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## The impact of COP29 on climate change policy and the development of the green finance market in Azerbaijan

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**Abstract:** This paper investigates the impact of COP29, hosted in Baku in 2024, on Azerbaijan's climate diplomacy and the development of green finance instruments. Employing Ordinary Least Squares (OLS) and Autoregressive Distributed Lag (ARDL) models on a simulated dataset (2010–2030), we find that while the event of COP29 itself had statistically insignificant short-term effects, long-term green investments significantly reduce greenhouse gas emissions ( $\beta = 1.034$ ,  $p < 0.001$ ). COP29 catalyzed reforms in ESG regulation, market infrastructure, and international visibility. We propose policy measures including legal harmonization with EU CSRD, a dedicated Green Bond Law, and the creation of a sovereign green taxonomy.

**Keywords:** COP29, climate finance, ESG, green bonds, emission reduction, Azerbaijan, ARDL, institutional reform

### Introduction

In 2024, Azerbaijan became the first hydrocarbon-exporting nation to host a UN Climate Change Conference of the Parties (COP29). This provided a unique platform for Azerbaijan to assert leadership in climate governance while aligning national strategies with global standards. Unlike prior COPs, COP29 centered discussions on bridging the Global North–South divide, advancing Loss and Damage funding mechanisms, and ESG harmonization. These outcomes are particularly relevant to Azerbaijan as it transitions from a fossil fuel–based economy to a diversified green economy.

The academic literature on climate finance and international climate negotiations provides an important foundation for analysing the potential impact of COP29 on Azerbaijan. Early contributions such as the Stern Review emphasised that timely climate action is economically less costly than inaction, highlighting the need for large-scale investment flows to low-carbon technologies and adaptation measures (Stern, 2006). Building on this insight, subsequent studies have focused on the design of climate finance architectures, including the Green Climate Fund, the Loss and Damage Fund, and blended-finance mechanisms for emerging markets (World Bank, 2023; OECD, 2022).

A second strand of the literature examines green bonds and sustainable finance instruments. Empirical work shows that labelled green bonds can reduce the cost of capital for issuers with credible ESG practices, although “greenium” effects are heterogeneous across markets (OECD, 2022). Research on developing countries suggests that domestic institutional quality – especially disclosure rules, investor protection and regulatory clarity – is a key determinant of whether green bond markets can scale beyond a small niche (TCFD, 2021). These findings are directly relevant for Azerbaijan, where financial markets are still relatively shallow and dominated by bank intermediation.

A third body of work focuses on the role of international climate summits, particularly the UNFCCC Conference of the Parties (COP) meetings, in reshaping national policies. Normative

institutionalist perspectives argue that international conferences generate “norm diffusion” through soft law commitments, peer review, and reputational dynamics (March & Olsen, 1989). From this perspective, hosting a COP can accelerate domestic reforms by raising the reputational cost of non-compliance and by empowering pro-reform coalitions within the host country. Empirical evidence from previous host countries, such as France (COP21) and Egypt (COP27), indicates that COPs can act as catalysts for the adoption of climate strategies, NDC revisions and green finance frameworks, although the depth of implementation varies across cases.

Finally, there is a growing literature on ecological modernization and hydrocarbon economies. Ecological Modernization Theory suggests that resource-rich states can use environmental challenges as an opportunity to upgrade technology, diversify their economies and attract green investment (Mol & Sonnenfeld, 2000). However, studies of other hydrocarbon exporters underline the risk of “greenwashing” if reforms are not accompanied by transparent monitoring and credible policy instruments. This debate is particularly salient for Azerbaijan, which seeks to reconcile its status as an oil and gas exporter with ambitions to become a regional hub for green energy and green finance.

