# RESEARCH ON ENVIRONMENTAL PROTECTION LAWS AND POLICIES FOR SUSTAINABLE GREEN DEVELOPMENT

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## ABSTRACT

**Objective:** Sustainable development in the modern day must inevitably include green development as it provides the best means of addressing the dual issues of protecting the environment and boosting the economy. This article aims to introduce the episodes of green finance to discuss the role of the green economy in attaining sustainable development objectives and address particular problems of sustainable finance and environmental, social, and governance concerns of green financing. A significant challenge is evaluating the success of the 2030 Agenda and the role played by public policy. Several projects have arisen to link budgetary expenditures and Sustainable Development Goal (SDG) performance at all levels since it is widely understood that budgets are one of the most effective weapons available to administrations to drive forward this contribution. Governments have lately implemented new policies relating to GE to optimize its effect.

**Method:** Thus, this paper suggests an *Environmental Regulations-based Sustainable Green Development (ER-SGD)* strategy for protecting the environment and boosting the economy.

**Result:** This essay uses environmental regulation as a moderator to experimentally explore the influence strategy of political competitions on the efficacy of green development from several viewpoints.

**Conclusion:** This article covers bolstering performance evaluation, optimizing energy savings and lowering emissions, and promoting business technology R&D.

**Keywords:** sustainable development, environmental law, green economy, rules and regulations.

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# PESQUISA SOBRE LEIS E POLÍTICAS DE PROTEÇÃO AMBIENTAL PARA O DESENVOLVIMENTO VERDE SUSTENTÁVEL

## RESUMO

**Objetivo:** O desenvolvimento sustentável nos dias de hoje deve incluir inevitavelmente o desenvolvimento verde, uma vez que proporciona a melhor forma de abordar as questões duais da proteção do ambiente e do reforço da economia. Este artigo tem como objetivo introduzir os episódios de financiamento verde para discutir o papel da economia verde na realização dos objetivos de desenvolvimento sustentável e abordar problemas específicos de financiamento sustentável e preocupações ambientais, sociais e de governação do financiamento verde. Um desafio significativo é avaliar o sucesso da Agenda 2030 e o papel desempenhado pelas políticas públicas. Diversos projetos surgiram para estabelecer uma ligação entre as despesas orçamentais e o desempenho dos Objetivos de Desenvolvimento Sustentável (ODS) a todos os níveis, uma vez que é amplamente reconhecido que os orçamentos são uma das armas mais eficazes de que dispõem as administrações para impulsionar esta contribuição. Os governos implementaram recentemente novas políticas relacionadas com a GE para otimizar o seu efeito.

**Método:** Assim, este documento sugere uma estratégia de Desenvolvimento Verde Sustentável (ER-SGD) baseada em Regulamentos Ambientais para proteger o meio ambiente e impulsionar a economia.

**Resultado:** Este ensaio usa a regulação ambiental como moderadora para explorar experimentalmente a estratégia de influência das competições políticas na eficácia do desenvolvimento verde a partir de vários pontos de vista.

**Conclusão:** Este artigo aborda o reforço da avaliação do desempenho, a otimização da economia de energia e a redução de emissões, e a promoção da pesquisa e desenvolvimento de tecnologia empresarial.

**Palavras-chave:** desenvolvimento sustentável, legislação ambiental, economia verde, regras e regulamentos.

## 1 INTRODUCTION

In 1972, environmental protection and enforcing environmental laws and regulations were high on the international agenda. One of the most significant issues, worldwide but particularly in developing nations, is implementing and enforcing environmental legislation[1-2]. Possible causes include insufficient competent law enforcement personnel, insufficient relevant data, and institutional ability to execute and administer environmental laws[3]. There has been a movement worldwide toward focusing on new international legislation on environmental challenges, even though several environmental accords have been established over decades[4-5]. These global regulations aim to address pollution, depletion of natural resources, and other environmental concerns. A new area of law concerning the environment and humanity has emerged: international law against the backdrop of sustainable development[6]. However, even with better environmental legislation, the ecosystem may not have been

protected long-term. Instead, most of this environmental legislation focused on controlling the spread of illness[7-8].

Despite the proliferation of plans, policies, and laws within the country's environmental regulatory structure, the country has been determined by "weak law enforcement," which refers to the lackluster outcomes of environmental law regulations and "difficult regulations enforcement[9-10]." They correspond to centralized barriers that prevent law enforcement agencies from effectively monitoring and managing the environment. An inefficient environmental management system, a root source of contamination and environmental damage, has prevented the government's efforts to safeguard the environment[11-12]. The authorities formed by the state to safeguard the environment at all levels, together with the authorities' respective tasks and control, constitute the environmental management system in this context[13]. The environmental management system is the foundation for protecting the environment in modern society and is the foundation and fundamental substance of environmental regulation[14-15]. Rule and management technology aims to guarantee that public policy is adhered to by imposing restrictions on economic operations[16]. These tools are designed to ensure an adequate level of environmental quality by regulating the emission of pollutants, allocating resources for sustainable usage, and labeling items according to their environmental effect. In the event of rule-breaking, they implement a system of checks and balances and financial and legal consequences[17-18].

The main contribution of the paper is:

1)    This article examines green growth's worldwide performance on environmental security and analyzes the factors of natural resource protection that are pertinent to green development.

2)    The benchmarking of environmental protection against the SDGs makes an indicator unique as a marker of environmentally conscious achievements.

3)    By developing the ER-SGD model, this paper investigates the influence of adaptable environmental laws on innovative technology on sustainable development shift given rigid enforcement of environmental regulations.

