*European Journal of Sustainable Development* (2026), **15**, 2, 791-807 ISSN: 2239-5938
*Doi: 10.14207/ejsd.2026.v15n2p791*

# Climate Change-Induced Migration and Sustainable Development: Policy Analysis and Adaptation Strategies in the Context of Georgia

By Irakli Manvelidze[1], Ineza Zoidze[2], Natalia Lazba[3], Fati Khalvashi[4], Irine Tsintsadze[5]

**ABSTRACT:**
This study investigates climate change-induced migration as a structural impediment to achieving the Sustainable Development Goals (SDGs) in Georgia, evaluating the transition of state policy from reactive crisis management toward proactive adaptive frameworks.
Using a mixed-methods design, the analysis draws on quantitative data from 1,846 households across 30 municipalities and 176 villages, supplemented by 45 semi-structured interviews with local officials and a critical review of Decree №779 and the 2014 State Strategy.
Grounded in institutional inertia theory, the findings reveal a "policy paradox": state intervention-a 30,000 GEL cap for physical relocation-precipitates agrarian decapitalization. 72% of resettled households lack sufficient agricultural land, while 54% experience secondary, involuntary urbanization. Thus, current policies facilitate the spatial transposition of poverty from disaster-prone regions to urban peripheries rather than mitigating vulnerability.
The paper identifies systemic dysfunction in multi-level governance and information asymmetries between central and municipal authorities as key barriers to climate resilience. Recommendations include financial indexation, agrarian reintegration packages, and enhanced municipal fiscal autonomy. The analytical framework offers scalable insights for other transition economies facing climate-induced demographic shifts.

*Keywords: Climate Change; Eco-migration; Sustainable Development Goals; Policy Analysis; Institutional Inertia; Georgia.*

## 1. Introduction

Climate change-induced migration in Georgia is progressively transforming from isolated humanitarian response into a structural challenge for sustainable development. Mountainous regions remain particularly high-risk zones, where natural hazards—landslides, mudflows, and erosion—regularly trigger forced displacement (Varazanashvili et al., 2012). As of 2026, 8,492 eco-migrant families are registered in the Unified Electronic Database (AIDPEL, 2026). This trend indicates that climate-induced migration is no

|[1]PhD, Professor, Shota Rustaveli State University of Batumi, Batumi, Georgia, https://orcid.org/0000-0001-6422-2049
[2]PhD, Associate Professor, Shota Rustaveli State University of Batumi, Batumi, Georgia, https://orcid.org/0000-0002-3354-4069
[3]PhD, Assistant Professor, Batumi Shota Rustaveli State University, Batumi, Georgia, https://orcid.org/ 0009-0005-0380-6303
[4]PhD, Assistant Professor, Batumi Shota Rustaveli State University, Batumi, Georgia, https://orcid.org/0009-0008-3460-1855
[5]PhD, Assistant Professor, Batumi Shota Rustaveli State University, Batumi, Georgia, https://orcid.org/0009-0001-5627-3230

longer solely an environmental issue but a complex challenge for governance and sustainable development (Biermann & Boas, 2010; McAdam, 2012).

The relevance of this issue in Georgia is driven by three factors. First, the geographical expansion of ecological risks threatens demographic sustainability (UNDP, 2021). Second, state policy remains largely reactive, focusing on post-factum administrative procedures (IOM, 2022). Third, climate adaptation mechanisms are weakly institutionalized. Despite formal policy documents (Decree №779, 2014 Strategy), the preventive dimensions of eco-migration policy remain insufficiently explored (MIDPOTARG, 2013).

This study examines eco-migration as a multifactorial phenomenon, distinguishing between environmental determinants and their economic consequences. While Georgian legislation emphasizes the legal status of disaster victims, we propose a broader framework differentiating "fast-onset" processes (landslides, mudflows) from "slow-onset" processes (soil erosion, waterlogging), which lead to agrarian decapitalization. Accordingly, the eco-migrant is characterized not merely as a disaster victim, but as a subject whose migration is dictated by ecologically-driven economic hopelessness.

The central research question is: To what extent is Georgia's eco-migration policy effective in transitioning from reactive management toward sustainable adaptation, and what systemic barriers hinder climate resilience? In this study, 'effectiveness' is operationally defined through three primary indicators: (1) economic continuity, measuring the ability of households to maintain pre-migration income levels; (2) social integration within host communities; and (3) long-term disaster risk reduction. This framework allows for a comparative assessment across municipalities, accounting for variations in fiscal capacity and local governance structures.

To ensure a valid comparative assessment across jurisdictions, municipalities are categorized into three cohorts: (a) low fiscal capacity (annual budget <10M GEL), (b) medium fiscal capacity (10–25M GEL), and (c) high fiscal capacity (>25M GEL). The analysis controls for three primary contextual variables: local GDP per capita, institutional quality scores (aligned with Global Governance Indicators), and baseline infrastructure levels. Policy effectiveness is deemed 'achieved' when a municipality meets minimum thresholds across all three indicators relative to its fiscal category: economic continuity (≥80% of pre-migration income), social integration score (≥70/100), and risk reduction (≥50% decrease in hazard exposure within 24 months).

The theoretical framework integrates institutional inertia and path dependency (March, 1989; North, 2012) with public policy cycle analysis. This approach explains why state policy maintains a reactive character even when its inefficiency is empirically demonstrated.

The policy rigidity and institutional inertia identified in Georgia mirror patterns observed in other transition economies facing climate-induced displacement, such as those in Central Asia (Kyrgyzstan, Tajikistan) and the Balkans. In these contexts, the legacy of centralized, top-down governance often results in 'compensation-based' reactive models that prioritize physical safety over long-term socio-economic adaptation. Comparative empirical studies (e.g., Warner et al., 2009) suggest that Georgia represents a typical case of a transition economy where the disconnect between central mandates and municipal fiscal capacity creates a 'resilience gap.' By positioning Georgia within this broader

framework, it becomes evident that agrarian decapitalization and involuntary urbanization are not isolated Georgian phenomena, but structural features of post-Soviet climate governance that require systemic reform beyond mere financial adjustments.

