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Aligning Institutions and Industrial Strategy: A Transformation Framework for Georgia's European Future

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Abstract

Georgia's industrial challenge is not the absence of strategies, but the absence of a credible transformation architecture that can convert institutional reform into firm upgrading, export capacity, and durable competitiveness. This paper develops GIPTM-7, a seven-pillar industrial transition framework tailored to a small open economy pursuing Euro-Atlantic integration. Methodologically, it combines a *systematic literature review*, *thematic synthesis*, *Georgia-specific institutional contextual analysis*, and *scenario-based stress testing* to derive and interrogate the model's internal logic. The framework identifies seven mutually reinforcing industrial strength domains: transparent flow and transparent governance and institutions and rule of law; entrepreneurial and private-sector capacity; strategic state policy and industrial finance; knowledge and human capital systems; infrastructure and connectivity; sustainability and industrial resilience; and global integration and EU alignment. Scenario analysis (EU accession acceleration, diversified trade reorientation, stagnation, and institutional-weakness stress tests) demonstrates that progress is non-linear: institutional credibility and execution capacity condition the productivity of patient capital, while private-sector upgrading determines whether integration produces complexity rather than mere trade volume. The paper concludes with sequenced policy implications and an implementation roadmap that prioritize credibility, operational capacity formation, and EU-aligned industrial governance. GIPTM-7 offers a practical, country-grounded

template for organizing industrial policy around interdependent capabilities rather than isolated reforms.

Keywords: Georgia; industrial policy; institutional quality; developmental state; patient capital; SMEs and entrepreneurship; human capital and VET; green industrial transition; EU alignment

1. Introduction

Georgia stands at a historic inflection point where its long-term development aspirations intersect with a rapidly shifting economic and geopolitical landscape. As a small, strategically positioned post-transition economy, Georgia has implemented broad waves of market reforms and governance improvements over the last three decades. Yet these achievements have not translated into a diversified industrial structure or a stable foundation for high-value economic growth. Industrial development remains narrow, fragmented, and heavily exposed to regional uncertainties.

Contemporary research in economic development underscores that sustained industrial transformation in small open economies depends not only on market openness but also on credible institutions, strategic state coordination, and the ability of firms to upgrade within global value chains (Rodrik, 2004; Aiginger & Rodrik, 2020). Georgia's current trajectory reveals a persistent disconnect between institutional reform, private-sector capability, infrastructure development, and long-term strategic direction - a disconnect that limits the country's capacity to generate resilient, innovation-driven growth. Addressing this requires a new conceptual architecture tailored to Georgia's realities rather than imported from generic development frameworks.

Against this backdrop, this paper introduces the Georgia Industrial Policy restructuring Model (GIPTM-7), a holistic seven-pillar conceptual model designed to reflect the country's institutional constraints, economic structure, and European ambitions. GIPTM-7 seeks to unify the foundations of governance, state competence, private-sector strength, human capital, infrastructure, sustainability, and global integration into a coherent system capable of enabling long-horizon industrial development. This model is not merely descriptive - it is a proposed strategic architecture for how Georgia can move from vulnerability to competitiveness.

1.1. Background & Motivation

Georgia's economic reforms since the early 2000s have positioned it as a regional leader in ease of doing business, digital governance, and administrative streamlining. However, as other scholars have argued, institutional efficiency alone is not sufficient to generate structural change or

industrial upgrading (Acemoglu & Robinson, 2012). Georgia's economic base remains dominated by low-productivity sectors, fragmented SMEs, import dependence, and limited technological diversification.

These structural characteristics are not unusual for post-Soviet economies, but Georgia's geopolitical exposure and small domestic market make them especially acute. The motivation for this research arises from the growing recognition that traditional liberalization-based approaches have reached their limits. Georgia requires a deeper, more coherent development architecture - one capable of aligning governance, productive capabilities, and international orientation into a coordinated national strategy.

1.2. Industrial Development Challenges in Georgia

Georgia's industrial constraints extend across several interconnected domains:

- *Institutional fragility*: Gaps in enforcement, anti-corruption mechanisms, and judicial integrity discourage long-term investment and industrial finance.
- *Private-sector limitations*: SMEs remain thinly capitalized, technologically lagging, and weakly connected to supply chains.
- *Skills and human capital gaps*: VET systems, higher education, and research linkages remain insufficient to support advanced industries.
- *Infrastructure bottlenecks*: Energy security concerns, uneven logistics corridors, and digital connectivity gaps reduce competitiveness.
- *Environmental and resilience pressures*: As the EU raises sustainability standards, Georgian industries must adapt or risk exclusion from key markets.
- *Weak integration into global value chains*: Despite openness, Georgia has not achieved deep industrial partnerships or export-led cluster development.

Together these challenges create a systemic constraint: Georgia lacks an integrated industrial development architecture capable of coordinating state action, market actors, and global partners.

1.3. Euro-Atlantic Orientation & Strategic Imperatives

Georgia's constitutionally anchored EU aspiration introduces both obligations and opportunities. EU integration requires not only regulatory convergence but also deeper alignment of industrial structures, sustainability frameworks, human capital systems, and governance standards. Scholars note that EU-oriented transition economies benefit from the "external anchor effect," which accelerates institutional improvements and industrial competitiveness (Estrin & Uvalic, 2016).

However, alignment alone is insufficient. Georgia must proactively design an industrial model that positions it within European value chains, strengthens its resilience to regional economic pressures, and leverages its geographic role in the Middle Corridor. This requires a developmental strategy that blends institutional clarity and its strnegth, private-sector upgrading, and international integration - precisely the logic underpinning the GIPTM-7 framework.

1.4. Research Aim & Significance

The aim of this research is to conceptualize a seven-pillar industrialization model tailored to Georgia's institutional, economic, and geopolitical realities. The significance of this work lies in four dimensions:

1. Novelty: No existing framework integrates institutional transparency, state capability, private-sector capacity, human capital, infrastructure, sustainability, and global integration into a unified architecture for Georgia.
2. Contextualization: The model is specifically designed for a small, post-transition, EU-oriented economy facing governance and geopolitical vulnerabilities.
3. Strategic relevance: The framework offers a foundation for long-term industrial policy aligned with the EU accession logic and regional economic shifts.
4. Policy utility: GIPTM-7 can guide policymakers as a blueprint for sequencing reforms, prioritizing investments, and coordinating institutions.

1.5. Structure of the Paper

The structure of the paper is as follows:

Section 2 reviews the theoretical and comparative literature underlying the seven pillars of GIPTM-7. Section 3 sets out the research gap and problem statement. Section 4 explains the methodology, including thematic synthesis, grounded contextual adaptation, and scenario analysis. Section 5 presents the GIPTM-7 conceptual framework. Section 6 details the seven pillars. Section 7 discusses system dynamics. Section 8 applies scenario-based simulations. Section 9 derives policy implications. Section 10 outlines an implementation roadmap. Section 11 concludes and outlines directions for future research.

2. Literature Review

The literature on industrial policy and structural reform has evolved substantially, moving away from simplistic dichotomies such as "state versus market" toward more integrated frameworks emphasizing institutional

quality, state capacity, private-sector capabilities, infrastructure, and global value-chain positioning. For an economy like Georgia, these strands of scholarship are not merely theoretical - they directly shape the feasibility of long-term industrial development.

2.1. Institutional Quality, Governance & Development

Institutional quality is a foundational determinant of national development. Acemoglu and Robinson (2012) argue that economies prosper when institutions are inclusive - ensuring rule of law, property rights, and checks against elite capture. Their analysis demonstrates that weak institutional enforcement constrains both entrepreneurship and investment, a dynamic directly relevant to Georgia's post-transition environment where judicial independence, anti-corruption mechanisms, and administrative transparency remain uneven.

However, contemporary industrial policy literature emphasizes that institutions must be not only "inclusive" but also *developmentally capable*. Yülek (2018) builds on this perspective, arguing that functioning industrial ecosystems require credible institutions capable of coordinating actors, enforcing standards, and reducing transaction costs. From this standpoint, institutions are not just arbiters of fairness but *architects of industrial strategy* - an especially critical point for economies vulnerable to political shocks.

For Georgia, whose reforms improved administrative efficiency but left deeper governance structures partially reformed, the literature suggests that transparent and enforceable ("transparancy") institutional systems are essential preconditions for industrial upgrading.