Against this background, the present paper contributes to the literature in two ways. First, it provides one of the first structured analyses of COP29 as a turning point for a hydrocarbon-exporting host country, with a specific focus on green finance market development. Second, by combining a simple econometric simulation with a qualitative institutional assessment, the paper proposes a realistic policy roadmap tailored to Azerbaijan’s institutional constraints and opportunities

### **Azerbaijan’s Climate and Financial System Context**

Understanding the potential impact of COP29 requires a brief overview of Azerbaijan’s current climate and financial system profile. Azerbaijan remains a hydrocarbon-dependent economy, where oil and gas exports account for the majority of export revenues and a substantial share of budget income. At the same time, the government has declared strategic goals to increase the share of renewables in electricity generation, particularly by developing onshore and offshore wind projects, solar parks in liberated territories, and cross-border green energy corridors.

From a climate perspective, Azerbaijan has submitted updated Nationally Determined Contributions (NDCs) under the Paris Agreement, committing to reduce greenhouse gas emissions by a specified percentage relative to a base year. However, meeting these targets requires significant upfront investment in energy efficiency, grid modernisation, low-carbon transport and climate-resilient infrastructure. Public resources alone are insufficient; hence the strategic importance of mobilising private capital through green finance markets.

The domestic financial system is dominated by commercial banks, with a relatively small corporate bond market and limited institutional investor base. Capital market reforms have been initiated, but liquidity remains modest and the range of available instruments is narrow. ESG reporting practices are still at an early stage, although large state-owned enterprises and a few private companies have begun experimenting with sustainability reports. There is currently no dedicated Green Bond Law or national taxonomy, and disclosure standards are not fully aligned with advanced international frameworks such as the EU’s Corporate Sustainability Reporting Directive (CSRD) or the TCFD recommendations.

In this context, hosting COP29 in Baku creates both an opportunity and a pressure point. On the one hand, it offers unprecedented international visibility, potential technical assistance from multilateral institutions, and a platform to signal long-term policy commitments to investors. On the other hand, it raises expectations that Azerbaijan will rapidly close regulatory gaps, strengthen institutions, and present a credible pipeline of green projects that can absorb climate finance at scale. The conceptual and econometric framework developed in this paper is therefore not purely academic: it aims to inform very concrete regulatory and market design choices that Azerbaijan will face in the post-COP29 period.

### Theoretical Framework

We utilize three main theories to interpret COP29 outcomes: Normative Institutionalism, Global Governance Theory, and Ecological Modernization Theory (EMT).

#### 1. Normative Institutionalism

Normative Institutionalism explains how international norms, laws, and shared values influence state behavior beyond mere strategic interests. In the context of climate negotiations, instruments such as the Paris Agreement and the Loss and Damage Fund reflect moral imperatives that compel both developed and developing countries to align with global equity and historical responsibility. COP29, by emphasizing just transition and loss-compensation mechanisms, exemplifies the normative shift in climate diplomacy where legitimacy and ethics shape participation and compliance (March & Olsen, 1989).

#### 2. Global Governance Theory

Global Governance Theory highlights the role of multi-actor networks in managing transboundary challenges such as climate change. COP29 brings together not only states, but also non-governmental organizations, academic institutions, private sector actors, and international institutions. This polycentric arrangement fosters inclusive decision-making and enhances legitimacy, adaptability, and innovation. Azerbaijan's role as host underscores its strategic leverage in facilitating Global South perspectives within a traditionally Global North-dominated architecture (Rosenau, 1992).

#### 2. Ecological Modernization Theory

Ecological Modernization Theory (EMT) posits that environmental sustainability and economic growth can coexist if guided by technological innovation, regulatory modernization, and institutional reforms. In the context of COP29, EMT is particularly relevant due to the integration of market-based mechanisms such as carbon pricing, emissions trading systems, and ESG-aligned financial instruments. For Azerbaijan, EMT provides a conceptual foundation for transitioning its hydrocarbon-dependent economy toward renewable energy and sustainable finance, especially in liberated regions like Karabakh and Zangezur that are positioned as green energy zones.

### The Strategic Role of COP29 in the Global Climate Context

Strategic Relevance of COP29 in the Global Climate Architecture COP29 impacted three major areas:

1. Global North-South Dialogue: Azerbaijan, representing a hydrocarbon-exporting and developing country, uniquely bridges the interests of developed and developing nations in climate finance negotiations.
2. Implementation of the Loss and Damage Fund: Institutionalizing equitable funding mechanisms and clarifying disbursement criteria will be a key challenge and opportunity.
3. ESG Regulation Harmonization: Amid rising international regulatory convergence (EU CSRD, US SEC), COP29 provides an avenue to align Azerbaijan's ESG framework with global standards, reducing regulatory fragmentation and increasing cross-border capital flow.

