs.

### 4.3 Obstacles for SMEs in Kyrgyzstan

Based on the institutional review of Section 2.6, several obstacles are expected to limit the adoption of eco-innovation among independent Kyrgyz SMEs ready for the corporate level: limited awareness of existing green finance tools outside of large urban centers; weak regulatory capacity to regulate the environment, which reduces the regulatory push incentives highlighted in the decision. (Horbach, 2008); and its continued reliance on renewable energy sources based on fossil fuels, which limits the feasibility of certain technological environmental innovations at the firm level (UNECE, 2024). These expected obstacles should be tested directly as part of a future research tool, and not as intended.

### 4.4 Preliminary Policy Results

Expected empirical confirmation, the framework offers several tentative, conditional policy directions. First, raising awareness of existing green financial facilities may be a prerequisite, especially outside of Bishkek and Osh, rather than the wider adoption of environmental innovations by SMEs. Second, given the expected complementarity between organizational and other forms of environmental innovation, technical assistance programs that create basic environmental management capabilities (for example, simplified templates for environmental management systems for SMEs) can have a multiplicative effect on the return to the next process and product innovation. Third, strengthening the monitoring and enforcement capabilities identified as a national priority (UNECE, 2024) may be necessary to activate a regulatory channel that has proven effective in other contexts (Horbach, Rammer and Rennings, 2012). These areas should be considered as hypotheses for policy development, awaiting confirmation by the empirical studies proposed in Section 3.

## 5. Conclusion

This paper developed a conceptual framework linking environmental innovation, divided into processes, products, and organizational metrics, to sustainable business performance among SMEs in Kyrgyzstan, and proposed a research methodology that can test this structure empirically. Three contributions will be made. First, the document mainly synthesizes the OECD literature on environmental innovation and precisely adapts to the institutional conditions of the Central Asian transition economy, including the Green Economy Development Program (2019-2023) and donor-supported green finance facilities. Second, it classifies environmental innovations by type, rather than as a single design, according to the evidence that environmental innovations are heterogeneous by type (Horbach & Rennings, 2013). Third, it becomes a concrete, reproducible research plan that includes a sampling strategy, scale construction, and an analytical strategy designed to guide the next empirical phase of this research program.

The main limitation of this paper by design is the lack of primary empirical results: the proposals put forward in section 4 are based on theory and evidence gathered in other institutional settings, and require direct testing using data from SMEs in Kyrgyzstan. Treat them as fixed outputs. The next logical step is to complete the proposed query and then test the hypothesis using the analytical strategy presented in Section 3.5. Future studies that expand this agenda may also consider collecting panel data to address causal problems and the quality of small and medium-sized enterprises using green finance tools to shed light on the potential impact of green finance on the future. Mechanisms by which environmental innovations do not or do not lead to increased productivity.

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