The rest of the paper is organized as Section 2 with the previous works on the research field, Section 3 with the proposed ER-SGD's explanation and its implementation, Section 4 with its results and discussions, and Section 5 with the article's conclusion.

## 2 THEORETICAL FRAMEWORK

The research in [19] begins by calculating each sector's green total factor productivity (GTFP) using a Slack-based Measure Data Envelopment Analysis (SBM-DEA) model and the Luenberger index. The impact on technological progress depends on whether the increased expense of complying with environmental regulations exerts sufficient pressure on businesses to innovate. In contrast, the long-term effects of technical advancement are positively offsetting.

To get reliable findings for a subset of OECD nations, the authors of [20] applied Cutting-Edge Panel Data Estimation (CEPDE) strategies that address problems of heterogeneity, variability, sequential correlation, and dependence across sections. The research empirically explores the relationship between environmental legislation and green growth using patents. The empirical results support the double divided (DD) hypothesis, which states that environmental restrictions are helpful since they push for eco-innovations and pull for green growth.

In [21], to learn more about the possible geographic effects of ER and GIE, a Spatial Econometric Model (SEM) is built. The direct effect test supports the 'U' shaped relationship between ER and GIE. Indirect impacts show that ER hinders GIE by inhibiting FDI flows both ways but helps by encouraging structural improvements in the industrial sector.

In [22], a Super-Slack-based Measurement Model (SSMM) was utilized to assess national economic sustainable development. Further realistic estimation methodologies included normal board, panel limits, and geographical panelist systems. According to the data, the environmental legislative factor is key to development.

In [23], a focused Structural Equation Model (SEM) was constructed for the elements affecting the industrial sector's green transformation in response to environmental legislation. To achieve economic green growth, the research recommended that policymakers consider these influencing elements' benefits and craft suitable environmental regulatory laws to encourage green transformation in the manufacturing sector.

According to [24] scientific-theoretical methods to comprehending environmental civilization, lawful society, and environmental legal customs, as well as present laws and assets committed to diagnosing the efficiency of national environmental policies, environmental and cultural law is a complicated fundamental group that comprises an

intricate of interdependent intellectual, significance, and exertion sections. Integrative study methods provide the backbone of it, along with more traditional scientific practices.

## 3 METHODOLOGY

An emerging paradigm has emerged around the need to achieve sustainable development objectives to mitigate environmental degradation, increase economic growth, and benefit future generations. Incorporating resource use and environmental degradation costs into the growth accounting system is necessary for sustainable industrial development. The sustainable development approach may significantly reduce ecological harm and environmental disaster while improving social well-being. It is a paradigm for sustainable growth that minimizes pollution and benefits society. Companies are incentivized to constantly increase the production and exploitation of environmental public goods since environmental degradation costs are not absorbed into their financial accounting. It causes industrial growth to strain the environment and its resources. To internalize environmental adverse externalities, government entities, adopting traditional economic principles, should charge emitters fees for the number of pollutants expelled. The marginal individual costs minus the marginal society cost would be covered.

Consequently, adaptable environmental policy is a realistic approach to solving environmental issues. Standard environmental laws are shown to have a considerable "cost effect" and "energy rebound effect" in the comparative analysis of environmental policy. Hazardous emission costs, carbon dealings, and environmental supports are adaptable policies for the environment that are demonstrably less expensive than conventional environmental policies like command and control regulation. Because of the savings it provides, a flexible environmental strategy is crucial to achieving energy efficiency and reduced emissions in manufacturing. There are two ways in which adaptable environmental policy influences industrial sustainable development. Polluting businesses, for example, will see an increase in operating costs due to government-imposed pollution discharge taxes. To save costs, businesses will find ways to minimize wastewater and gas production and $CO_2$ and particulate matter emissions 2.5 (PM2.5).

Figure.1 Environmental protection on green technology
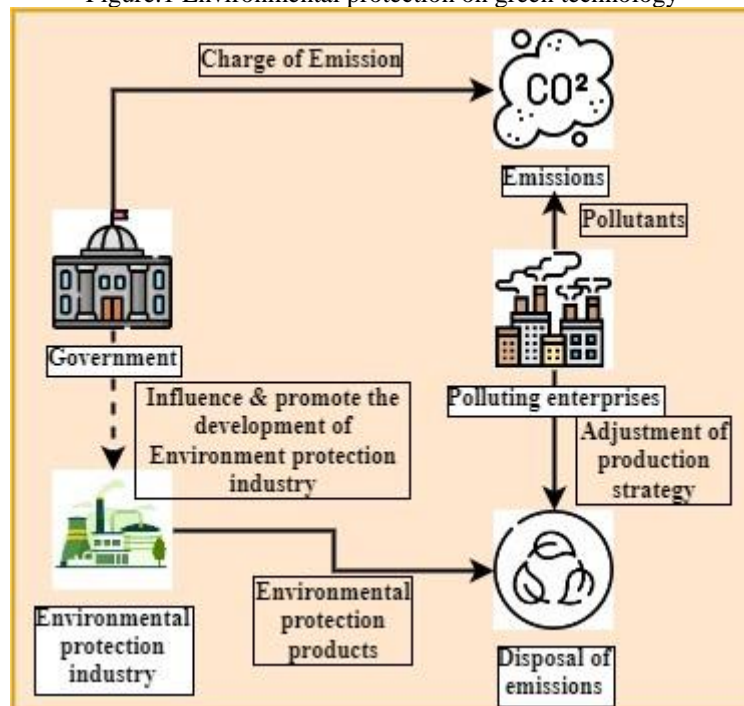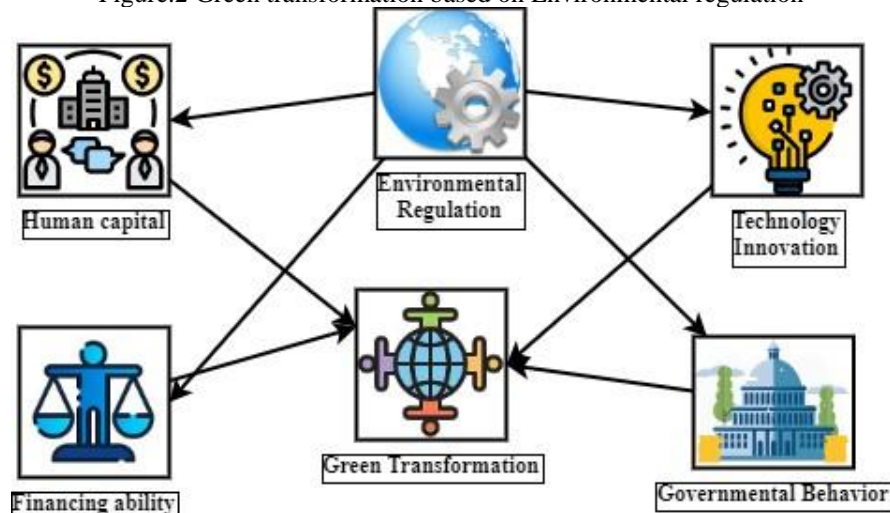