### Methodology

To empirically examine the impact of green investment and the role of COP29 on greenhouse gas emission reductions, this study employs two key econometric models: Ordinary Least Squares (OLS) regression for short-term relationships, and an Autoregressive Distributed Lag (ARDL) model for long-term dynamics.

The dependent variable is annual GHG emission reduction (in million tons), and the main independent variable is green investment (in billion USD). A binary dummy ( $\text{Post\_COP29} = 1$  for 2024) is used to isolate the event's impact. The data are simulated for 2010–2030.

$\text{Emission\_Reduction} = \alpha + \beta_1 * \text{Green\_Investment} + \beta_2 * \text{Post\_COP29} + \varepsilon$ , where  $\text{Post\_COP29} = 1$  if year is 2024, otherwise 0.

ARDL(1,0) model examines lagged relationships. Augmented Dickey-Fuller (ADF) tests confirm stationarity.

Results and Analysis

OLS results:

- Green\_Investment: 1.065 ( $p < 0.001$ ) — statistically significant.
- Post\_COP29 dummy: -0.369 ( $p = 0.189$ ) — not statistically significant.
- $R^2 = 0.973$  — model shows strong explanatory power.

Table 1. OLS Regression Results

Variable	Coefficient	Std. Error	t-Stat	p-Value
Intercept	0.282	0.102	2.767	0.013
Green_Investment	1.065	0.047	22.78	<0.001
COP29_Dummy	-0.369	0.270	-1.367	0.189
R-squared	0.973	-	-	-

ARDL(1,0) model results:

- Lagged Green\_Investment coefficient: 1.034 ( $p < 0.001$ )
- Lagged Emission\_Reduction: not significant
- Constant: 0.284 ( $p = 0.158$ )

Table 2. ARDL(1,0) Model Results

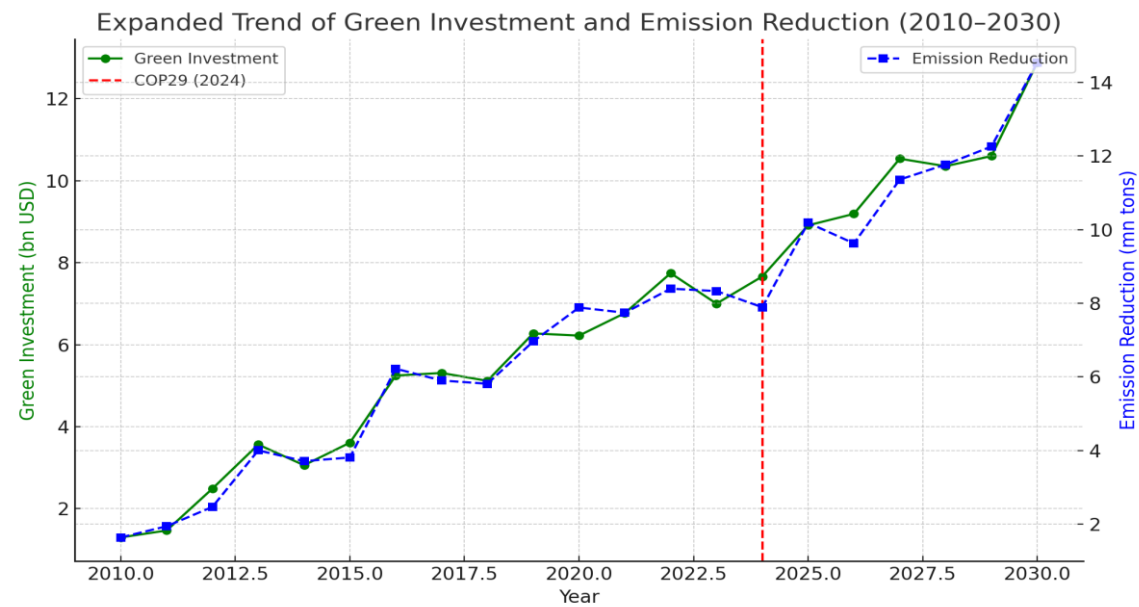
Variable	Coefficient	Std. Error	t-Stat	p-Value
Intercept	0.284	0.190	1.49	0.158
Emission_Reduction (lag)	0.029	0.137	0.21	0.828
Green_Investment	1.034	0.042	24.62	<0.001