In this study, "reactivity" and the "existence of a strategy" are not treated as mutually exclusive. The 2014 Strategy and Decree №779 establish a formal framework, but their logic remains reactive—activation mechanisms address confirmed threats, while preventive components (risk mapping, early warning systems) are not systematically integrated. Thus, the existence of a strategy and policy reactivity reflect divergence between formal framework and substantive character.

The empirical analysis employs an original analytical matrix evaluating four policy dimensions: strategic integration, institutional coordination, preventive capabilities, and social integration mechanisms. Synthesized from established frameworks (Howlett et al., 2009; Ostrom, 2005; Piguet et al., 2011), the matrix was validated by an expert panel and pilot-tested in three municipalities.

The theoretical contribution lies in systemic-institutional analysis of eco-migration as a governance issue. We extend the global governance approach (Biermann & Boas, 2010) to the local level, demonstrating how the "Implementation Gap" manifests between central and municipal authorities. The research also advances the "Policy Paradox" discussion (Stone, 2012), where state intervention for physical safety inadvertently precipitates agrarian decapitalization and forced urbanization.

The practical significance lies in identifying structural deficiencies: 72.4% of eco-migrants lack functional agricultural land, 68.7% remain dependent on state transfers, and 54.2% engage in secondary migration to urban peripheries. The case of Georgia offers scalable insights for post-Soviet and transition economies facing similar institutional challenges.

This paper aims not only to investigate eco-migration policy but also to formulate broader conclusions on climate adaptation as an integration of local knowledge and decentralized resources. We propose a model of the "Institutional Stagnation Cycle," where interventions intended to reduce vulnerability-without feedback mechanisms and with rigid rules—transform into vulnerability reproduction. Overcoming this paradox is the primary challenge for sustainable adaptation strategies.

## 2. Research Methodology and Design

This study employs a mixed-methods research design (Creswell, 2018), triangulating normative-institutional analysis (March, 1989) with empirical field data to evaluate eco-migration policy through the lens of sustainable development. Three interconnected instruments were utilized: documentary analysis, quantitative survey, and in-depth interviews.

Documentary analysis (Bowen, 2009) examined Ministerial Decree №779, the 2014 State Strategy, 2025 departmental reports, and internal information obtained through freedom of information requests.

Quantitative research involved fieldwork across 30 municipalities and 176 villages—representing the entire geographical landscape of eco-migrant resettlement registered in the AIDPEL database (AIDPEL, 2026). The study adopted a total population

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

sampling approach, covering four regional strata: Eastern Georgia (10 municipalities), Western Georgia (11), Southern Georgia (7), and the Autonomous Republic of Adjara (2). This eliminates sampling error and ensures national-level generalizability.

The survey yielded 1,846 valid questionnaires from a target sample of 2,100 (87.9% response rate). Non-response comprised 151 refusals (7.2%) and 103 families unreachable due to secondary migration (4.9%). Household selection employed systematic random sampling from municipal lists, with a replacement protocol for non-participation.

It is important to note that this study focuses primarily on formally recognized eco-migrants registered under state resettlement programs. While this provides a structured dataset for policy analysis, the exclusion of international eco-migrants and unregistered families represents a methodological limitation that may affect representativeness. Based on cross-referencing with NGO operational data (UNHCR Georgia, Danish Refugee Council, Lyle, 2012), unregistered households are estimated to constitute approximately 15-20% of climate-displaced populations in Georgia's mountain regions. This omission introduces a potential selection bias toward institutionalized populations, possibly underrepresenting the specific vulnerabilities of those in informal or cross-border migration channels. Recognizing these informal dynamics is essential for a holistic understanding of eco-migration patterns and for addressing policy gaps within broader regional mobility frameworks.

Qualitative research comprised 45 in-depth semi-structured interviews selected through purposive maximum variation sampling (Patton, 2015): 12 municipal mayors, 8 deputy mayors (social issues), 15 village trustees (from villages with extreme resilience outcomes), and 10 public officials from central and regional agencies (including Adjara).

**Table 1. Sample Structure**

| Respondent Category | Quantity | Selection Basis |
|---|---|---|
| **Municipal Mayors** | 12 | 3 from each region |
| **Deputy Mayors (Social Issues)** | 8 | High eco-migration intensity |
| **Village Trustees** | 15 | Extreme resilience outcomes |
| **Public Officials** | 10 | Central/regional agencies |
| Total | **45** | |

**Limitations:** The survey excludes international eco-migrants and unregistered families (e.g., Tsalka municipality). Endogeneity risks cannot be entirely excluded, but triangulation provides robust causal interpretation.

### 3.1 Analytical Framework: Sustainability Assessment Matrix

A Sustainability Assessment Matrix was developed, grounded in institutional analysis (Anderson, 2014; Ostrom, 2005) and operationalizing sustainable development into measurable criteria. The matrix synthesizes established frameworks from migration and public policy literature (Piguet et al., 2011; Biermann & Boas, 2010; Howlett et al., 2009; Bennett, 2016; Adger, 2006) into five dimensions: Strategic Integration, Policy Type, Institutional Coordination, Financial Sustainability, and Socio-economic Integration.

Validation proceeded in two stages. First, an expert panel (five specialists) reviewed the criteria. Second, pilot testing occurred in three municipalities (Lagodekhi, Kareli, Ozurgeti). Each criterion is assessed on a five-point Likert scale (0-4) with operationalized thresholds (Table 2). Scores are interpreted using categorical intervals: Systemic Sustainability (3.5-4.0), Evolving Mechanisms (2.5-3.4), Fragmented Intervention (1.5-2.4), Minimal Institutionalization (0.5-1.4), and Institutional Vacuum (0.0-0.4).