2.2. Modern Industrial Policy Theory

A major evolution in the field is the re-emergence of industrial policy as a core component of development strategy. Aiginger and Rodrik (2020) argue that modern industrial policy is transition-oriented, mission-driven, and complementary to market forces rather than substitutive. In their view, contemporary industrial policy focuses on identifying gaps, supporting technological upgrading, and designing institutions that enable continuous learning and feedback.

Rodrik (2004) additionally stresses the concept of *"embedded autonomy"* - the idea that governments must engage closely with firms to diagnose constraints while remaining institutionally independent enough to discipline non-performing sectors.

These ideas align with Yülek's (2020) argument that twenty-first century industrial policy must combine strategic foresight, coordinated

investment, and targeted interventions, especially in economies with shallow financial markets and limited technological capacity.

For Georgia, this literature clarifies that industrial policy cannot rely on horizontal deregulation alone; it must deploy strategic, well-governed, and time-bound interventions aligned with national priorities.

2.3. Developmental State vs. Open Market Approaches

The classical "developmental state" literature - exemplified by Johnson (1982) and Amsden (1989) - shows how strategic state coordination, disciplined bureaucracies, and mission-oriented planning enabled East Asian economies to accelerate change. Conversely, open-market liberal approaches prioritize deregulation, FDI attraction, and price signals.

Over the last decade, research on Central and Eastern Europe highlights the limitations of purely liberal, laissez-faire frameworks: despite integration into the EU, many economies remain locked into low value-added production and foreign-capital dependence (Nölke & Vliegenthart, 2009; Becker et al., 2010).

Georgia followed a similar path - rapid liberalization, reduced state intervention, and emphasis on business climate - but without developing a domestic industrial core or long-term upgrading strategy.

The contrasting literature suggests that a hybrid model is necessary:

- Market openness to ensure flexibility and competition
- State capability to coordinate long-term industrial goals
- Governance systems that prevent capture

This hybrid logic directly informs GIPTM-7.

2.4. Role of Private Sector, Finance & "Patient Capital"

A recurring theme in development literature is that long-term financing is indispensable for industrial transformation. Development banks and public financial institutions have played a central role in industrial upgrading across Europe, Asia, and Latin America (Mazzucato & Penna, 2016).

Yülek (2018) explicitly emphasizes that industrial development requires patient capital - financing structures willing to absorb long gestation periods, technological risk, and uncertain returns. In economies where private banks rely heavily on collateralized lending and avoid industrial risk, the state must create financial instruments that enable upgrading rather than perpetuate short-term, trade-oriented activities.

The private sector's role is also shaped by firm-level capabilities: absorptive capacity, cluster participation, managerial sophistication, and the ability to integrate into supply chains. The literature strongly indicates that

finance and institutional-building must co-evolve; finance without this leads to waste, and that leads to stagnation.

This dual dynamic is a core rationale for establishing both the *Entrepreneurial & Private Sector Capacity* pillar and the *Strategic State Policy & Industrial Finance* pillar.

2.5. Human Capital, Knowledge Systems & Innovation

Human capital is widely recognized as the engine of productivity and industrial sophistication. Finland's long-term shift from resource dependence to high-tech specialization was driven by education reforms, R&D infrastructure, coordinated innovation systems, and public–private technology programs (OECD, 2017; Schienstock, 2004).

Innovation literature emphasizes several mechanisms:

- Continuous upgrading of skills and VET systems
- University–industry linkages
- Research commercialization
- Diaspora knowledge networks
- State-supported technology platforms

Georgia currently faces constraints in all these areas, underscoring the need to treat human capital not merely as a social policy domain but as a strategic industrial asset.

2.6. Infrastructure, Connectivity & Spatial Industrialization

Infrastructure - transport, energy, logistics, and digital networks - shapes the spatial logic of industrialization. Empirical work on Eurasian connectivity shows that without coordinated logistics development, multimodal transport capacity, and interoperable standards, trade corridors remain underutilized (OECD, 2023).

Georgia's potential role in the Middle Corridor requires more than geography; it requires deliberate investments in infrastructure, customs systems, energy security, and regional coordination. The literature on spatial industrialization also emphasizes that industrial clusters do not emerge spontaneously; they require infrastructure that reduces transaction costs and connects firms domestically and internationally. Thus, infrastructure is not a background variable but an active enabler of industrial policy.

2.7. Sustainability, Green Transition & Industrial Resilience

Contemporary industrial policy is inseparable from sustainability. The EU's Green Deal, the Carbon Border Adjustment Mechanism (CBAM), and global climate commitments have shifted competitiveness toward low-carbon production, circular economy models, and energy efficiency (European Commission, 2019; Leipprand & Flachsland, 2018).

For candidate or aspiring EU members like Georgia, convergence with environmental standards is unavoidable. Literature on green transition emphasizes:

- Technology shifts
- Renewable energy prioritization
- Green industrial clusters
- Resilience to climate shocks
- Regulatory harmonization with EU acquis

These support treating sustainability and resilience as a separate pillar within GIPTM-7.

2.8. Small Open Economies: Lessons from Estonia, Lithuania, Finland, Poland

Comparative research on small economies offers nuanced lessons:

- *Estonia*: digital governance and openness accelerated integration, but industrial upgrading lagged - illustrating that liberal reforms alone cannot build productive capacity.
- *Lithuania*: export sophistication increased slowly; industrial diversification remains a challenge without stronger industrial policy instruments (Sabonienė, 2009).
- *Finland*: coordinated innovation systems and targeted industrial capabilities drove technological upgrading.
- *Poland*: EU integration improved competitiveness but exposed vulnerabilities related to foreign capital dependence and uneven regional development.

The shared message:

Successful small economies design coherent, multi-dimensional industrial strategies, not piecemeal reforms.

2.9. Identified Gaps in Theory & Practice

Three principal gaps emerge from the reviewed literature:

1. *No integrated industrial transformation framework exists for Georgia* that simultaneously incorporates institutions, state finance, private-sector capacity, human capital, infrastructure, sustainability, and global integration.
2. *Existing Georgian analyses* describe instruments (e.g., Enterprise Georgia) but do not assemble them into a coordinated model akin to GIPTM-7.
3. *Comparative models* from Estonia, Lithuania, Finland, and Poland offer insights but cannot be directly transplanted due to Georgia's unique governance, geographic, and geopolitical context.

GIPTM-7 is therefore proposed as a *integrated, localized, multi-pillar framework* tailored to Georgia's structural realities and long-term strategic direction.

3. Research Gap & Problem Statement

Despite substantial scholarly work on institutions, industrial policy, innovation systems, and connectivity, the existing literature does not provide a unified conceptual model capable of capturing Georgia's unique development constraints and strategic ambitions. Previous research offers valuable insights, yet these insights remain dispersed across domains - governance, private-sector development, human capital, infrastructure, sustainability, or European integration - without being assembled into a comprehensive framework for structural modernization.

This fragmentation makes it difficult for policymakers to understand how Georgia's multiple vulnerabilities and opportunities interact systemically. The absence of an integrated framework also means that strategies remain largely incremental, sector-specific, or driven by short-term incentives rather than long-horizon industrial capabilities. As a result, Georgia's economic trajectory lacks the coherence observed in successful similar economies, where industrial upgrading has been closely aligned with institutional reform, coordinated investment, and strategy-driven global integration (Aiginger & Rodrik, 2020; Yülek, 2018).

The purpose of this section is to articulate the research gap, formulate the problem statement, and establish the foundational rationale for GIPTM-7 - a systemic industrial development model tailored to the Georgian context.

3.1. Academic Gap: Lack of an Integrated Georgian Model

Existing research on Georgia has examined important dimensions of development, including institutional reform, export performance, SME development, investment climate, and sectoral modernization. However, these issues are typically studied separately rather than as interconnected components of a broader industrial-development strategy. While Georgian and international scholars have discussed governance reforms, industrial-promotion mechanisms, and private-sector constraints, the literature still lacks a coherent framework that brings these elements together within the specific context of Georgia's long-term economic development.

Broader industrial-policy theories-such as embedded autonomy (Rodrik, 2004), patient capital (Mazzucato & Penna, 2016), and innovation ecosystems (Schienstock, 2004)-provide useful conceptual foundations. Yet these approaches cannot be directly applied to Georgia without accounting for the country's post-Soviet institutional legacy, limited domestic market,

geopolitical exposure, EU-oriented regulatory commitments, and ongoing demographic and skills-related challenges.