Source: Prepared by Authors (2023)

Polluting the environment and drawing attention to our limited natural resources have unintended consequences. Thus, governments should formulate suitable environmental policies that consider social welfare and continually aim to enhance environmental quality. Everyone's well-being is at stake; thus, polluting businesses, the environmental protection sector, and the general public must all be considered. The government's ultimate objective is the enhancement of social welfare since it represents the public interest. Profits from polluting businesses and the environmental protection sector, consumer overabundance, environmental harm, and sewage fees contribute to society's well-being. Companies that contribute to pollution and those that work to mitigate it each have unique business strategies that affect how much money they bring in. If profits are high, then social welfare may also be high. Pollutants released by polluting businesses are the primary source of environmental harm. The quantity of output is correlated with the amount of pollution released. Therefore, polluting firms' production and pollution management strategy ultimately determines the extent of environmental harm. Damage to the environment has unintended consequences that harm society as a whole. Pollutant discharge fees are a kind of social assistance that the government should collect to reduce pollution.

The money collected from sewage fees will go toward projects that improve the environment. In the game model, polluting businesses try to maximize their interests by implementing a production plan and an emission disposal strategy that maximizes profit while complying with environmental rules. The primary elements determining the profit of polluting businesses are the price and cost of its own goods, pollution treatment plan, price of environmental protection industry's product, and governmental effluent taxes. Directly marketed to customers, this product has a demand curve that reduces manufacturing volume as prices fall. If the technical breakthrough is delayed, the manufacturing unit cost will unlikely decrease. In addition, how they deal with their emissions significantly impacts polluting businesses' bottom lines. Figure 1 depicts the method through which government environmental regulations impact polluting businesses and environment protection businesses. The polluting business and environmental protection sectors are essential links in the economic chain. The polluting business sector purchases goods and services from the environmental protection sector. As a result, the production strategy of polluting businesses significantly impacts the interests of the environmental protection sector. The environmental protection sector is similarly motivated by maximizing profits. Because protecting the environment has beneficial knock-on consequences, environmental policies are necessary to help the environmental protection sector achieve its goals. Market demand potential, government sewage levies, and polluting businesses' production practices are the main variables impacting the revenues of environmental protection businesses. Companies that pollute and those who work to safeguard the environment attempt to maximize their personal gains. In most cases, a company's cost to implement measures to reduce pollution grows as more pollutants are released into the environment.

When the cost of pollution control provided by environmental protection agencies is more than the cost of sewage disposal, polluting businesses will choose the former. Thus, the government may maximize social welfare by establishing and enforcing fines for the release of pollutants. Sewage fees impact polluting businesses' output and pollution response strategies in a roundabout way. The environmental protection sector will optimize its manufacturing approach following the pollution treatment plan for polluting businesses.

Figure.2 Green transformation based on Environmental regulation
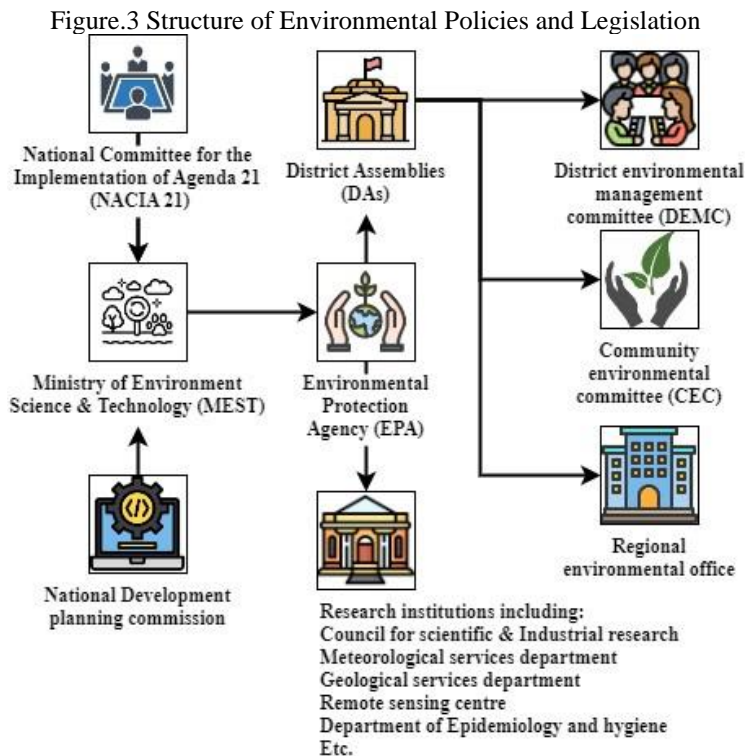