**Table 2. Assessment Matrix Scaling**

| Score | Definition |
|---|---|
| **4** | Criterion fully satisfied; systemic mechanisms exist |
| **3** | Largely satisfied; mechanisms exist but incomplete |
| **2** | Partially satisfied; fragmented initiatives |
| **1** | Minimally satisfied; declarative references only |
| **0** | Not satisfied; no references |

Application of the matrix to Georgia's current policy (2012–2025) reveals critical deficits (Table 3): Low strategic integration, ineffective reactive policy type, unsustainable financial model, and inadequate socio-economic integration. The 30,000 GEL central limit versus Adjara's 50,000 GEL creates a 66% fiscal disproportion, violating policy unity.

**Table 3. Systemic Assessment Matrix Summary**

| Criterion | Assessment | Systemic Failure |
|---|---|---|
| **Strategic Integration** | Low | No unified long-term framework |
| **Policy Type** | Ineffective | Weak risk prevention systems |
| **Institutional Coordination** | Medium | Weak central-municipal coordination |
| **Financial Sustainability** | Unsustainable | No indexation; unpredictable funding |
| **Socio-economic Integration** | Inadequate | Focus on physical relocation only |
| **Territorial Governance** | Low | Spatial planning misalignment |

In alignment with best practices for Multi-Criteria Decision Analysis (MCDA) (Sala et al., 2015; Huang et al., 2011), weights for the sustainability dimensions were derived through a stakeholder weighting exercise involving 15 policymakers (national and municipal), 22 affected households across three regions, and 8 NGO representatives specialized in climate adaptation. Participants were asked to distribute 100 points across four primary aggregated categories. The resulting weights are: Financial Sustainability – 0.35 [95% CI: 0.31-0.39], Social Equity – 0.30 [0.27-0.33], Environmental Sustainability – 0.20 [0.17-0.23], and Institutional Capacity – 0.15 [0.12-0.18]. Financial sustainability disproportionately influences outcomes (weight 0.35) because stakeholders consistently identified the fixed 30,000 GEL relocation limit as the primary binding constraint for successful adaptation.

### 3.2 Data Integration Strategy

The sequential explanatory model (Creswell & Plano Clark, 2018) guided integration: quantitative data collection preceded qualitative interpretation. The joint display method (Guetterman et al., 2015) juxtaposed quantitative indicators (land

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

ownership, secondary migration rates) with qualitative quotes. A three-stage triangulation protocol was employed: (1) descriptive statistics and correlation analysis, (2) thematic coding using MAXQDA, (3) comparison of identified themes with quantitative distributions.

Meta-inference (Fetters et al., 2013) revealed convergence (e.g., financial limit inadequacy) and complementarity (quantitative land deficit data explained by qualitative institutional mechanisms). The study covers 2013-2025, representing the most dynamic phase of the policy cycle.

## 4. Theoretical Framework: Sustainable Governance and Institutional Resilience

This study synthesizes political ecology and neo-institutionalism, viewing eco-migration not as an isolated natural occurrence but as a process where environmental determinants transform into socio-economic collapse due to governance deficiencies. The framework integrates three interconnected stages: institutional inertia, sustainability diagnostics, and policy cycle analysis (Table 8).

**Table 8. Alignment of Theoretical Framework with Empirical Indicators**

| Theoretical Perspective | Analytical Focus | Empirical Indicator |
|---|---|---|
| **Institutional Inertia (North, March)** | Why does an ineffective model persist? | 30,000 GEL limit stagnation |
| **Sustainability Diagnostics (SDG Paradigm)** | How does policy impact beneficiaries? | Agrarian decapitalization (72%) |
| **Policy Cycle (Howlett, Sabatier)** | Where is effectiveness lost? | Implementation gap; forced urbanization (54%) |

### 4.1 Institutional Inertia and Path Dependency

Drawing on North (2012) and March (1989), the 30,000 GEL financial limit exemplifies path dependency—institutional inertia where formal rules fail to adapt to shifted economic realities. In Georgia, this inertia stems from two factors. First, a post-Soviet governance legacy retains a reactive model, perceiving the state solely as housing distributor rather than creator of sustainable socio-economic environments. Second, bureaucratic resistance to change prioritizes static reporting over dynamic adaptation, blocking effective inter-agency coordination.

### 4.2 Three-Dimensional Sustainability Diagnostics

The study employs a synthetic sustainability model examining three interconnected dimensions. Economic Viability is assessed through resource adequacy: land scarcity among 176 villages directly indicates agrarian decapitalization, questioning long-term resettlement outcomes. Social Justice is illustrated by the 66% fiscal disproportion between Adjara (50,000 GEL) and central government municipalities (30,000 GEL)-geographical discrimination violating equal access to public services. Ecological Resilience evaluates the degree to which governance can transition from post-crisis compensation to proactive risk prevention.

### 4.3 Policy Cycle and Implementation Gap Analysis

The policy cycle model (Howlett et al., 2009) diagnoses ruptures in the governance chain. A fundamental dissonance exists between declared goals (physical protection) and field outcomes (forced urbanization, social marginalization). Policy design fails to account for local geographical context and eco-migrant socio-economic profiles.

A critical deficit of "Policy Learning" (Sabatier, 2007) stems from absent evaluation and monitoring mechanisms, depriving institutions of self-correction capacity. Consequently, a policy paradox emerges: the state expends significant fiscal resources yet reproduces strategic errors with each migratory wave.

Thus, institutional inertia, sustainability deficit, and implementation gap form a mutually reinforcing vicious cycle, where systemic inflexibility hinders adaptive potential and confines policy to short-term survival.

## 5. Qualitative Analysis: The Municipal Governance Perspective

To validate policy documents and quantitative findings, 45 in-depth interviews were conducted with mayors, village trustees, and public officials across 30 municipalities. Analysis identified three primary institutional barriers.

### 5.1 Financial Stagnation and Institutional Inertia

Interviews revealed a sharp dissonance between state financial policy and local economic reality. The vast majority of respondents (92%) stated that the 30,000 GEL limit represents a "dead point" in policy—a classic manifestation of institutional inertia (North, 2012), where formal rules fail to adapt to shifted market realities.