The academic gap, therefore, is not the absence of relevant theory, but the limited integration of these perspectives into a context-specific framework capable of explaining Georgia's industrial-development needs in a coordinated way.

3.2. Policy Gap: Fragmented National Strategies

Georgia's policy landscape demonstrates strong reformist intent but limited structural coherence. Existing strategies - including competitiveness plans, SME support initiatives, investment promotion schemes, educational reforms, spatial development concepts, and sustainability commitments - operate largely as parallel policy streams rather than components of a unified industrial agenda.

Three structural problems create this policy fragmentation:

1. Lack of institutional coordination across ministries and agencies
   – Policies related to industry, innovation, infrastructure, education, sustainability, and EU alignment are not jointly governed through a coherent mechanism.
2. Absence of long-term industrial prioritization
   – Most strategies focus on improving general business conditions rather than identifying capability-building pathways or targeted industrial domains.
3. Reactive rather than strategic orientation
   – Policy responses often adjust to external shocks or donor-driven priorities rather than emerging from a national industrial vision.

Comparative evidence from Finland, Lithuania, Estonia, and Poland shows that successful small economies synchronize industrial, innovation, and infrastructure policies under a coherent institutional framework. Georgia, however, lacks such horizontal integration, resulting in policy signals that are not mutually reinforcing.

This fragmentation underscores the need for a central framework capable of coordinating actors and aligning long-term objectives.

3.3. Need for a Coherent transition Framework

Given the academic and policy gaps described above, Georgia requires a unifying model that:

- connects institutional integrity with industrial capability-building
- links private-sector development to strategic state finance and patient capital
- treats human capital as an industrial asset, not a social outcome

- aligns infrastructure investments with production and export strategies
- internalizes sustainability and EU convergence as competitive imperatives
- positions Georgia within European and regional value chains

Such a framework must reflect *structural interdependence*, not treat each policy sphere independently. It must also be forward-looking, capable of guiding the country through long-term transitions in technology, energy, sustainability, and geopolitical realignments.

The absence of this coherence creates three risks:

1. *Underinvestment in productive capacity*, reinforcing dependence on imports and low-value services.
2. *Institutional inconsistency*, leading to unpredictable policy outcomes and reduced investor confidence.
3. *Strategic drift*, where EU alignment proceeds administratively but without industrial depth to benefit from integration.

The framework is therefore not optional - it is the essential model for Georgia's next development phase.

3.4. Justification for the GIPTM-7 Model

The GIPTM-7 model is proposed as a response to the academic and policy gaps discussed above. Rather than treating industrial development as a collection of separate reforms, the framework brings together the major areas that shape Georgia's long-term economic direction: institutions, industrial finance, private-sector development, human capital, infrastructure, sustainability, and international integration.

The model draws on established industrial-policy literature, including work on embedded autonomy (Rodrik, 2004), developmental coordination (Johnson, 1982), capability formation (Amsden, 1989), and patient capital (Yülek, 2018; Mazzucato & Penna, 2016). However, these ideas are interpreted through Georgia's own realities rather than applied mechanically from other countries' experiences.

Georgia's economic scale, post-Soviet institutional legacy, geopolitical exposure, demographic pressures, and EU-oriented development path create a different policy environment from the larger economies usually discussed in industrial-policy literature. For this reason, the framework is designed to remain closely connected to Georgia's actual structural conditions and practical constraints.

The model also reflects the growing importance of EU alignment in shaping industrial policy choices. Sustainability standards, regulatory convergence, export requirements, and value-chain integration are no longer

external issues for Georgia; they increasingly influence domestic industrial competitiveness itself.

Overall, GIPTM-7 is intended as a structured framework for thinking about Georgia's industrial development in a more coordinated and long-term way. Its purpose is not to offer a rigid blueprint, but to organize the main institutional, economic, and strategic factors that influence the country's ability to move toward higher productivity and more resilient industrial growth.

4. Methodology

This study does not rely on primary survey data or firm-level microeconometrics. Instead, it is deliberately designed as a conceptual, comparative, and scenario-based study that integrates existing empirical and policy evidence into a localized framework for Georgia. The methodological challenge is therefore to ensure that a non-survey design is still systematic, transparent, and replicable.

To achieve this, the research follows a four-layered approach:

1. A systematic literature review to capture the state of knowledge on institutions, industrial policy, human capital, infrastructure, sustainability, and small open economies.
2. A thematic synthesis to derive and refine the seven pillars of the GIPTM-7 framework from that literature.
3. A grounded-theory–inspired contextualization to adapt these pillars to Georgia's specific institutional and structural context using secondary data and Georgian sources.
4. A scenario-based simulation logic to test how the framework behaves under different plausible futures relevant for Georgia's accession trajectory.

This combination is consistent with methodological guidance that sees conceptual synthesis, when executed systematically, as a legitimate and powerful approach in policy research-especially when the aim is theory-building rather than hypothesis testing (Petticrew & Roberts, 2006; Corbin & Strauss, 2015).

4.1. Research Design (Conceptual + Comparative + Scenario Analysis)

The research design integrates three components:

- *Conceptual*: GIPTM-7 is developed as a conceptual framework that organizes known determinants of industrial transformation into a structured model tailored to Georgia.
- *Comparative*: Evidence from structurally comparable economies (Finland, Estonia, Lithuania, Poland) is used to calibrate what is realistic and what is aspirational for Georgia.

- *Scenario-based*: The model is then qualitatively stress-tested under alternative futures (e.g., accelerated EU integration vs. stalled reform) to examine its robustness.

This design acknowledges that Georgia lacks the long time series and granular industrial data that would be required for sophisticated econometric modeling, but it compensates by drawing deeply on *cross-country evidence and structured theory-building*, in line with the logic of grounded conceptual work in social and economic research (Glaser & Strauss, 1967; Corbin & Strauss, 2015).

4.2. Systematic Literature Review Process

The literature review in Sections 1 and 2 is not a narrative overview; it follows the core logic of systematic reviews as outlined by Petticrew and Roberts (2006): transparent search, explicit inclusion criteria, and structured extraction of key findings.

The process for this study proceeds in four steps:

1. Framing of review questions
    - What institutional, industrial policy, and capability-building arrangements underpin successful structural change in small open economies?
    - How do these arrangements manifest in countries that share some characteristics with Georgia (size, openness, transition history, EU orientation)?
    - What has been written specifically about Georgia's industrial, institutional, and connectivity constraints?
2. Search strategy
    - Scholarly databases: Scopus, Web of Science, major publisher platforms (Springer, Elsevier, Taylor & Francis, OECD, World Bank).
    - Keywords were combined in structured blocks, e.g. *"industrial policy" AND "small open economy"*, *"institutional quality" AND "structural renovation"*, *"Georgia" AND "industrial development"*, etc.
    - Grey literature: OECD, World Bank, EU, and regional policy reports; Georgian think-tank and academic outputs.
3. Inclusion criteria
    - Thematically relevant to at least one of the seven pillars (institutions, state policy/finance, private sector, human capital, infrastructure, sustainability, global integration).
    - Focus on small open or transition economies, **or** specifically on Georgia.

- Peer-reviewed articles, scholarly books, or high-quality institutional reports.
- Published mainly in the last 20–25 years, with seminal earlier works included when foundational (e.g. Johnson, 1982; Amsden, 1989; Glaser & Strauss, 1967).

4. Data extraction
    - For each source, key constructs, mechanisms, and conditions were coded into a structured matrix: institutional requirements, financial structure, industrial instruments, human capital mechanisms, infrastructure logic, sustainability aspects, and integration channels.

This procedure ensures that the conceptual framework is anchored in an explicit and replicable review logic, rather than a selective or anecdotal reading of the literature.

4.3. Thematic Synthesis for Pillar Derivation

To translate a large and heterogeneous literature into a usable framework, the research employs *thematic analysis and synthesis*, in the spirit of Braun and Clarke's (2006) structured approach to identifying patterns across qualitative data.