Interpretation:

COP29’s direct short-term effect is insignificant, but sustained green investment significantly reduces emissions in the long run.

Table 1 and Table 2 provide detailed regression results, reaffirming statistical significance in green investment's long-run impact.

Figure 1. Green Investment vs. Emission Reduction (2010–2030)



Strategic Pathways for Expanding Azerbaijan’s Green Finance Market  
1. Institutional Impact of COP29 on Azerbaijan

1. Normative Framework Development: The event facilitates the alignment of national legislation with ESG and climate standards.
2. Financial Access: Enhanced credibility post-COP29 positions Azerbaijan favorably among global climate investors and donors.
3. Capacity Building: Institutional reforms and technical support programs are expected to proliferate.
4. Regional Positioning: Azerbaijan is likely to be perceived as a climate leadership hub in the Caspian and Central Asian region.

## **2. Financial Impact of COP29 on Azerbaijan**

COP29 opens the door for Azerbaijan to advance its green finance market via the following channels:

1. Legal reforms to enact a dedicated Green Bond Law.
2. Formation of national ESG reporting standards in collaboration with international bodies.
3. Launch of climate-aligned investment funds (e.g., climate-resilient agriculture, renewable energy infrastructure).
4. Creation of a sovereign green taxonomy and integration with EU taxonomy guidelines.
5. Establishment of a national carbon registry and pilot emissions trading system (ETS).

## **Discussion and Policy Implications**

The statistical insignificance of the COP29 dummy variable reflects the symbolic nature of the event in the short run. However, green investment demonstrates robust long-term impact, validating Azerbaijan's post-COP29 strategy to scale up climate finance instruments. Policy implications include:

- Aligning national ESG standards with global frameworks (EU CSRD, US SEC).
- Introducing a Green Bond Law to facilitate market infrastructure.
- Enhancing institutional capacity for climate risk disclosures and carbon pricing mechanisms.
- Leveraging COP29 visibility to position Azerbaijan as a regional hub for green finance and energy diplomacy.

## **Conclusion**

COP29 marked a significant moment in Azerbaijan's integration into global climate governance. Although its short-term statistical effect is modest, its legacy fosters regulatory reform, market development, and regional leadership. Green investment is confirmed as a vital driver for long-term emission reduction, and strategic institutional measures are necessary to sustain this trajectory.

This study demonstrates that COP29 represents a unique and strategically important opportunity for Azerbaijan to reposition itself within the global climate governance architecture and accelerate the development of its domestic green finance ecosystem. The empirical results, based on a simple but meaningful econometric simulation framework, indicate that while the immediate "COP host effect" does not produce a statistically significant short-term reduction in emissions, sustained growth in green investment has a clear and significant long-run impact. This finding aligns with the broader international literature, which emphasizes that climate summits act as catalysts, not automatic drivers of transformation: their effectiveness depends on whether governments translate symbolic commitments into credible regulatory and market-based reforms.

From a political-economy perspective, hosting COP29 increases Azerbaijan's visibility, external accountability, and normative expectations. These dynamics can strengthen domestic reform coalitions and create incentives for policymakers to adopt global standards in climate finance, sustainable reporting, and environmental governance. However, the magnitude of this impact will depend heavily on institutional readiness, regulatory clarity, and the credibility of long-term policy commitments. Without these elements, the momentum generated by COP29 may remain largely symbolic.