Source: Prepared by Authors (2023)

Figure 2 explains that social regulation includes environmental control, and sustainability and economic development are being examined by numerous scholars. Most of these analyses focused on the effect of environmental regulations on economic growth using a single or all-encompassing index. There has been no correlation between the results so far. There are three points of view: First, Businesses could not remain competitive due to the high costs associated with complying with environmental regulations. Second, if environmental regulations are carefully crafted, they may help businesses better use their resources, leading to more innovation and, ultimately, a more dynamic economy. It was determined that, driven by markets, environmental regulation had a major part in the behavioral shift necessary for green development, and governmental environmental regulation greatly influenced technical innovation. Third, no evidence enforcing environmental standards harms economic growth. What role environmental regulation has in attenuating the correlation between these parameters and green transformation needs to be determined. For this reason, the research employs an ER-SGD analysis to examine their effects on the green transition.

Green transformation requires improving the green economy and ecosystem together. Governments must develop transition plans, including enabling factors like ecological inventiveness, greener information, and capital investments. Internal factors like research and development spending, technological innovation, talent reserves, financing capacity, and external factors like the transition environment, government policies, and the economic climate all play a role in a successful green transformation. Human resources, financial resources, technological innovation, government policy, and

environmental regulations are the five groups into which this research divided the elements affecting the transition to a greener economy. Human capital emphasizes a country's citizens' collective intelligence, experience, creativity, and resourcefulness to accomplish a goal. The human capital mix is a key component in determining economic growth. Human capital has been employed as a GDP expansion model variable, with many researchers emphasizing the importance of this factor in boosting GDP and overall economic growth. Access to capital is critical to economic growth and its long-term sustainability. Factors that play a role include company size, competitiveness inside aggregation straight, managerial ability, bank stability, customer loyalty, and investment assurance valuation. Scholars are now more interested in studying the connection between finance capability and business transformation than the previously studied association between financing capability and a greener industrial sector. According to these academics, a company's access to capital favors its capacity to undergo a transition.

As a result of technological advancements, the value of manufactured goods can be raised, the transition from time-consuming to technology-intensive production can be facilitated, and the investigation and development of low-carbon and energy-saving technologies can be directed. An essential driver of the green transition in manufacturing is the actions of governments. It does this through strengthening market monitoring, constructing a platform for providing services related to industrial transformation, and establishing a favorable setting for green transformation and growth. Government social regulation, including environmental control, is essential. It's a big deal for the cause of green manufacturing and protecting the environment. Environmental regulations may indirectly affect the green transformation of manufacturing by encouraging clean industries to replace pollution-intensive industries progressively. Therefore, environmental regulation moderates the transformation and upgrading of the industrial sector by influencing human capital, financial capacity, technical innovation, and governmental conduct. Environmental regulatory enforcement may also guide industrial company funding, support research into reducing emissions and low-carbon innovations, and boost human capital's understanding of environmental damage and greener transformations.

Figure.3 Structure of Environmental Policies and Legislation



Source: Prepared by Authors (2023)

Additional support for this curriculum comes from national environmental legislation, policy implementation codes, and environmental literature. These rules and legislation will ensure that the nation's natural and artificial resources are used efficiently without depleting the environment. It is the responsibility of the Ministry of Environment, Science, and Technology (MEST), the Environment Protection Agency (EPA), and other integration and inside companies at all levels (from the national to the local) to implement the various environmental Acts (See Figure 3).

As part of its imperial responsibilities, the United States government determines institutional strategies for defining and enacting systems, legislation, guidelines, monitoring, and requirements for enhancing the safety and value of physical assets. The country's decentralization policy, coordination of sectoral interests, and absorption of environment administration align with the goals outlined in the country's 1992 constitution. To prevent the incompatibility of national environmental policies and laws in the area, the structured system, like other sectorial methods, gives duties to different entities for ecologically diverse financing and board activities. However, the EPA is the go-to agency for environmental protection, guidelines, and monitoring.

There is also a legal framework that encourages participation from all people in managing the country's natural resources. It ensures all aspects of the legal framework

align with the nation's top legislation and the most popular political, social, and financial plans while also conforming to realistic development requirements. The framework should provide circumstances for developing, monitoring and updating sectoral rules for all national assets' reclamation, protection, administration, and sustainable use. To guarantee that national environmental policy and legislation are responsibly transformed into attainable action, the Environmental Protection Agency (EPA) has developed a new National Environmental Action Plan (NEAP) in collaboration with the Ministry of Environment, Science and Technology (MEST), the National Development Planning Commission (NDPC), and other major organizations. The NEAP lays out the structures and action plans, as well as the goals and timeline for achieving those goals.

However, the necessity to discover effects that cannot be categorized as direct is raised because the nation's budget alignment to SDGs restricts its scope to the policy's direct effects on SDGs. Several other nations have also exploited this distinction in their alignment process. However, depending on subjective and quantitative or terminological evidence, direct and indirect influence definitions differ from one approach to the next. However, alignment with a specific SDG does not always suggest that the policy's corresponding budgetary allocations affect that SDG in any way, shape, or form. By applying the methodology to the country's 2021 Budgetary Policies as a case study, this paper hopes to lay the groundwork for designing a tool that identifies the consequences of the government's expenditure corresponding to SDGs, using analytical data to exclude unreliable and descriptive variability.