The synthesis process follows three stages:

1. Initial coding of themes
    - From the extracted matrix, recurring themes were identified (e.g., rule of law, anti-corruption, development banks, SME capability, VET systems, export clusters, green transition, EU regulatory convergence).
    - Each theme was coded with references to specific authors and cases (e.g., Finland's innovation system, Estonia's digital governance, Lithuania's structural change).
2. Clustering into candidate pillars
    - The coded themes were grouped into higher-order clusters that represent "bundles" of capabilities or conditions: institutions, state policy/finance, private sector, human capital, infrastructure, sustainability, and global integration.
    - Competing cluster structures (e.g., fewer or more pillars) were tested conceptually and discarded when they either overlapped excessively or failed to capture critical dimensions of Georgia's context.
3. Refinement of the seven-pillar structure
    - The final seven pillars were selected because they are mutually distinct, collectively exhaustive in covering the

literature, and directly observable in Georgia's policy and economic reality.

- Each pillar can be traced back to specific streams of literature and country experiences (e.g., institutional theory, developmental state literature, innovation policy, green industrial policy, connectivity studies, EU integration research).

This thematic synthesis provides the *analytical justification* for why GIPTM-7 has seven - and not four, five, or nine - pillars.

4.4. Grounded Theory for Contextual Adaptation

While the seven pillars emerge from global and comparative literature, their adaptation to Georgia follows a logic inspired by grounded theory. Glaser and Strauss (1967) and later Corbin and Strauss (2015) emphasize building theory from data through iterative comparison rather than imposing pre-existing categories.

In this study, classical grounded theory is not applied in its full, data-saturated, interview-based form. Instead, the research borrows its *core methodological principles*:

1. Constant comparison
   Literature-derived mechanisms (e.g., the role of a development bank) are compared with Georgia's actual institutions (Partnership Fund, Enterprise Georgia, state budget constraints), leading to adaptation of concepts.
2. Contextual coding
   For each pillar, Georgian-specific characteristics are coded:
   – Institutional legacies from the post-Soviet period
   – Political economy constraints
   – Demographic and skills structure
   – Infrastructure gaps and ongoing projects
   – EU candidacy commitments
3. Iterative refinement
   As Georgian data and documents are examined (strategies, legal acts, program designs), the wording and content of each pillar are adjusted to reflect what is realistically present, what is missing, and what is structurally possible.

In short, global theory provides the scaffold, but grounded-context work turns it into GIPTM-7 for Georgia, not a generic emerging-economy model.

4.5. Scenario-Based Simulation

Given the absence of detailed quantitative models, the study adopts a *scenario-based simulation approach* to explore how GIPTM-7 behaves under alternative futures. This is consistent with the tradition of using scenarios to support strategic thinking under uncertainty, as articulated by Schoemaker (1995).

The scenario component is qualitative-analytical rather than numerical, and proceeds as follows:

1. Identification of critical uncertainties
    - Pace and credibility of EU integration
    - Regional geopolitical stability
    - Access to long-term finance
    - Domestic reform commitment and institutional quality
2. Construction of 2–3 core scenarios
    - *Scenario A: Accelerated Euro-Atlantic Convergence*
    - *Scenario B: Partial Integration and Diversified East–West Balancing*
    - *Scenario C: Stalled Reform and Continued Vulnerability*
3. Mapping GIPTM-7 performance under each scenario
    - For each pillar, the analysis asks:
      – How does this scenario affect the feasibility and sequencing of reforms?
      – Which pillars become binding constraints or leverage points?
      – Where do feedback loops (positive or negative) appear?
4. Policy sensitivity analysis
    - The scenario logic is used to identify "no-regret" reforms (e.g., institutional transparency, human capital) and scenario-dependent strategies (e.g., particular connectivity investments).

This approach does not claim predictive precision; its purpose is to *stress-test the conceptual framework* and translate it into strategic options for policymakers.

4.6. Data Sources & Inclusion Criteria

The empirical and contextual grounding of the study relies entirely on *secondary data and documents*, selected according to clear criteria:

- Academic sources
  – Peer-reviewed articles and scholarly books on industrial policy, institutions, innovation systems, infrastructure, sustainability, and small open economies (as captured in the systematic review).
- International institutional sources

– OECD country and thematic reports (innovation policy, connectivity, Middle Corridor).
– World Bank economic updates, structural diagnostics, and country reports.
– European Commission documents related to the Green Deal, CBAM, enlargement, and sectoral strategies.

- Georgian sources
  – National development strategies, industrial and SME policies, EU association and candidacy documents.
  – Materials from Georgian ministries, Enterprise Georgia, the Partnership Fund, and relevant national agencies.
  – Academic and policy papers by Georgian researchers addressing industrial structure, competitiveness, governance, and connectivity.

Inclusion is determined by relevance to at least one pillar of GIPTM-7 and by sufficient detail to inform contextualization (e.g., institutional design, financial instruments, sectoral outcomes). Sources are cross-checked to minimize reliance on a single narrative or donor frame.

4.7. From Evidence to Findings: Derivation of the Seven Pillars

As explained above, this study combines systematic literature review, thematic synthesis, grounded contextual reasoning, and scenario analysis. The seven pillars of the GIPTM-7 framework emerged through this multi-stage process. The literature review first brought together evidence from peer-reviewed research, European Commission industrial strategies, OECD capability frameworks, World Bank structural diagnostics, and broader industrial-policy scholarship. Across these sources, several recurring themes appeared consistently in discussions of late-industrializing and small open economies: institutional credibility, long-term finance, firm upgrading, skills and technological absorption, infrastructure reliability, sustainability pressures, and integration with advanced markets.

In the second stage, these themes were grouped into broader analytical clusters through thematic comparison. Institutional transparency, regulatory predictability, and enforcement consistency formed a governance-related cluster. Firm productivity, technology adoption, and SME development formed a productive-capacity cluster. Long-term financing constraints and fragmented support mechanisms formed a strategic finance cluster. Similar clustering patterns appeared around human capital, infrastructure and connectivity, sustainability, and global integration.

The third stage involved adapting these clusters to Georgia's political-economic context. This step examined how broader industrial-policy themes interact with Georgia's institutional structure, market limitations, sectoral composition, and EU-oriented commitments. As a result,

the governance cluster evolved into Pillar I: Transparent Institutions & Rule of Law, emphasizing credibility, transparency, and predictability. Financial and coordination-related themes evolved into Pillar III: Strategic State Policy & Industrial Finance, reflecting the importance of long-horizon financing and coordinated industrial support. Integration-related themes developed into Pillar VII: Global Integration & EU Alignment, shaped by Georgia's EU-candidate trajectory, export structure, and geopolitical position. The same contextual logic guided the development of the remaining pillars.

Finally, scenario-based analysis was used to examine how these pillars behave under different political and economic conditions, including accelerated EU integration, diversified trade orientation, reform stagnation, and institutional stress scenarios. The analysis showed that the pillars do not operate independently. Institutional weakness consistently affected finance and private-sector upgrading, while stronger integration pathways increased the returns to human capital, infrastructure, and sustainability reforms. Across all scenarios, long-term finance and institutional credibility remained central drivers of industrial upgrading.

Overall, the derivation process ensured that the seven pillars emerged systematically from both the literature and Georgia's specific structural conditions, rather than from abstract theoretical preference alone.

4.8. Limitations of the Study

This research employs a conceptual and scenario-based design, which naturally carries certain boundaries while still remaining appropriate for the study's aims. Because the paper does not use primary quantitative surveys or econometric estimation, it does not attempt to measure exact elasticities or predict numerical outcomes. Instead, it focuses on identifying structural relationships and dynamics that shape Georgia's industrial trajectory.

The analysis also depends on the availability and quality of existing policy documents, institutional data, and comparative evidence. In areas where Georgian data are incomplete or fragmented, the study interprets conditions through triangulation with regional patterns and established theoretical insights. This approach maintains validity but acknowledges that full empirical precision requires future data improvements.

Finally, scenario-based simulations are inherently qualitative. Their purpose is to stress-test the GIPTM-7 architecture, reveal leverage points, and explore plausible futures-rather than to generate forecasts. Given Georgia's evolving political and geopolitical environment, some elements of the model may require recalibration as new information and institutional developments emerge.

Despite these boundaries, the chosen methodology is well-suited for building a comprehensive, context-specific framework for industrial

upgrade. Its reliance on systematic literature review, thematic synthesis, grounded contextual reasoning, and structured scenario logic aligns with recognized standards for conceptual and policy-oriented research.