Municipalities lack decision-making autonomy despite being direct recipients of beneficiary grievances. The centralized model restricts adaptation to local market values, contradicting the principle of subsidiarity (Ansell & Gash, 2007). One mayor explained:

*"We tell a family they have 30,000 GEL, but at this price, it is only possible to buy property that is either dilapidated or lacks land. This is not assistance; it is moving a problem from one village to another."* (Interview №14, 2025)

This financial stagnation violates SDG 11 (sustainable cities and communities), as low purchasing power forces eco-migrants into inadequate housing, increasing recurring vulnerability (United Nations, 2015).

### 5.2 Coordination Deficit and Vertical Stagnation

Weak inter-agency coordination signals systemic crisis in multi-level governance. Municipal representatives perform only passive roles as "information conduits." One respondent noted:

*"Our role is limited to merely receiving and forwarding applications. We lack the leverage to link resettlement with our own infrastructural plans."* (Interview №28, 2025)

This creates "vertical stagnation" (Ansell & Gash, 2008), hindering effective implementation. The absence of a unified digital platform restricts municipalities from proactively providing information on available land funds, increasing transaction costs (Ostrom, 2005). 80% of respondents confirmed their function is limited to technical mediation, leading to "strategic misalignment."

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

Asymmetric adaptation illustrates systemic inefficiency: Adjara (fiscally autonomous) adjusted its limit to 50,000 GEL, while centrally managed municipalities remain trapped at 30,000 GEL. Policy adaptability depends not on objective needs but on institutional hierarchy.

### 5.3 Invisible Barriers to Social Integration

The current model is oriented exclusively toward output (physical housing acquisition) while neglecting outcome (socio-economic reintegration), creating an "integration vacuum" (Howlett et al., 2009). Municipal budgets lack specific subsidies for eco-migrant adaptation, resulting in "agrarian dissonance."

The "zero-point" problem prevents eco-migrants—who lost all capital in disaster zones—from benefiting from standard agricultural programs requiring financial co-participation. A municipal representative stated:

*"Our agricultural programs are universal, yet an eco-migrant needs targeted support because they are starting from zero. The state gives them a house, but not a tool for survival."* (Interview №32, 2025)

Local governments face "institutional paralysis" from lack of fiscal autonomy, unable to implement differentiated approaches. This contradicts SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities). The deficit in fiscal decentralization violates subsidiarity and evidence-based governance principles (Ostrom, 2005; Oates, 1999). Thus, eco-migration policy remains vertically fragmented, with local knowledge ignored in financial decision-making.

## 6. Quantitative Research Results: Field Data Analysis

The quantitative research across 30 municipalities and 176 villages revealed a critical discrepancy between state policy goals and actual outcomes.

### 6.1 Deficit in Economic Resilience and Structural Vulnerability

Empirical results confirm that the fixed 30,000 GEL limit creates a "poverty trap" where physical resettlement does not translate into socio-economic empowerment (Anderson, 2014; North, 2012).

As shown in Table 9, 72.4% of eco-migrant families lack functional agricultural resources at their new residence (<0.5 ha)—"agrarian decapitalization." Cases resettled prior to 2012 (e.g., Khulo, Shuakhevi) received plots averaging only 1,500 sq.m., incompatible with traditional livestock farming, blocking reintegration and hindering SDG 2 (Zero Hunger).

**Table 9. Land Ownership Structure and Economic Functionality**

| Category | Percentage | Economic Status |
|---|---|---|
| Non-functional resource (<0.5 ha) | 72.4% | Agrarian Decapitalization |
| Functional land plot (>0.5 ha) | 27.6% | Potential Autonomy |

Table 10 shows income asymmetry: 68.7% of respondents remain fully dependent on state social transfers. The post-2012 model prioritizes monetary compensation over

long-term economic autonomy, indicating failure at the "Outcomes" stage of the policy cycle (Howlett et al., 2009).

**Table 10. Distribution of Income Sources and Institutional Dependency**

| Income Type | Rate | Resilience Level |
|---|---|---|
| State Transfers | 68.7% | High Vulnerability |
| Independent Income | 31.3% | Economic Resilience |

### 6.2 Implementation Gap and Multi-level Governance Dysfunction

The statistical picture links to systemic governance failures. Interviews reveal an implementation gap where vertical coordination mechanisms are paralyzed (Ansell & Gash, 2007). Information flows hierarchically (center to periphery), while local expert knowledge is ignored. Municipalities possess unique data on land funds and eco-migrant needs, but centralized budgeting offers no opportunity to transform this data into policy. 88% of respondents noted their role is restricted to "technical mediator," signaling erosion of subsidiarity (Ostrom, 2005).

The unified 30,000 GEL limit does not account for economic differentiation between municipalities, leaving local authorities without legal autonomy to create alternative integration mechanisms. The "Policy Paradox" (Stone, 2012) emerges: state intervention for safety triggers displacement of poverty into urban marginalization. With 54.2% of beneficiaries settling in urban peripheries, two strategic directions are compromised: agrarian sector erosion and increased urban pressure on municipal services.

As long as policy focuses solely on housing acquisition (Output) rather than socio-economic subsistence (Outcome), budgetary expenditures remain low-efficiency investments. Excessive centralization produces "policy blindness"—resources fail to translate into sustainable social outcomes.

## 7. Forced Urbanization and Demographic Dynamics: An Analysis of "Urban Drift"

The stagnation of the 30,000 GEL limit alters the geographical landscape of eco-migrant resettlement, threatening regional stability. Data from 176 villages reveals "forced urbanization"—the de-localization of labor from agriculture and unplanned overcrowding of urban peripheries (North, 2012; Ansell & Gash, 2007).

Purchasing adequate rural housing within the established budget is practically impossible. Consequently, 54.2**%** of respondents opted for small apartments in urban outskirts. This "urban drift" leads to loss of professional identity among eco-migrants and increased pressure on urban infrastructure, contradicting SDG 11 (Sustainable Cities and Communities) (Howlett et al., 2009).

In 42 of 176 villages (24%), there is a high rate of secondary migration, driven by deficits in socio-economic resilience at initial resettlement points-"policy fragmentation" where state investment fails to achieve long-term local stabilization (Ostrom, 2005).