Figure.4 Framework of ER-SGD
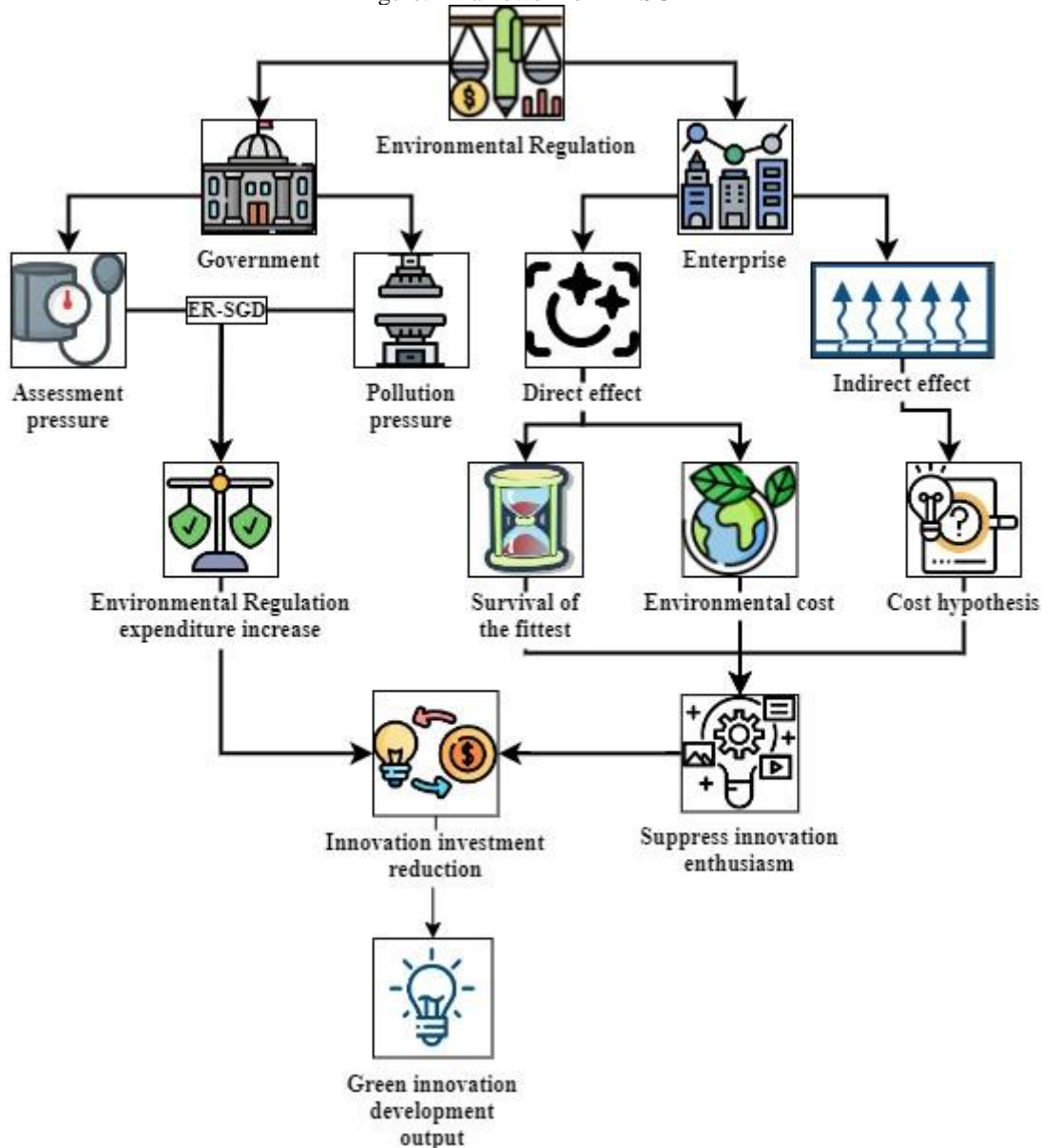


Source: Prepared by Authors (2023)

Two factors, the environmental cost effect and the survival of the fittest, account for the direct influence of environmental legislation on regional innovation output. When the regional environmental regulatory policy is established, and each economic unit maintains its current output level, environmental costs, including pollution control and rent-seeking, will rise, causing a decrease in R&D spending. Second, prospective entrants also consider environmental risk and cost expenditures when calculating the cost of entry, dampening established businesses' innovative zeal. Thirdly, when businesses incur higher environmental costs, they prioritize increasing production volume or output above pursuing economic compensation via innovation. Small private businesses are less able

to thrive when the expense of complying with environmental regulations grows, which is consistent with the survival of the fittest hypothesis. There is also a decline in regional innovation output due to a deteriorating property rights system. The "pursuing cost assumption" suggests that environmental laws would raise the cost of doing business and reduce investment in R&D, hence stifling corporate innovation in the area. It demonstrates that businesses have maximized their earnings and that increasing environmental regulatory intensity in their areas would cut into those profits and their ability to innovate. This is especially true for less-capitalized startups and SMBs. The effects are magnified in a nation where the private sector has developed extensively, and state ownership plays a relatively minor role. Whether or not environmental issues, such as PM2.5 pollution, can be resolved is now factored into local officials' performance reviews and opportunities for advancement in a country, thanks to the country's central government's focus on sustainable development as part of the country's overall development strategy. Particularly in recent years, the attention of municipal politicians has shifted to concerns concerning the environment and the reduction of poverty. Environmental governance consumes a growing share of government spending as national environmental standards rise, leaving less money for research and development and reducing the rate at which regions may innovate. According to the fundamental rule of geography, everything is connected to everything else, yet nearby objects have stronger ties to one another than those farther away. Environmental regulations also take into account their physical location. Therefore, this research takes a geographical approach to analyzing how strict environmental regulations affect the amount of innovation produced in different areas. In Figure 4, one sees the procedure for environmental control. Therefore, regulating the environment, a transmissible element of regional government competitors currently impacts the efficiency of green development. Therefore, this article employs the following model to examine how the level of rivalry between local governments affects the efficacy of green development.