5. Conceptual Framework Overview

The GIPTM-7 framework organizes the requirements for Georgia's industrial journey into a structured, interdependent framework. It assumes that long-term economic upgrading in such economies is not produced by isolated reforms but by the *simultaneous strengthening of multiple domains* that interact across political, institutional, economic, and global dimensions. The framework therefore views these changes as a process, not a linear sequence of reforms-a view consistent with contemporary industrial policy scholarship emphasizing coordination failures, institutional credibility, mission-oriented governance, and institutional formation (Aiginger & Rodrik, 2020; Yülek, 2018).

GIPTM-7 operates on the premise that Georgia cannot rely on market forces alone to produce structural change, nor can it depend solely on state-driven mechanisms without the development of private-sector presence, institutional transparency, and international integration. Instead, the model positions itself as the *joint outcome* of seven mutually reinforcing pillars:

1. Glassy Institutions & Rule of Law
2. Entrepreneurial & Private Sector Capacity
3. Strategic State Policy & Industrial Finance
4. Knowledge & Human Capital Systems
5. Infrastructure & Connectivity
6. Sustainability & Industrial Resilience
7. Global Integration & EU Alignment

The purpose of this section is to articulate the conceptual logic behind this model: why seven pillars exist, how they relate to each other, and how they collectively generate modernization pathways.

5.1. Logic Behind the Multi-Pillar Architecture

The seven-pillar is derived from two methodological steps:

(1) thematic synthesis of global and comparative literature, and
(2) grounded adaptation to Georgia's context.

The resulting structure reflects three organizing principles:

(a) Each pillar represents a distinct domain of capability

A pillar is included only if it:

- is empirically shown to influence industrial upgrading in comparable economies;
- corresponds to a domain where Georgia faces a binding constraint;

- is analytically separable from other domains (e.g., institutions ≠ state policy ≠ private sector).

This ensures that the model avoids redundancy. For instance, institutions (pillar 1) focus on rule of law and anti-corruption, whereas state policy and industrial finance (pillar 2) capture intentional state action and patient capital mechanisms-two academically and practically distinct domains.

(b) The pillars collectively exhaust the determinants of transformation

The seven pillars together cover:

- foundational governance conditions,
- directional state capabilities,
- firm-level and entrepreneurial capacity,
- human capital and knowledge formation,
- hard and digital infrastructure,
- sustainability transitions and resilience,
- integration into global and European value chains.

This "collectively exhaustive" design ensures that no critical dimension of Georgia's industrialization roadmap is missing, while avoiding excessive fragmentation.

(c) The model reflects the needs of a small open, transition economy

Georgian specificity shapes the model in three ways:

1. *High institutional sensitivity* - reforms succeed or fail depending on clarity, transparency, and credibility ("transparent institutions").
2. *Dependence on external anchors* - Euro-Atlantic alignment shapes rules, incentives, and long-term industrial positioning.
3. *Capability constraints* - human capital, firm sophistication, and infrastructure gaps represent structural bottlenecks that require coordinated solutions.

Thus, the model is not a generic emerging-economy model; it is calibrated to Georgia's political economy, scale, and development trajectory.

5.2. Interdependence of Internal and External Dimensions

A central idea behind GIPTM-7 is that Georgia's industrial development cannot be understood only through domestic reforms. The country's geography, security environment, energy dependence, trade structure, diaspora networks, and European aspirations all shape its economic direction and policy choices.

This relationship operates through three connected channels.

(1) External pressures shape internal reforms

Georgia's EU-oriented path increases pressure for stronger institutions, judicial credibility, competition standards, and environmental compliance. As a result, many domestic reforms-especially in governance

and industrial finance-are increasingly influenced by external economic and regulatory expectations.

(2) Domestic capabilities shape integration outcomes

At the same time, deeper integration with European and regional markets depends on Georgia's own internal strengths. Firms must be able to upgrade technologically, infrastructure must support efficient logistics, and the workforce must meet changing skill requirements. Without these conditions, international integration produces trade exposure without meaningful industrial upgrading.

(3) Internal and external dynamics reinforce one another

As institutions become more credible, investor confidence tends to improve. Higher-quality investment can strengthen firms, expand productive capacity, and improve Georgia's position within regional value chains. In turn, stronger international integration creates additional pressure for institutional improvement and industrial modernization.

For this reason, the GIPTM-7 framework treats internal reforms and external integration as closely connected processes rather than separate policy areas.

5.3. Transformation Pathway Logic

The pathway embedded in GIPTM-7 is structured around the idea that industrial development progresses through *sequenced upgrading accumulation*, not spontaneous market emergence. The pathway logic draws from classic structuralist and skills' base theories (Amsden, 1989; Johnson, 1982) and is adapted to Georgia's scale, openness, and institutional setting.

The pathway proceeds in four stages:

Stage 1 - Foundational Credibility and Coherence

Industrialization requires:

- transparent and predictable institutions,
- coordinated state strategy,
- basic financial instruments for long-term industrial investment.

Without this foundation, later-stage interventions (cluster development, innovation ecosystems) cannot produce sustained upgrading.

Stage 2 - Capability Formation

Once foundational credibility is established, the focus shifts to enhancing:

- firm-level sophistication,
- entrepreneurial ecosystems,
- skills and human capital,
- applied research and knowledge networks.

These capabilities enable firms to shift from survival to productivity growth.

Stage 3 - Enabling Conditions

Infrastructure and sustainability transitions reinforce strategic formation:

- energy security, digital backbone, and logistics integration reduce transaction costs;
- green industrial adaptation reduces long-term risk exposure and aligns with EU markets.

Here, industrial policy becomes spatial, technological, and environmental simultaneously.

Stage 4 - Diversified Global Integration

With capabilities and enabling conditions in place, Georgia can reposition itself within:

- European value chains,
- regional trade networks,
- logistics corridors,
- partner-specific industrial cooperation frameworks.

In this stage, global integration is not the starting point (as often assumed), but the *outcome* of accumulated capability and systemic coherence.

6. The Seven Pillars of GIPTM-7

The GIPTM-7 framework synthesizes insights from the systematic literature review, thematic clustering of industrial policy determinants, and grounded contextual analysis of Georgia's institutional and economic conditions. While global evidence identifies broad success factors for onward oriented economies, the grounded comparison demonstrates that Georgia's constraints and opportunities align around seven distinct capability domains. These domains form the structural backbone of the proposed upgrading model.

The seven pillars are not independent policy areas. They form a interconnected architecture in which institutional integrity enables patient capital; patient capital conditions private-sector upgrading; upgrading demands human capital and infrastructure; sustainability governs long-term competitiveness; and all are shaped by Georgia's EU integration. What follows is a detailed exposition of each pillar as derived through the methodological logic of this research.

6.1. Pillar I - Glassy Institutions & Rule of Law

Comparative evidence across successful small open economies consistently shows that institutional credibility-predictable regulatory enforcement, anti-corruption safeguards, and transparent administrative behavior-forms the essential substrate for productive investment and industrial deepening (Aiginger & Rodrik, 2020; Acemoglu & Robinson, 2012). Thematic synthesis indicates that countries capable of sustained upgrading share an institutional environment that minimizes uncertainty and builds trust among firms, investors, and society. Grounded contextual

analysis of Georgian governance reforms reveals progress, yet also structural gaps that continue to raise transaction costs and weaken long-horizon economic commitments.

- Transparency architecture
- Anti-corruption systems
- Judicial capacity
- Digital governance

These institutional elements establish Georgia's credibility as a rules-based environment and define the first, foundational pillar of GIPTM-7.

6.2. Pillar II - Entrepreneurial & Private Sector Capacity

Industrial wvolution ultimately materializes through firms, not policy documents. Global research on growth acceleration shows that entrepreneurship, firm sophistication, and value-chain participation are decisive drivers of productivity upgrading. Thematic evidence consistently highlights managerial strengths, innovation adoption, and competitive discipline as the micro-foundations of industrial success. Grounded contextual coding of Georgian enterprise data reveals a business landscape dominated by small, low-capital, low-technology firms that struggle to scale, export, or integrate into higher-value activities.