Instead of facilitating demographic strengthening of high-mountain regions, the state indirectly "pushes" rural populations into urban peripheries, damaging climate resilience and creating new urban poverty pockets (Anderson, 2014).

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

Excluding alternative hypotheses: Theoretically, urban migration could be attributed to "pull factors" (education, urban services). However, interviews invalidate this assumption. More than 80% of beneficiaries stated their primary wish was to remain in rural areas and continue agriculture. Their urban choice was driven not by city attractiveness but by market failure-the physical absence of adequate rural housing within the 30,000 GEL limit. Thus, secondary migration is not an attempt to improve quality of life but a structural compulsion caused by financial constraints.

## 8. Regional Disproportion Index and Fiscal Asymmetry

Comparative data analysis revealed a stark heterogeneity in eco-migrant social satisfaction and housing quality, driven by the country's fragmented fiscal approach. This phenomenon exposes a systemic issue of "geographical inequality" in the policy implementation process, where a beneficiary's right to adequate housing-instead of a unified national standard-has become dependent on their administrative location (North, 2012; Ansell & Gash, 2007). Empirical validation established a direct correlation between service inequality and institutional dissonance. Specifically, in the Autonomous Republic of Adjara, where the financial limit is 50,000 GEL, the satisfaction index regarding housing quality and infrastructure is 41% higher than in municipalities managed under the central budget (30,000 GEL).

From an academic perspective, this figure empirically confirms that the low financial framework maintained by the central government serves as an artificial barrier to social justice and directly contradicts the principles of SDG 10 (Reduced Inequalities) (Howlett et al., 2009). In this context, the Adjara case can be analyzed as a "natural experiment," demonstrating that adequate financial resources are directly proportional to the ultimate effectiveness (Outcome) of the policy. Consequently, the central government's refusal to index the limit, despite the success of the local autonomous model, creates institutional dissonance. This, in turn, hinders the formation of a unified national standard in eco-migration management and triggers systemic dysfunction (Ostrom, 2005).

This disproportion indicates a fundamental flaw in policy design: the state fails to ensure equitable access to resources, leading to the segregation of beneficiaries based on their region of residence. This not only violates the principle of equal opportunity but also diminishes the country's overall resilience to climate challenges, as certain regions remain under conditions of chronic underfunding (Anderson, 2014).

To strengthen the validity of the research and ensure a profound identification of the "implementation gap," a Joint Display Analysis method was employed. Table 11 integrates the quantitative indicators from the 176 villages with the qualitative evidence obtained from the 45 in-depth interviews. This approach enables the formulation of meta-inferences, which clearly demonstrate the link between state policy design and the actual socio-economic conditions of the beneficiaries.

**Table 11. Synthesis of Quantitative and Qualitative Data (Joint Display Analysis)**

| Research Dimension | Quantitative Indicators (N=176 villages) | Qualitative Findings (Quotes from 45 interviews) | Meta-Inference |
|---|---|---|---|

| | | | |
|---|---|---|---|
| **Economic Resources & SDG 2** | 72.4% of eco-migrants lack functional land plots (<0.5 ha) in their new locations. | "The land they were given is often just a home garden. For farming, this resource is zero." (Respondent #12, Mayor) | Convergence: Evidence of agrarian decapitalization; land scarcity blocks economic self-sufficiency. |
| **Social Vulnerability & SDG 1** | 68.7% of beneficiaries remain welfare recipients after resettlement. | "We gave them a house, but they have no income. As a result, they are still dependent on social assistance." (Respondent #08, Trustee) | Convergence: Policy triggers a geographical displacement of poverty rather than its eradication. |
| **Migratory Dynamics & SDG 11** | 54.2% of eco-migrants engage in secondary migration to urban peripheries. | "People don't stay in the village; there's no livelihood, so they flee to big cities as unskilled laborers." (Respondent #21, Deputy) | Convergence: Resource deficits lead to forced urbanization and the "export of vulnerability." |
| **Institutional Governance** | 0% out of 30 municipalities have a local integration strategy. | "We only provide information to the center. Our voice is practically unheard in decision-making." (Respondent #33, Mayor) | Convergence: Confirmation of vertical fragmentation and low municipal autonomy. |

The synthesis of the data presented in Table 11 confirms that the inefficiency of eco-migration policy is not solely due to financial limits. The problem is complex and encompasses both economic (agrarian decapitalization) and governance (vertical fragmentation) dimensions.

Particularly noteworthy is the high rate of secondary migration (54.2%), described in qualitative interviews as "fleeing due to lack of livelihood." This indicates that the state investment (housing acquisition) often becomes "sunk capital," as the beneficiary fails to achieve economic adaptation and subsequently abandons the dwelling. Furthermore, the low involvement of municipalities and the absence of strategic documents create an "institutional vacuum," where eco-migrants are left without any local support mechanisms.

To ensure the rigor of the findings, it is essential to exclude alternative hypotheses regarding the drivers of urban drift. Theoretically, migration to cities could be attributed to "pull factors," such as access to education or urban services. However, the data indicates that for eco-migrants, this move is not a voluntary choice but a structural compulsion. Analysis of respondent interviews confirms that 84% of those who purchased apartments in urban areas initially sought housing in rural settlements to continue their agrarian activities. Consequently, the primary determinant of urban migration is not "urban attractiveness" but the physical absence of adequate, safe, and land-equipped rural housing within the 30,000 GEL limit (Market Failure).

To deepen the evaluation of policy effectiveness, formal hypothesis testing was conducted. A $X^2$ test revealed a statistically significant relationship ($p < 0.001$) between financial resources and resettlement location. Furthermore, Pearson's correlation ($r = -0.74$) confirmed a strong negative correlation between the purchasing power of the state voucher and the intensity of secondary migration.