- Step 1: A foundational regression analysis will be developed by analyzing the relationship between local authority competitions and the efficacy of green development. If the proportion of governmental cooperation is large, it may be possible to proceed to Step 2. It would indicate that local government rivalry may affect the effectiveness of green development.

$$fd_{jl} = \rho_0 + \rho_1 fg_{jl} + \rho_h K_{jl} + \sigma_j + c_l + \omega_{jl} \qquad (1)$$

$j$ stands for the section element in Equation (1), whereas $l$ stands for the time element. Competing development strategies at the local level ($fdfg$), Budgetary Rivalry ($fdcre$), and Financial rivalry $fd_{jl}$, is the critical determinant of this article, and $fd$ is the efficacy of eco-friendly construction locally. In addition to local government rivalry, other factors that may impact green development's efficacy $K$ include the following: the regional effect ($\sigma_j$), the temporal effect ($c_l$), and the random disturbance term ($\omega_{jl}$). The research highlights the effect of competitiveness between municipal governments on the efficiency of sustainable growth $\rho$, denoted by the $\rho_1$ coefficient.

- Step 2: It is possible to evaluate if local government competition affects mediating factors by including mediating variables ($BT_{jl}$) into the regression model (Equation (2)):

$$BT_{jl} = \beta_0 + \beta_1 fg_{jl} + \beta_h K_{jl} + \sigma_j + c_l + \omega_{jl} \qquad (2)$$

When,

examining $\beta_1$ the relationship between local government competition and environmental regulation, we use the following Equation: where $BT$ is the determining factor, i.e., ecological law ($erl$), and $\beta$ is the regression coefficient.

- Step 3: Reduced green development efficiency and decreased local government competitiveness once mediating variables are added, then the model in Equation (3) is:

$$fd_{jl} = \rho_0 + \rho_1 fg_{jl} + \rho_2 BT_{jl} + \rho_h K_{jl} + \sigma_j + c_l + \omega_{jl} \qquad (3)$$

Let's assume the mediation variable has a statistically important coefficient of dependence ($\rho_2$). The effect of regional administration competitive advantages on sustainability effectiveness is entirely due to intermediary variables if the correlated coefficient ($\rho_1$) with local legislation collaboration grows insignificant, while the converse is true if the regression coefficient ($\rho_1$) of local legislative rivalries is smaller but still substantial.

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## 4 RESULTS AND DISCUSSION

Sustainable environmental administration requires the strict application of environmental laws and regulations. There is a lot of inconsistency in the available information, making environmental concerns challenging to address despite their importance to any country's conversation. Changing perspectives on how to handle environmental issues on a worldwide scale are having an increasing impact on the debate over implementing environmental laws and regulations.

Dataset Description: Indicators of importance were taken from the World Development Indicators and rearranged to correspond with the SDGs from which the data were taken [19]. While these indicators might be useful, they aren't necessarily the official ones for keeping tabs on SDG progress.

## 4.1 CONFORMITY TO REGULATIONS AND GREEN DEVELOPMENT

Figure.5 Countries



a Conformity on growth. b Sustainability development
Source: Prepared by Authors (2023)
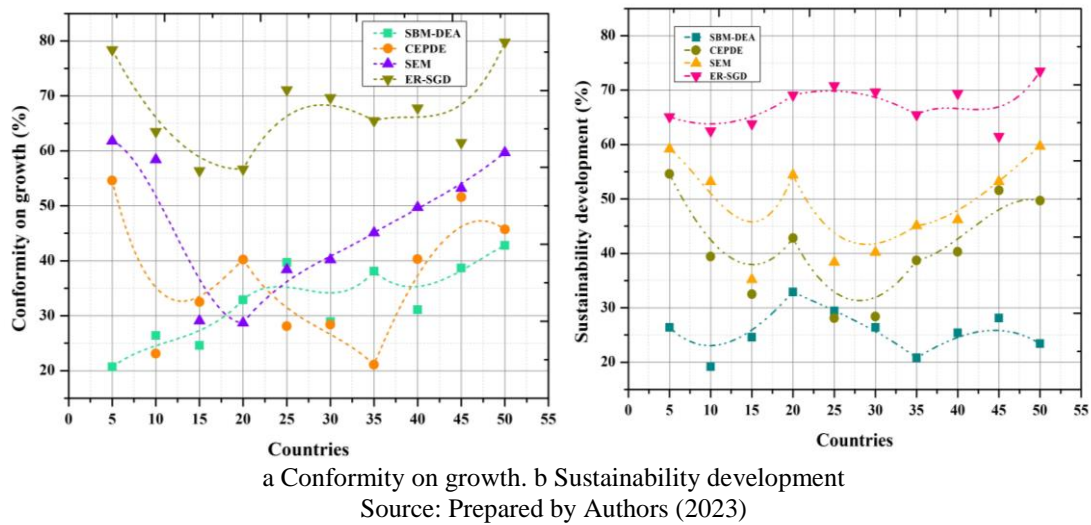
Indicators like those shown in Figure 5a cannot be aggregated because they employ various units of measurement. Standardization provides a technique to translate them into the same team to facilitate evaluation among the specific variables, years, and countries. Rescaling, commonly referred to as a min-max conversion, was chosen to standardize the Sustainable Development Index's components because (i) it serves as the clearest and most frequently used approach, (ii) it may incorporate upper and lower limits, and (iii) it permits the implementation of environmental objectives. To account for the

lower limit $a$ and higher bound $s$, a more comprehensive mathematical formula of the modifying explore is shown in Equation (4).

$$N_x^{norm} = s + \left(\frac{i_x - N_{min}}{N_{max} - N_{min}}\right)(a - s) \qquad (4)$$

Where,

s=lowerbound, a=upperbound.