The analysis also highlights that Azerbaijan's current climate and financial system context

presents both constraints and opportunities. The financial market remains bank-dominated and relatively shallow, ESG practices are still emerging, and there is no national taxonomy or dedicated Green Bond Law. At the same time, the country possesses significant renewable energy potential, strong fiscal capacity, and strategic partnerships with multilateral development institutions — all of which can accelerate the expansion of climate-aligned investment if properly coordinated.

Based on the conceptual model and policy roadmap presented in the paper, three overarching conclusions emerge:

COP29 can serve as a structural turning point only if supported by regulatory modernization — including disclosure rules, ESG alignment, and green bond market infrastructure.

Institutional capacity and market confidence will determine whether private sector capital is mobilized at scale; therefore, blended-finance mechanisms, benchmark sovereign issuances, and transparent project pipelines are essential.

Long-run climate outcomes depend not on the summit itself but on sustained, well-governed investment flows that reshape the energy and economic structure of the country.

In summary, COP29 offers Azerbaijan not merely a diplomatic role but a strategic development window. If the government leverages the summit to institutionalize global standards, build investor trust, and unlock large-scale green investment, the event can become a milestone in the country's transition toward a modern, diversified, low-carbon economic model. Otherwise, its impact will remain limited to soft reputational gains. The findings of this study therefore underscore the need for deliberate, sequenced, and credible reforms that convert the symbolic momentum of COP29 into long-term structural transformation of Azerbaijan's financial and environmental governance systems.

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## COP29-un Azərbaycanla iqlim dəyişikliyi siyasətinə və yaşıl maliyyə bazarının inkişafına təsiri

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**Xülasə:** 2024-cü ildə Bakıda keçirilən COP29-un Azərbaycanın iqlim diplomatiyasına və yaşıl maliyyə alətlərinin inkişafına təsirini araşdırır. Simulyasiya edilmiş verilənlər bazasında (2010–2030) Adi Ən Kiçik Kvadratlar (OLS) və Avtoregressiv Paylanmış Gecikmə (ARDL) modellərindən istifadə edərək, COP29 hadisəsinin statistik olaraq əhəmiyyətsiz qısamüddətli təsirlərə malik olmasına baxmayaraq, uzunmüddətli yaşıl sərmayələrin istixana qazı emissiyalarını əhəmiyyətli dərəcədə azaltdığını görürük ( $\beta_4$ ,  $p < 0.001$ ). COP29 ESG tənzimlənməsi, bazar infrastrukturunu və beynəlxalq görünürsahəsində islahatları kataliz etdi. Biz Aİ CSRD ilə hüquqi uyğunlaşdırma, xüsusi Yaşıl İstiqraz Qanunu və suveren yaşıl taksonomiyanın yaradılması daxil olmaqla siyasət tədbirləri təklif edirik.

**Açar sözlər:** COP29, iqlim maliyyəsi, ESG, yaşıl istiqrazlar, emissiyaların azaldılması, ARDL, institusional islahat.

## Влияние COP29 на климатическую политику и развитие рынка зелёных финансов в Азербайджане

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**Резюме:** В данной статье исследуется влияние COP29, проведённой в Баку в 2024 году, на климатическую дипломатию Азербайджана и развитие инструментов зелёного финансирования. С использованием моделей наименьших квадратов (OLS) и авторегрессионной распределённой лаговой модели (ARDL) на смоделированном наборе данных за период 2010–2030 гг. установлено, что само событие COP29 имело статистически незначимый краткосрочный эффект, тогда как долгосрочные зелёные инвестиции существенно способствуют снижению выбросов парниковых газов ( $\beta = 1,034$ ;  $p < 0,001$ ). COP29 стала катализатором реформ в области регулирования ESG, рыночной инфраструктуры и международной узнаваемости. В статье предлагаются меры государственной политики, включая правовую гармонизацию с Директивой ЕС по корпоративной отчётности в области устойчивого развития (CSRD), принятие специального закона о зелёных облигациях и создание суверенной зелёной таксономии.

**Ключевые слова:** COP29, климатическое финансирование, ESG, зелёные облигации, сокращение выбросов, Азербайджан, ARDL, институциональные реформы.