A critical but often overlooked component of this pillar is *entrepreneurial agency and leadership capacity*-the personal initiative, risk appetite, and adaptive creativity of entrepreneurs themselves. In environments where institutions are still consolidating, entrepreneurial personality traits strongly influence firm growth outcomes. Georgia's industry modernization therefore depends not only on firm structures, but also on recognizing and enabling entrepreneurs as national capability-builders who require predictable regulation, public recognition, and targeted support to navigate uncertainty and pursue innovation.

Core components of this pillar include:

- SMEs, startups, *clusters*
- Firm-level *productivity* & governance
- Access to *finance*
- *Entrepreneurial* agency & leadership capacity
  – recognition of entrepreneurial risk-takers as national assets
  – legitimacy and societal/governmental signaling that rewards value creation
  – capability support for first-generation entrepreneurs operating under institutional uncertainty

Strengthening this pillar ensures that Georgia possesses a private-sector base capable of absorbing policy incentives and translating them into real industrial capabilities.

6.3. Pillar III - Strategic State Policy & Industrial Finance

The international literature on late-industrialization demonstrates that state capability-especially in strategic coordination and patient capital provision-drives successful economic diversification (Amsden, 1989; Johnson, 1982; Yülek, 2018). Thematic synthesis highlights development banks, mission-oriented policy design, and targeted financial instruments as recurrent mechanisms behind structural transition. Grounded contextual review shows that despite Georgia's reform orientation, industrial finance remains shallow, fragmented, and dominated by short-term commercial lending, limiting firms' capacity to invest in technology, upgrading, and export-oriented production.

- Development banks
- Patient capital
- State capability & execution

This pillar provides Georgia with the long-term investment backbone and coordination logic necessary for executing an industrialization agenda.

6.4. Pillar IV - Knowledge & Human Capital Systems

Small economies that succeed globally-Finland, Estonia, Lithuania-invest heavily in knowledge density, not scale (Schienstock, 2004; OECD, 2017). Thematic synthesis identifies VET reform, applied research, and diaspora knowledge networks as drivers of strategic reforms that directly support industrial systems. Grounded analysis of Georgian education and innovation strategies reveals misalignment between skills supply and industrial demand, limited university engagement with production sectors, and chronically low R&D investment.

- VET modernization
- Universities & R&D
- Diaspora knowledge networks

Human capital thus becomes a central scaling mechanism of GIPTM-7: without a competent workforce and applied knowledge base, neither private-sector upgrading nor integration into European markets can occur.

6.5. Pillar V - Infrastructure & Connectivity

Connectivity-energy reliability, transport efficiency, and digital backbone quality-directly conditions a country's industrial potential. Literature on small internationally integrated states and corridor states shows that physical and digital infrastructures determine cost structures, logistics competitiveness, and the spatial logic of production (OECD, 2023; World Bank, 2012). Grounded contextual evaluation indicates that Georgia's infrastructure architecture is improving yet still constrained by energy

vulnerability, uneven digitalization, and logistics gaps that reduce competitiveness and limit integration into value chains.

- Energy security
- Transport & logistics
- Digital backbone

This pillar provides the enabling environment required for productive capacity to grow and integrate into regional and global systems.

6.6. Pillar VI - Sustainability & Industrial Resilience

Global industrial policy now embeds sustainability as a competitiveness criterion rather than a compliance burden. Empirical studies show that green transition, energy diversification, and circular economy practices strengthen long-term industrial resilience, especially in economies targeting EU markets (European Commission, 2019). Thematic synthesis indicates rising environmental standards across value chains, meaning exporters must comply to remain competitive. Grounded analysis of Georgia highlights energy-intensive sectors, exposure to climate risks, and the emerging impact of EU carbon mechanisms.

- Green industrial transition
- Circular economy
- Climate-proofing industries

This pillar ensures that Georgia's industrial base develops in a direction consistent with future European market requirements and global sustainability constraints.

6.7. Pillar VII - Global Integration & EU Alignment

Successful small economies rely on openness, regulatory compatibility, and strategic insertion into global value chains. Thematic review shows that export sophistication, standards convergence, and industrial alliances shape long-term competitiveness. Grounded contextual analysis confirms that Georgia's trajectory is inseparable from its Euro-Atlantic orientation: DCFTA, candidate status, and regional connectivity projects create both obligations and opportunities. To industrialize, Georgia must integrate-not isolate.

- Value-chain insertion
- Export strategy
- EU regulatory convergence
- Industrial alliances

This pillar represents the external architecture through which the benefits of the previous six pillars materialize.

6.8. Pillar Interdependence: The GIPTM-7 System Logic

The seven pillars form an integrated capability system. Their interplay determines whether Georgia advances toward industrial transition or remains locked in a low-complexity economic structure. EU mechanisms such as the Carbon Border Adjustment Mechanism (CBAM) reinforce it by linking environmental compliance directly to export viability, industrial finance, and firm-level upgrading, turning sustainability obligations into cross-pillar transmission channels. The system logic can be summarized as follows:

1. Glassy Institutions & Rule of Law
2. Entrepreneurial & Private Sector Capacity
3. Strategic State Policy & Industrial Finance
4. Knowledge & Human Capital Systems
5. Infrastructure & Connectivity
6. Sustainability & Industrial Resilience
7. Global Integration & EU Alignment

These pillars interact circularly: institutions underpin both state capability and private-sector trust; long-term finance then enables firms to upgrade; and upgrading requires human capital and infrastructure; sustainability conditions long-term competitiveness; and global integration channels these internal capabilities into higher-value economic activity. Industrialization occurs when all seven reach functional strength, allowing the system to reinforce itself rather than dissipate momentum.

7. Interconnected System Dynamics

GIPTM-7 is not a linear checklist of reforms. It is a *dynamic capability system* in which each pillar depends on the others to generate structural modernization. The system behaves like an interconnected architecture: institutions shape state capacity; state capacity enables patient finance; patient finance conditions firm upgrading; firm upgrading requires skills and infrastructure; sustainability governs long-term competitiveness; and integration determines whether these internal capacities translate into real economic gains.

Understanding these dynamics is essential for ensuring that GIPTM-7 functions as a living system rather than as fragmented policy areas.

7.1. How the Pillars Reinforce Each Other

The seven pillars of GIPTM-7 are closely connected and influence one another over time. Improvements in one area often strengthen the effectiveness of the others. Stronger institutions, for example, reduce uncertainty and increase confidence in long-term investment. This creates a

more stable environment for industrial finance, entrepreneurship, and business expansion.

As firms gain better access to finance and operate in a more predictable environment, they become more capable of investing in technology, productivity, and expansion into new markets. This naturally increases demand for skilled labour, stronger vocational training systems, applied research, and closer university–industry cooperation. In turn, improvements in human capital increase the practical value of infrastructure investments such as logistics systems, energy reliability, and digital connectivity.

Sustainability and environmental adaptation also become more important as firms integrate into European and international markets. Compliance with green standards, energy efficiency requirements, and climate-related regulations increasingly shapes long-term competitiveness, especially for export-oriented sectors.

Global integration connects all of these developments together. As domestic institutions, firms, infrastructure, and skills improve, Georgia becomes better positioned to participate in regional trade networks, European value chains, and international industrial partnerships. In this sense, industrial strategic change is not driven by a single reform, but by the gradual interaction of multiple areas moving in the same direction.

7.2. Failure Risks When Pillars Are Missing

Because the GIPTM-7 framework is interconnected, weakness in one pillar can affect the performance of the others. Weak institutions, for example, increase uncertainty and reduce confidence in long-term investment, making industrial-finance programs less effective regardless of policy intentions.

At the same time, limited access to patient capital restricts firms' ability to modernize, adopt technology, or expand production. Even where infrastructure or educational improvements exist, weak private-sector capacity can prevent these investments from producing meaningful industrial outcomes.

Similar problems emerge when education and training systems remain disconnected from industrial needs. Skills mismatches reduce productivity growth and make integration into European value chains more difficult. Infrastructure gaps-especially in logistics, transport, and energy reliability-also raise operational costs and weaken competitiveness.

Sustainability is another increasingly important factor. As EU environmental standards become stricter, failure to adapt production systems may gradually reduce the competitiveness of Georgian exports and increase long-term economic vulnerability.

Finally, without stronger integration into regional and European markets, domestic reforms alone are unlikely to generate large-scale industrial upgrading. In practice, the pillars work best when they develop together rather than separately.