As mentioned, standardized indicators with values between 1 and 100 were obtained using the algorithm. Since a score of zero may be misunderstood as a sign of a country's inability to execute, a lower limit was required. It meant that we couldn't go any lower than 1. Each indicator's sustainability goals were integrated using the upper limit (Figure 5b). For each criterion, success in meeting the sustainability goal was indicated by a score of 100. Indicators or benchmarks may be used to directly calculate the distance to sustainability objectives after they are included in the rescaling technique.

### 4.2 IMPACT OF ENVIRONMENTAL LAWS ON SDGS

Table.1 Impact of laws

| STATES | SBM-DEA | CEPDE | SEM | ER-SGD |
|--------|---------|-------|------|--------|
| 2 | 18.2 | 29.4 | 51.3 | 62.1 |
| 4 | 20.5 | 24.6 | 39.1 | 63.2 |
| 6 | 26.4 | 34.6 | 29.1 | 56.4 |
| 8 | 31.8 | 40.2 | 23.6 | 59.7 |
| 10 | 23.6 | 36.1 | 34.6 | 61.1 |
| 12 | 28.9 | 29.7 | 41.8 | 63.2 |
| 14 | 18.6 | 21.1 | 46.1 | 65.5 |
| 16 | 21.8 | 40.3 | 42.5 | 67.8 |
| 18 | 29.4 | 50.8 | 53.2 | 70.1 |
| 20 | 26.1 | 41.3 | 57.1 | 72.4 |

Source: Prepared by Authors (2023)

Table 1 shows that various organizations have passed environmental legislation and set ecological norms to preserve the natural world. Protecting the environment is fundamental to a country's well-being, as the EPA states. To rephrase, the EPA must ensure appropriate regulation of environmental laws and regulations within a comprehensive sustainable development strategy. However, environmental regulations are seldom effective just because they exist. Therefore, ensuring that standards are

implemented, and the environment is protected requires strict inspection and enforcement of environmental laws and regulations.

## 4.3 ENVIRONMENTAL PROTECTION BASED ON ER-SGD

Table.2 Protection level

| COUNTRIES | SBM-DEA | CEPDE | SEM | ER-SGD |
|---|---|---|---|---|
| 2 | 19.5 | 26.4 | 59.7 | 44.7 |
| 4 | 26.4 | 23.1 | 36.4 | 51.6 |
| 6 | 23.1 | 31.6 | 29.1 | 42.1 |
| 8 | 16.4 | 40.2 | 23.6 | 56.1 |
| 10 | 26.4 | 19.6 | 34.6 | 61.5 |
| 12 | 21.3 | 29.7 | 40.2 | 62.7 |
| 14 | 26.4 | 21.1 | 46.1 | 64.5 |
| 16 | 21.7 | 40.3 | 42.5 | 56.4 |
| 18 | 19.4 | 52.7 | 53.2 | 48.7 |
| 20 | 23.1 | 41.3 | 51.9 | 51.6 |

Source: Prepared by Authors (2023)

According to Table 2, Article 53 of the Environmental Protection Law, Citizens, legal people, and other organizations should be incentivized by the appropriate government agencies, higher levels, and oversight institutions to report instances of polluting the environment or harm to the environment inflicted by any firm or individual. Yet, a collaborative employed procedure could be developed among the autonomous ecological protection organization and the county and town governments to enforce environmental laws for sustainable green development efficiently. The local environmental protection committees are a potential venue for such collaboration. The country's green growth has always been partly motivated by the principle of sustainable development. The ER-SGD approach is crucial in ensuring the safety of a country's ecosystems. Therefore, it's essential to maintain harmony between the environment and the economy by adhering to the principle of sustainable development.

## 5 CONCLUSION

Continuously revenue generation, social change, and preservation of the environment should underpin governmental environmental regulations and programs, according to the Environmental Protection Agency (EPA), the nation's primary environmental agency, which has broadened its priorities and work priorities. Environmental groups like the EPA are doing their part to ensure a sustainable environment by enforcing policies and laws. Still, the current development pattern is

hugely taxing on the planet's natural resources. However, these issues continue to redraw the nation's environmental sustainability perspective in the wrong direction, pointing out how crucial it is to access up-to-date, effective environmental laws and rules. The suggested ER-SGD method's findings, which indicated a similar association between environmental regulations and the accomplishment of SDGs, were consistent with those of the previous study. Businesses that enforce strict environmental laws must establish policies promoting sustainable materials, renewable energy sources, and other eco-friendly methods. Environmental groups look out for things like clean air and water, the safety of wildlife, and the integrity of any materials uncovered in the wild. By ensuring a stable climate, an abundance of natural assets, and skilled employees, environmental regulation helps achieve the SDGs. The suggested ER-SGD was consistent with the study's findings because it centered on the idea that businesses can contribute to the nation's sustainability by enforcing their environmental laws or by adhering to regulations set forth and enforced by an external regulatory authority. Therefore, corporate environmental standards guarantee the SDGs' achievement.