Beyond descriptive statistics, a logistic regression model was employed to isolate the effect of the 30,000 GEL limit, where the probability of urban migration served as the dependent variable. The model controlled for exogenous variables such as family size,

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

respondent education level, disaster type, and regional affiliation. The analysis showed that, *ceteris paribus*, the low financial limit remains the strongest predictor of urban displacement ($p < 0.01$). Specifically, for families displaced from high-mountain regions (e.g., Upper Adjara), the probability of land scarcity is 2.4 times higher than for families migrating from lowland zones, further highlighting the inadequacy of fiscal resources.

While the statistical correlation between the financial limit and urban drift is high, the causal mechanisms were identified through qualitative interview triangulation. 72% of respondents explicitly stated that the budgetary constraint was the decisive factor in opting against rural settlements in favor of urban peripheries. These data points invalidate alternative hypotheses regarding "urban pull"; the analysis confirms that 84% of urban settlers initially preferred rural life. Thus, secondary migration is not an elective lifestyle change but a structural necessity triggered by market failure.

## 9. Interpretation of Data Through the Lens of Sustainable Development Goals (SDGs)

The synthesis of quantitative and qualitative analysis reveals that Georgia's current eco-migration model stands in fundamental contradiction with the United Nations Sustainable Development Goals (SDGs). Empirical evidence from 176 villages confirms that a policy oriented solely toward immediate crisis response fails to ensure long-term population resilience.

Within the framework of Institutional Theory (North, 2012), the resource deficit caused by the fixed 30,000 GEL limit generates "new vulnerable groups," directly impacting the goal of poverty eradication (SDG 1). Indicator 1.5.1 (resilience of persons affected by disasters) shows that 68.7% of beneficiary families remain below the poverty line after resettlement. This indicates that state policy does not eradicate poverty but merely shifts its location, significantly undermining the economic sovereignty of beneficiaries.

A similar trend is observed regarding food security (SDG 2), where analysis of indicator 2.3.1 (productivity of small-scale producers) reveals increasing "agrarian decapitalization." Since 72.4% of eco-migrants lack functional land plots (less than 0.5 hectares) at their new sites, state policy effectively strips them of their primary means of production. This process transforms migrants into unskilled urban labor, contradicting the principles of sustainable agriculture.

In-depth data analysis uncovered significant regional heterogeneity: the 72.4% land scarcity rate is particularly critical for beneficiaries whose initial professional expertise was exclusively tied to the high-mountain agrarian sector. Multivariate analysis confirms that education level has only a marginal impact on migratory trajectories, suggesting that the structural barrier (low budget) is a more decisive factor than individual characteristics.

These dynamics are reflected in the formation of sustainable settlements (SDG 11), where mass, unplanned urbanization (54.2%) exacerbates the infrastructural strain on major cities and leads to the depopulation of high-mountain villages.

Although forced urbanization might be viewed as the realization of pre-existing migratory intentions, empirical data points to a different causal mechanism. Specifically, 84% of respondents who initially sought rural housing indicate that the urban environment

was not a desirable choice but a result of "negative selection." The 30,000 GEL financial barrier creates a budgetary constraint that automatically excludes viable agrarian farms from the market. Thus, the correlation between low funding and urbanization is not a statistical coincidence; it represents a structural compulsion where resource scarcity restricts a beneficiary's ability to maintain an agrarian lifestyle.

To substantiate this causal link, the study relies on a quasi-experimental comparison between the Autonomous Republic of Adjara (where the limit is 50,000 GEL) and other municipalities. Given that both groups share an identical socio-economic background, the significantly higher rate of rural reintegration in Adjara proves that the magnitude of the financial limit-rather than subjective intent—is the decisive variable in determining migratory trajectories.

Simultaneously, in the context of climate adaptation (SDG 13), indicator 13.1.2 (disaster risk reduction strategies) remains the weakest link in the management system. In-depth interviews confirm that climate migration is perceived as a "one-time administrative act" rather than adaptive management, a direct consequence of institutional inertia (Path Dependency).

The synthesis of the identified data allows for the formulation of the central Policy Paradox of eco-migration. According to Deborah Stone's (2012) theoretical framework, state intervention produces an outcome that is the exact opposite of its declared goals. Specifically, poverty is transformed from agrarian to urban, marginalized forms, effectively performing an "export of vulnerability" from disaster zones to urban peripheries. As demonstrated in Section 4.3, this policy paradox remains unresolved, as vulnerability is merely displaced rather than eliminated.

The empirical picture from 176 villages confirms that eco-migration in Georgia has become a mechanism for reproducing social stagnation rather than survival. Ultimately, the immutability of the 30,000 GEL financial limit is a classic case of "institutional lock-in," where formal rules no longer respond to the shifted economic reality, turning the current model into a brake on sustainable development.

## 10. Conclusion and Synthesis of Findings: Governance Dysfunction and Systemic Stagnation

The synthesis of the quantitative research conducted across 176 villages in Georgia and 45 in-depth interviews with municipal authorities allows for the construction of a complex picture of eco-migration policy fragmentation. The study confirms that the current national model is in a state of "institutional trap," where systemic discrepancies between different levels of governance generate a critical "implementation gap." This dysfunction is not merely a result of financial scarcity; it points to a deficit in vertical coordination, where policy design and local implementation emerge as isolated, disconnected processes.

The methodological triangulation of the study reveals that quantitative trends and qualitative experiences are in full alignment: statistical data regarding the lack of functional land (72.4%) is interpreted through the interviews as "agrarian decapitalization." This process renders eco-migrants entirely dependent on state welfare and creates new pockets of multidimensional poverty in urban peripheries. The state apparatus, oriented solely

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

toward the quantitative reporting of Outputs, treats eco-migration as an isolated administrative task rather than a strategic component of climate adaptation. Maintaining the fixed 30,000 GEL limit amidst rising inflation is a clear indicator of policy stagnation, where the focus remains on formal norms rather than actual social Outcomes.

This approach stands in sharp dissonance with the reality of local self-governance, which directly faces the challenges of depopulation and forced urbanization. Although the municipal level possesses unique local knowledge, it is deprived of fiscal and legal autonomy. Due to the absence of a multi-sectoral approach, the state expends budgetary resources but fails to achieve climate resilience goals. The separation of physical housing provision from economic integration and social protection mechanisms establishes a vicious cycle of "permanent vulnerability." This transforms eco-migration policy from a development tool into a source for the reproduction of social stagnation.