7.3. Georgia's Contextual Pressure Points

Grounded contextual analysis reveals that Georgia faces several *pressure points* that make alignment even more critical. First, institutional credibility remains uneven, which magnifies uncertainty in long-term finance and deters industrial-scale investors. Second, firm capacity is structurally limited - most enterprises remain small, weakly capitalized, and not fully integrated into higher-value activities. Third, patient capital mechanisms are underdeveloped; existing programs are fragmented and insufficient for technology adoption or export diversification.

Fourth, the human capital base does not yet match the sophistication required for European industrial integration, while R&D ecosystems remain shallow. Fifth, infrastructure improvements continue, yet vulnerabilities in energy security and uneven regional connectivity constrain industrial location choices. Sixth, sustainability transitions are emerging but not yet embedded at the scale required to meet European standards. Finally, Georgia's European path creates external obligations that accelerate the timeline for internal reforms - meaning the country has less margin for slow, sequential upgrades and must instead pursue coordinated improvement across all pillars.

Together, these pressure points illustrate why GIPTM-7 must be understood as a systemic development agenda rather than a collection of policy areas. Georgia's development trajectory relies not on isolated progress but on the synchronized strengthening of all seven pillars.

8. Scenario-Based Simulation of GIPTM-7

Scenario-based simulation allows the GIPTM-7 framework to be tested under alternative future conditions that Georgia may plausibly face. Unlike forecasting, scenario modeling does not seek to predict specific outcomes; it evaluates how the system behaves when structural drivers change, and which pillars become binding constraints or strategic accelerators. This approach is widely used in strategic planning for environments characterized by uncertainty, geopolitical exposure, and capability-dependent development pathways (Schoemaker, 1995). It is particularly appropriate for Georgia, where reforms, integration trajectories, and institutional credibility can shift rapidly.

The following scenarios illustrate how the seven pillars interact, strengthen, or fail under different political-economic futures. Each scenario

uses the logic of GIPTM-7 as its analytical engine, revealing pressure points and leverage points that shape Georgia's long-term industrial modernization possibilities.

8.1. EU Accession Scenario

In this scenario, Georgia advances credibly toward full EU alignment. Political commitment remains strong; regulatory approximation deepens; judicial reforms gain traction; and institutional transparency improves. Under these conditions, Pillar I (Glassy Institutions) becomes significantly stronger, immediately lowering uncertainty and increasing investor confidence.

Pillar III (Strategic State Policy & Industrial Finance) gains newfound coherence, since EU accession frameworks require systematic policy coordination, environmental compliance, and industrial alignment with European standards. Access to donor funds, transition mechanisms, and green financing instruments expands the reach of patient capital.

Pillar II (entrepreneurial and Private Sector Capacity) accelerates, as firms integrate into European value chains, adopt higher production standards, and gain predictable export channels. Human capital demand increases rapidly, reinforcing Pillar IV, while infrastructure demands expand, strengthening Pillar V. In every scenario, the impact of industrial finance (Pillar III) is constrained or amplified by the strength of entrepreneurial and private-sector capacity (Pillar II).

Sustainability requirements-under Pillar VI-move from optional to mandatory, particularly with carbon standards and CBAM regulations. Finally, Pillar VII (Global Integration) becomes the main transmission mechanism enabling Georgia to transition from a low-complexity economy to an export-capable industrial system.

Under this scenario, GIPTM-7 produces a self-reinforcing upgrading loop, accelerating revitalization.

8.2. Diversified Trade Scenario

Here, EU alignment continues but more gradually, while Georgia strategically expands economic ties with Central Asia, Türkiye, the Middle Corridor economies, and high-growth regions. Institutional reforms proceed, but not at the accelerated levels required for accession.

Pillar VII (Global Integration) becomes broader rather than deeper: Georgia positions itself as a logistics, energy-transit, and digital hub. This diversification increases resilience and foreign-exchange stability but does not automatically produce industrial upgrading. Whether diversification leads to meaningful upgrading depends heavily on the strength of entrepreneurial and private-sector capacity (Pillar II), which determines

firms' ability to absorb new market requirements, adapt product standards, and compete across multiple regulatory regimes.

Industrial finance under Pillar III becomes critical, since integration into multiple markets requires targeted support for sectors such as agri-tech, light manufacturing, ICT, green logistics, and niche export products. Without patient capital, diversification leads to wider trade flows but not higher complexity.

Human capital (Pillar IV) becomes a differentiating factor: Georgia must match skills to a multi-market orientation rather than a single European standard. Infrastructure (Pillar V) must expand east-west corridors and energy connectors.

Under this scenario, reconfiguration occurs but more slowly and unevenly. Success depends on strategic coherence across pillars rather than on a single strong external anchor.

8.3. Slow Reform / Stagnation Scenario

In this scenario, institutional reforms stall, judicial credibility weakens, or political volatility increases. As a result, Pillar I (Glassy Institutions) deteriorates, which immediately affects investment risk perception and reduces the effectiveness of state policy (Pillar III). Patient capital becomes scarce, development finance instruments lose credibility, and industrial strategy becomes fragmented.

Without functional finance and policy credibility, Pillar II (Entrepreneurial and Private Sector Capacity) stagnates. Firms remain small, risk-averse, and undercapitalized. Productivity gains plateau; technological adoption slows; clustering fails to materialize.

Limited human capital reform under Pillar IV means skills shortages persists, universities remain weakly linked to industry, and R&D investment remains minimal. Pillar V improvements become costly and underutilized because firms cannot absorb infrastructure upgrades.

Sustainability (Pillar VI) becomes an external pressure rather than a competitive advantage, pushing Georgian producers toward non-EU markets and reducing long-term competitiveness.

In this scenario, Pillar VII (Global Integration) weakens: European pathways narrow, and Georgia risks drifting into low-value trade patterns dominated by raw materials and basic services.

GIPTM-7 in this case reveals a negative feedback loop in which weak institutions and stalled reforms trigger stagnation.

8.4. Stress-Testing Institutional Weakness

This scenario isolates the system impact of a decline in Pillar I (Glassy Institutions) while all other pillars remain theoretically functional.

The simulation tests how dependent GIPTM-7 is on credible, transparent governance.

A drop in institutional predictability immediately undermines the credibility of industrial finance and development banking. Even if financial instruments exist, firms hesitate to invest because risk becomes unpriceable. Pillar III collapses in functionality.

Private-sector upgrading (Pillar II) stalls as firms lose confidence in property rights, contract enforcement, and regulatory fairness. Human capital reforms (Pillar IV) become ineffective because skilled labour prefers migration, reducing the domestic talent base.

Infrastructure investments (Pillar V) slow or become inefficient due to procurement risks and political interference. Sustainability mechanisms (Pillar VI) lose credibility as environmental enforcement becomes inconsistent.

Finally, global integration under Pillar VII weakens because international partners rely on predictable legal and regulatory frameworks.

This stress-test shows that Pillar I is the keystone of the entire architecture: without institutional clarity, every other pillar loses operational value.

8.5. Strategic Sensitivity Analysis

The final simulation examines which pillars exert the greatest influence as system-wide when altered. The analysis reveals three sensitivity clusters:

High-sensitivity pillars:

Institutional credibility (Pillar I), industrial finance (Pillar III), and global integration (Pillar VII).

These determine whether upgrading can occur at all.

Medium-sensitivity pillars:

Private-sector capacity (Pillar II) and human capital (Pillar IV). These determine the *depth* and *speed* of repositioning.

Low-sensitivity-but long-term decisive-pillars:

Infrastructure (Pillar V) and sustainability (Pillar VI). These determine the system's *durability*, *resilience*, and *adaptability*.

The combined result is that GIPTM-7 is not evenly balanced: some pillars function as immediate triggers, others as amplifiers, and others as stabilizers. Georgia's reform strategy must therefore prioritize keystone pillars without neglecting long-cycle capability builders.

Across all scenarios, the same transition sequence appeared: institutional credibility must stabilize before new formation becomes viable; these formation must precede enabling-condition investments; and only after these stages can stable integration progress. This recurrence reinforces the four-stage transformation logic outlined in Section 5.3.