# REFERENCES

1.      Cao, Y., Liu, J., Yu, Y., & Wei, G. (2020). Impact of environmental regulation on green growth in China's manufacturing industry–based on the Malmquist-Luenberger index and the system GMM model. *Environmental Science and Pollution Research*, *27*, 41928-41945.

2.      Wu, H., Hao, Y., & Ren, S. (2020). How do environmental regulation and environmental decentralization affect green total factor energy efficiency: Evidence from China. *Energy Economics*, *91*, 104880.

3.      Falcone, P. M. (2020). Environmental regulation and green investments: The role of green finance. *International Journal of Green Economics*, *14*(2), 159-173.

4.      Usman A, Che-Ahmad A, Abdulmalik SO. The Role of Internal Auditors Characteristics in Cybersecurity Risk Assessment in Financial-Based Business Organisations: A Conceptual Review. International Journal of Professional Business Review. 2023 Aug 7;8(8):e02922-.

5.      Peng, X. (2020). Strategic interaction of environmental regulation and green productivity growth in China: green innovation or pollution refuge?. *Science of the total environment*, *732*, 139200.

6.      Shanshan Z, Ahmad A, Heng X. Analysis of Management Strategies for Urban Hotels in China Under the Sustainable Development Goals of Low-Carbon Tourism. International Journal of Professional Business Review. 2023 Aug 7;8(8):e02995-.

7.      Zhao, X., Tao, W., Ma, X., Wang, C., & Mentel, G. (2023). Exploring the role of environmental regulation on energy security: Contextual findings for sustainable development in Chinese provinces. *Gondwana Research*, *116*, 113-124.

8.      Zhou, A., & Li, J. (2021). Impact of anti-corruption and environmental regulation on the green development of China's manufacturing industry. *Sustainable Production and Consumption*, *27*, 1944-1960.

9.      Liao, Z., Weng, C., & Shen, C. (2020). Can public surveillance promote corporate environmental innovation? The mediating role of environmental law enforcement. *Sustainable Development*, *28*(6), 1519-1527.

10.     Martinez Hernandez, J. J., Sánchez-Medina, P. S., & Díaz-Pichardo, R. (2021). Business-oriented environmental regulation: Measurement and implications for environmental policy and business strategy from a sustainable development perspective. *Business Strategy and the Environment*, *30*(1), 507-521.

11.     Hsu, C. C., Quang-Thanh, N., Chien, F., Li, L., & Mohsin, M. (2021). Evaluating green innovation and performance of financial development: mediating concerns of environmental regulation. *Environmental Science and Pollution Research*, *28*(40), 57386-57397.

12. Sun, J., Zhai, N., Miao, J., Mu, H., & Li, W. (2023). How do heterogeneous environmental regulations affect the sustainable development of marine green economy? Empirical evidence from China's coastal areas. *Ocean & Coastal Management*, *232*, 106448.

13. Ouyang, X., Li, Q., & Du, K. (2020). How does environmental regulation promote technological innovations in the industrial sector? Evidence from Chinese provincial panel data. *Energy Policy*, *139*, 111310.

14. Wu, H., Li, Y., Hao, Y., Ren, S., & Zhang, P. (2020). Environmental decentralization, local government competition, and regional green development: Evidence from China. *Science of the total environment*, *708*, 135085.

15. Martinez Hernandez, J. J., Sánchez-Medina, P. S., & Díaz-Pichardo, R. (2021). Business-oriented environmental regulation: Measurement and implications for environmental policy and business strategy from a sustainable development perspective. *Business Strategy and the Environment*, *30*(1), 507-521.

16. Ahmed, Z., Ahmad, M., Rjoub, H., Kalugina, O. A., & Hussain, N. (2022). Economic growth, renewable energy consumption, and ecological footprint: Exploring the role of environmental regulations and democracy in sustainable development. *Sustainable Development*, *30*(4), 595-605.

17. Cuiyun, C., & Chazhong, G. (2020). Green development assessment for countries along the belt and road. *Journal of environmental management*, *263*, 110344

18. Mukhlynina, M., & Vedysheva, N. (2020). Legal aspect of the implementation of the UN sustainable development goals in the field of environmental management in Russia. In *E3S Web of Conferences* (Vol. 169, p. 05006). EDP Sciences.

19. Li, H., He, F., & Deng, G. (2020). How does environmental regulation promote technological innovation and green development? New evidence from China. *Polish Journal of Environmental Studies*, *29*(1), 689.

20. Mahmood, N., Zhao, Y., Lou, Q., & Geng, J. (2022). Role of environmental regulations and eco-innovation in energy structure transition for green growth: Evidence from OECD. *Technological Forecasting and Social Change*, *183*, 121890.

21. Lyu, Y., Zhang, J., Wang, L., Yang, F., & Hao, Y. (2022). Towards a win-win situation for innovation and sustainable development: The role of environmental regulation. *Sustainable Development*, *30*(6), 1703-1717.

22. Chen, H., Yang, Y., Yang, M., & Huang, H. (2022). The impact of environmental regulation on China's industrial green development and its heterogeneity. *Frontiers in Ecology and Evolution*, *10*, 967550.

23. Zhai, X., & An, Y. (2020). Analyzing influencing factors of green transformation in China's manufacturing industry under environmental regulation: A structural equation model. *Journal of Cleaner Production*, *251*, 119760.

24. Kurylo, L., Kurylo, I., Shulga, I., & Horodetska, I. (2020). Environmental legal culture as a factor in ensuring sustainable development of society. *European Journal of Sustainable Development*, *9*(1), 220-220.

25. https://www.kaggle.com/datasets/theworldbank/sustainable-development-goals