

The Role of Environmental Litigations in Reducing GHG Emissions

Enric Cervera¹, Inmaculada Martínez-Zarzoso^{1,2}

¹ University Jaume I, ² University of Goettingen

Abstract

This brief explores the impact of environmental litigations on greenhouse gas (GHG) emissions, highlighting their potential as complementary tools for addressing global warming. Using panel data analysis and the stochastic IPAT model, the research indicates that climate-related litigations significantly reduce emissions, particularly in high-income countries. These results emphasize the role of judicial interventions in fostering climate action, providing insights for policymakers and stakeholders.

Global warming, driven by the accumulation of GHG emissions, poses existential threats to societies worldwide, exacerbating extreme weather events and economic vulnerabilities. These include rising sea levels, more frequent and intense droughts, and threats to food and water security. While international agreements like the Paris Agreement that entered into force in 2016

aim to mitigate these challenges, progress remains insufficient to limit warming to 1.5°C. In this context, environmental litigations have emerged as a critical mechanism for helping to enforce climate accountability and bridging legislative gaps (Setzer and Vanhala, 2019).

Litigation often arises when governments or corporations fail to meet established

environmental regulations or commitments. These legal actions can compel actors to address their shortcomings, leading to direct or indirect reductions in GHG emissions. This research uses the stochastic IPAT model (Grunewald and Martínez-Zarzoso, 2016), extended to incorporate litigation variables, to analyze trends in GHG emissions. The model assesses how population, affluence, technology, and legal interventions influence environmental impacts. By employing a panel dataset covering 32 countries from 1996 to 2018, the analysis provides robust insights into the role of judicial systems in addressing climate change.

The study employs a fixed-effects panel regression model to isolate the impact of resolved litigations on GHG emissions. The stochastic IPAT framework is extended to include a litigation dummy variable, which turns active in the year a case is resolved. Key variables include GDP per capita, population size, and the rule of law index, alongside the litigation indicator. Robustness checks, including instrumental variable approaches, validate the findings by accounting for potential endogeneity between litigation and emissions using as an instrument the date of the judicial claims.

A key methodological contribution is the differentiation between high-income and middle-income countries in the analysis. The results indicate that high-income countries experience a greater reduction in emissions post-litigation due to stronger governance and enforcement mechanisms. Conversely, the impact in middle-income countries is less

robust, reflecting differing levels of institutional capacity and environmental accountability (Eskander et al., 2021).

There are a number of ways to leverage the full potential of environmental litigations:

- 1. Strengthen the Capacity of Judicial Systems:** Ensure that courts have adequate resources and expertise to address climate-related cases effectively. Specialized environmental courts or judicial training programs could enhance the capacity to handle complex climate litigation.
- 2. Integrate Litigations with Policy Frameworks:** Align litigation outcomes with broader legislative and policy goals to maximize their impact. For instance, governments could incorporate judicial decisions into national climate strategies or update regulations based on litigation outcomes.
- 3. Increase the Promotion of International Cooperation:** Facilitate cross-border legal frameworks to address transnational environmental challenges. This is particularly relevant for issues such as cross-border pollution and shared ecosystems.
- 4. Enhance Transparency and Public Participation:** Access to litigation data and outcomes can empower individuals and the civil society to hold governments and corporations accountable, fostering a culture of environmental responsibility.

Policy Implications

By integrating judicial and legislative efforts, governments and stakeholders can drive meaningful progress toward achieving net-zero emissions and safeguarding future generations. However, litigation alone cannot replace proactive policies and international collaboration. It should be viewed as a complementary tool to strengthen climate governance.

References

- Cervera, E. and Martínez-Zarzoso, I. (2024). The Impact of Environmental Litigations on Emissions, INFER WP Series no. 16.
- Eskander, S., Fankhauser, S., & Setzer, J. (2021). Global lessons from climate change legislation and litigation. *Environmental and Energy Policy and the Economy*, 2 (1), 44-82.
- Grunewald, N. and Martínez-Zarzoso, I. (2016). Did the Kyoto Protocol fail?: An evaluation of the effect of the Kyoto Protocol on CO₂ emissions, *Environment and Development Economics*, 21 (1), 1–22.
- Setzer, J. and Vanhala, L. C. (2019). Climate change litigation: A review of research on courts and litigants in climate governance, *WIREs Climate Change*, 10 (3), 359.



Website:

<https://infer-research.eu/>



Contact:

publications@infer.info