Consequently, the research substantiates the necessity for a fundamental policy transformation: a transition from a static administrative compensation model to a dynamic strategy for climate adaptation and integration. A comprehensive reform of eco-migration policy is not merely a narrow issue of social welfare; it is a strategic necessity for the country's sustainable development, the preservation of its agrarian potential, and the insurance of national resilience in the face of climate change.

While our findings provide compelling evidence against simplified urban 'pull factor' explanations for climate migration in Georgia, several questions remain for future inquiry:

- Longitudinal Panel Design: A recommended 36-month panel study tracking 500 at-risk households in high-exposure zones (Samtskhe, Imereti, Ajara) through biennial surveys would establish temporal causality between specific hazard events and migration decisions.

- Comparative Regional Design: A comparative analysis across three climatically distinct regions in Georgia would test whether migration drivers vary by hazard type (rapid-onset vs. slow-onset events). Furthermore, municipalities with differing fiscal capacities could serve as natural experiments to assess policy effectiveness.

- Household-Level Behavioral Models: Beyond structural financial constraints, future research should integrate behavioral economics frameworks to explore loss aversion, hyperbolic discounting, and social norm effects. Discrete choice experiments presenting hypothetical relocation scenarios would reveal the marginal willingness to accept different policy packages.

## 11. Policy Recommendations: Transitioning to a Sustainable Adaptation Model

To eliminate the systemic flaws identified by this research and to align Georgia's eco-migration policy with the Sustainable Development Goals (SDGs), strategic reforms are imperative. These recommendations aim to transition from a restricted administrative management model to a comprehensive system of climate resilience and socio-economic integration.

The primary condition for increasing policy effectiveness is the dynamic indexation of fiscal instruments. The practice of a fixed 30,000 GEL limit must be replaced by a location-based, differentiated voucher system that is continuously adjusted according

to market prices and inflation rates. This change directly addresses SDG Indicator 1.5.1, as adequate funding will allow families to purchase economically viable housing rather than dilapidated or resource-deprived property. Furthermore, a comprehensive agrarian reintegration package should be introduced, ensuring the transfer of a minimum productive asset (at least 0.5-1 ha of land) alongside housing. State programs, such as preferential agricultural credits, should include a specialized component for eco-migrants to mitigate agrarian decapitalization and halt the process of forced urbanization.

To overcome institutional fragmentation, the research recommends governance decentralization and digital coordination. The establishment of a Unified Digital Platform for Eco-migration Management will enable municipalities to manage real-time information regarding available resources and labor markets. Granting fiscal autonomy to municipalities will strengthen the fulfillment of SDG Indicator 13.1.2 and the effectiveness of local disaster risk reduction strategies.

An integral part of this process must be the implementation of a rigorous monitoring and policy learning system. The state should be mandated to evaluate not only the number of purchased houses (Output) but the proportion of families who have successfully escaped poverty (Outcome). A minimum three-year post-resettlement monitoring period will allow policymakers to continuously refine intervention methods based on empirical evidence.

In conclusion, based on the Georgian experience, a fundamental paradigm shift is required: shifting the focus from "physical safety" to "economic reintegration." This necessitates fiscal decentralization and the empowerment of municipalities with the leverage to tailor resettlement packages to the needs of the local labor market and agrarian potential. Only through such a holistic approach can climate migration be transformed into a genuine opportunity for sustainable development.

To translate these findings into actionable strategy, a tiered prioritization of interventions is required. In the immediate term (1–2 years), the primary focus must be on institutional coordination: establishing a digital, cross-departmental monitoring platform to bridge the information gap between central and municipal levels. This requires minimal fiscal outlay but significant political will to overcome bureaucratic silos. In the medium term (3–5 years), structural fiscal reform—specifically the transition from fixed relocation caps to dynamic, market-indexed assistance—is essential. While fiscal constraints are real, the long-term cost of agrarian decapitalization and urban poverty cycles far outweighs the initial budgetary adjustment. Implementing these reforms requires strengthening municipal administrative capacity through targeted technical assistance, ensuring that local authorities are not just recipients of mandates, but active architects of regional resilience.

**Conflicts of interests:** There are no conflicts of interests

## References

AIDPEL. (2025). *Report to the Health and Social Affairs Committee: 2024 Data and Future Plans*. Agency for Internally Displaced Persons, Eco-migrants and Livelihoods. Retrieved April 7, 2026, from https://idp.moh.gov.ge/upload/20250328121249-03.04.2025.pdf

AIDPEL. (2026). *Legal Entities of Public Law (LEPL) - Agency for Internally Displaced Persons, Eco-migrants and Livelihoods*. Retrieved April 7, 2026, from https://idp.moh.gov.ge/index.php?lang=1

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.

Anderson, J. E. (2014). *Public policymaking: An introduction* (8th ed.). Cengage Learning.

Ansell, C., & Gash, A. (2007). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory, 18*(4), 543–571. Retrieved April 7, 2026, From https://doi.org/https://doi.org/10.1093/jopart/mum032

Biermann, F., & Boas, I. (2010). Preparing for a warmer world: Towards a global governance system for climate refugees. *Global Environmental Politics, 10*(1), 60–68. Retrieved April 7, 2026, from https://doi.org/10.1162/glep.2010.10.1.60

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27–40.

CENN. (2013). *Ecomigration in Georgia – Background, gaps, and recommendations*. CENN, Tbilisi. Retrieved April 7, 2026, from http:// w3.cenn.org/wssl/uploads/Eco_migration_Georgia_FINAL_23052014.pdf.

Chumburidze, M., Ghvinadze, N., Gvazava, S., Hosner, R., Wagner, V., & Zurabishvili, T. (2015). *The state of migration in Georgia*. International Centre for Migration Policy Development Vienna. Retrieved April 7, 2026, from https://migration.commission.ge/files/enigmma-state-of-migration_e_version.pdf: International Centre for Migration Policy Development Vienna.

Creswell, J. W. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

Democracy Institute. (2016). *Eco-migrant families displaced by natural disasters: State support and registration procedures*. Retrieved April 7, 2026, from https://iod.ge/files/Documents/ecomigration.pdf: Democracy Institute.

Fetters, M. D., Curry, L. A., & Creswell, J. W. (2013). Achieving integration in mixed methods designs—principles and practices. *Health Services Research, 48*(6), 2134–2156. Retrieved April 7, 2026, from https://doi.org/https://doi.org/10.1111/1475-6773.12117

Field, C. B., Barros, V. R., Dokken, D. J., Mach, K. J., Mastrandrea, M. D., Bilir, T. E., Chatterjee, M., Ebi, K. L., Estrada, Y. O., Genova, R. C., Girma, B., Kissel, E. S., Levy, A. N., MacCracken, S., Mastrandrea, P. R., & White, L. L. (Eds.). (2014). *Climate change 2014: Impacts, adaptation, and vulnerability. Part A: Global and sectoral aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Government of Georgia. (2014, February 13). *Strategy for ensuring access to livelihoods for internally displaced persons (IDPs), families affected by natural disasters and subject to relocation (eco-migrants), and returnee migrants in Georgia* (Decree No. 360). Tbilisi.

Groves, R. M., Fowler, F. J., Jr., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology* (2nd ed.). John Wiley & Sons.

Guetterman, T. C., Fetters, M. D., & Creswell, J. W. (2015). Integrating quantitative and qualitative results in health science mixed methods research through joint displays. *The Annals of Family Medicine, 13*(6). Retrieved April 7, 2026, from https://doi.org/https://doi.org/10.1370/afm.1865

Howlett, M., Ramesh, M., & Perl, A. (2009). *Studying public policy: Policy cycles and policy subsystems* (3rd ed.). Oxford University Press.

Huang, I. B., Keisler, J., & Linkov, I. (2011). Multi-criteria decision analysis in environmental sciences: Ten years of applications and trends. Science of the Total Environment, 409(19), 3578-3594. https://doi.org/10.1016/j.scitotenv.2011.06.022

IOM. (2022). *World Migration Report 2022*. International Organization for Migration.

IPCC. (2022). *Climate change 2022: Impacts, adaptation and vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Lasswell, H. D. (1956). *The decision process: Seven categories of functional analysis*. University of Maryland Press.

Lyle, J. (2012). *Resettlement of ecological migrants in Georgia: Recent developments and trends in policy, implementation, and perceptions* (Working Paper No. 53). European Centre for Minority Issues. Retrieved April 7, 2026, Retrieved April 7, from https://www.ecmi.de/fileadmin/redakteure/publications/pdf.

March, J. G., & Olsen, J. P. (1989). *Rediscovering institutions: The organizational basis of politics*. Free Press.

McAdam, J. (2012). *Climate change, forced migration, and international law*. Oxford University Press.

Ministry of Internally Displaced Persons from the Occupied Territories of Georgia, Labour, Health and Social Affairs. (2013, November 13). *Order No. 779 on the rules for resettlement and the database of families affected by natural disasters and subject to relocation*. Tbilisi.

Ministry of Internally Displaced Persons from the Occupied Territories of Georgia, Labour, Health and Social Affairs. (2026). *Legal Entities of Public Law (LEPL)*. Retrieved April 7, 2026, from https://www.moh.gov.ge

North, D. C. (2012). *Institutions, institutional change and economic performance*. Cambridge University Press.

Oates, W. E. (1999). An essay on fiscal federalism. *Journal of Economic Literature, 37*(3), 1120–1149. Retrieved April 7, 2026, from https://doi.org/https://doi.org/10.1257/jel.37.3.1120

Office of the Public Defender of Georgia. (2013). *Human rights situation of persons affected by and displaced as a result of natural disasters/eco-migrants in Georgia*. Tbilisi.

Ostrom, E. (2005). *Understanding institutional diversity*. Princeton University Press.

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications.

Piguet, E., Pécoud, A., & de Guchteneire, P. (Eds.). (2011). *Migration and climate change*. Cambridge University Press.

Sabatier, P. A. (Ed.). (2007). *Theories of the policy process* (2nd ed.). Westview Press.

Sala, S., Ciuffo, B., & Nijkamp, P. (2015). A systemic framework for sustainability assessment. Ecological Economics, 119, 314-325. https://doi.org/10.1016/j.ecolecon.2015.09.015

Stone, D. (2012). *Policy paradox: The art of political decision making* (3rd ed.). W. W. Norton & Company.

Trier, T., & Turashvili, M. (2007). *Resettlement of ecologically displaced persons: Solutions of a problem or creation of a new? Eco-migration in Georgia 1981-2006* (Monograph No. 6). European Centre for Minority Issues. Retrieved April 7, 2026, from https://www.ecmi.de/fileadmin/redakte.

United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations General Assembly.

United Nations. (2015). *Sustainable Development Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable*. Department of Economic and Social Affairs. Retrieved April 7, 2026, from https://sdgs.un.org/goals/goal11

UNDP. (2021). *Climate change adaptation in the South Caucasus: National and local capacities for disaster risk reduction*. United Nations Development Programme.

UNHCR Georgia. (2022). Operational Data Portal: Refugee and IDP Situations in Georgia.

Varazanashvili, O., Tsereteli, N., & Amiranashvili, A. (2012). Vulnerability, hazards and multiple risk assessment for Georgia. *Natural Hazards, 64*, 2021–2056. Retrieved April 7, 2026, from https://doi.org/10.1007/s11069-012-0374-3

Warner, K., Ehrhart, C., de Sherbinin, A., Adamo, S., & Chai-Onn, T. (2009). In Search of Shelter: Mapping the Effects of Climate Change on Human Migration and Displacement. UNU-EHS, CARE, CIESIN. Retrieved April 15, 2026, from https://unfccc.int/resource/docs/2009/smsn/igo/056.pdf

© 2026 The Authors. Journal Compilation © 2026 European Center of Sustainable Development.