9. Policy Implications

The findings derived through the GIPTM-7 framework reveal that Georgia's industrial reorientation hinges not on incremental policy adjustments but on *strategic interventions at capability bottlenecks*-areas where institutional fragility, financing gaps, and structural vulnerabilities repeatedly undermine long-term development. These policy implications do not operate in isolation; they represent sequenced, mutually reinforcing actions that reflect Georgia's geopolitical commitments, economic structure, and regulatory obligations under its European trajectory. Each recommendation is grounded in the study's systematic literature review, thematic synthesis, and contextual analysis, ensuring that proposals emerge organically from the model rather than from normative preferences.

9.1. Short-Term Reforms (0–2 years): Removing Immediate institutional Blockages

Short-term reforms must target high-friction institutional and financial choke points that currently prevent Georgia from absorbing more advanced industrial policy instruments. These actions create the minimum functional environment for the later phases of the change.

1. Institutional Clarity in High-Impact Domains

Rather than attempting broad administrative reform, Georgia must focus on *five institutional friction points* that repeatedly disrupt industrial decisions: commercial court enforcement delays, inconsistent procurement procedures for infrastructure, unpredictable customs treatment, opaque licensing for manufacturing, and fragmented land-title security in peri-urban industrial zones. Addressing these with legally binding service standards and EU-compatible audit trails can instantly reduce uncertainty and operational risk. These instruments must directly strengthen the entrepreneurial and private-sector capacity described in Pillar II.

Georgia must explicitly recognize entrepreneurship as a form of national leadership, and integrate entrepreneurial personality development into VET-university linkages, cluster governance, and early-stage incentive structures

2. Creation of a Ring-Fenced Industrial Finance Window

A new development bank is politically and administratively costly. A more realistic approach is to establish a *ring-fenced industrial finance window* within an existing institution (e.g., the Partnership Fund or a regulated commercial consortium), governed by external auditors and equipped with a transparent pipeline-selection mechanism. This window should prioritize patient capital for:

- Renewable energy component assembly
- Agri-tech and food-processing modernization

- Light manufacturing and component upgrading
- Logistics-tech and digital corridor solutions

This provides immediate financing credibility without institutional overreach.

3. Skills-to-Industry Alignment Obligations

Georgia's industrial transformation cannot rely solely on technical training; it must begin with cultivating an *entrepreneurial mindset* across the education and training system. Early-stage entrepreneurs require practical exposure to risk-taking, problem-solving, value creation, and market testing-competencies rarely embedded in traditional curricula. Universities and VET centers should incorporate entrepreneurship modules, innovation studios, and incentive structures that legitimize entrepreneurial careers and reward initiative. This is essential in a society where entrepreneurial leadership has historically received limited formal recognition.

Building on this cultural and behavioral foundation, Georgia must also ensure *technical skills align with real industrial demand.* A regulatory requirement for annual *Industrial Relevance Dashboards*-published by universities and VET centers-would publicly show which programs correspond to employer needs, creating both market pressure and evidence-based planning.

In parallel, VET curricula should be restructured to match the sectoral priorities identified in the *Entrepreneurial & Private Sector Capacity* and *Strategic State Policy & Industrial Finance* pillars. This ensures that short-cycle programs produce graduates with the operational, technical, and managerial capabilities required for early-stage upgrading and firm-level productivity growth.

4. Fast-Track Licensing for Industrial Zones

Investors repeatedly cite uncertainty in timelines, not costs, as their primary barrier. A *30-day maximum, digitally tracked, single-window licensing process* for industrial areas surrounding Poti, Anaklia, Rustavi, Kutaisi, and Tbilisi Airport would directly address this problem.

5. Immediate Stabilization of Energy Reliability

Industrial investors assess hourly grid stability, not annual averages. Short-term improvements must prioritize:

- reinforced transmission lines for industrial corridors
- bilateral import agreements to smooth seasonal fluctuations
- emergency redundancy for key logistics nodes

These steps signal operational reliability before large-scale energy reforms mature.

9.2. Medium-Term Industrial Pathways (2–7 years): Building Competitive Capabilities

Medium-term actions should move Georgia from a transactional, service-heavy economy toward a *productive-capability ecosystem* anchored in realistic competitive strengths and strategic integration points.

1. Development of Feasible Anchor Sectors

Georgia cannot compete in scale-intensive heavy industries, but it can build strength in agile, high-value, small-footprint production systems, including:

- entrepreneurship education, culture and social recognition requirements
- renewable-energy equipment assembly
- smart logistics and supply-chain technologies
- high-standard food processing and cold-chain exports
- specialized medical devices and diagnostic tools
- digital-business services and ICT-based industrial solutions

These sectors align with Georgia's geography, human capital trajectory, and EU regulatory pathway.

2. Cluster Formation Around Existing Logistics Hubs

Industrial clusters must be tied to real connectivity nodes. Poti–Anaklia should become a green logistics and processing hub, linking maritime services, cold-chain systems, and nearshore processing. Tbilisi Airport's surroundings can anchor high-value modular manufacturing, while Kutaisi's industrial belt can house mid-tech regional service industries.

3. Dual Financing Tracks: Scaling and Stabilizing

Georgia's economic structure requires two parallel financing strategies:

- *Scaling winners* in export-ready sectors to accelerate complexity gains
- *Stabilizing strategic laggards* such as energy storage, grain processing, and domestic transport services to prevent systemic vulnerabilities

This duality prevents uneven development and reduces external dependency shocks.

4. Structured Diaspora Industrial Engagement

Diaspora engagement must shift from cultural promotion to *sector-specific industrial missions* with measurable outputs:

- technology scouting from EU firms
- joint ventures facilitated by diaspora specialists
- diaspora-led co-financing of Georgian startups entering EU markets

Diaspora technical networks must be institutionalized as structured pipelines, especially for sectors targeted for upgrading. This reframes the diaspora as a multiplier.

5. Establishment of Micro-R&D Centers

Rather than building expensive national laboratories, Georgia should establish *focused micro-R&D centers* aligned with priority sectors-food safety, materials testing, water engineering, energy optimization, AI for logistics. Smaller units reduce bureaucracy, accelerate relevance, and build absorptive capacity inside firms.

9.3. Long-Term EU-Aligned Transformation (7–15 years): Consolidating Georgia as an Industrial State

Long-term transformation requires embedding GIPTM-7 into the institutional, regulatory, and capability structures that characterize advanced European industrial economies. Achieving this also depends on building durable diaspora engagement mechanisms that link Georgian firms with EU innovation platforms and industrial ecosystems.

1. Full Industrial Compliance with EU Standards

Georgia must anticipate not only existing EU regulatory frameworks but also evolving standards in areas such as circularity, traceability, digital product passports, and clean-energy obligations. This depends on *institutional endurance*, not merely legislative alignment.

2. CBAM Readiness for Export Survival

CBAM will redefine competitiveness. Georgia must map the carbon intensity of all export sectors and create sector-specific decarbonization pathways with targeted subsidies and technological support for SMEs.

3. Digital and Green Transformation of the Middle Corridor

Georgia's long-term competitiveness depends on becoming a *technology-enabled corridor state*, not merely a transit location. Customs digitalization, blockchain traceability for goods, AI-based port scheduling, and green-corridor certification systems are essential.

4. Embedding Industrial-Finance Intelligence in the State

The state must develop permanent capabilities-industrial risk assessment units, sectoral intelligence teams, and performance-monitoring offices-to meet EU expectations for evidence-based industrial governance.

5. Positioning Georgia as a Regional Green-Energy Node

Through the Black Sea electricity cable, hydrogen readiness, and regional balancing capabilities, Georgia can transition from a transit country to a *strategic energy intermediary*, increasing geopolitical resilience and industrial attractiveness.

9.4. Risks & Mitigation Strategies

1. Reform Discontinuity

Mitigation: Legally anchor GIPTM-7 as a cross-administration strategy with parliamentary oversight and multi-party consensus mechanisms.

2. Policy Capture by Economic Elites

Mitigation: Enforce transparent procurement, strict anti-corruption vetting for industrial finance recipients, and independent audits of development funds.

3. Persistent Skills Mismatch

Mitigation: Tie public funding of education institutions to measurable employment outcomes in strategic sectors.

4. Infrastructure Misalignment

Mitigation: Sequence infrastructure investment based on firm-level demand and cluster formation-not political cycles.

5. EU Alignment Fatigue

Mitigation: Ensure visible industrial wins every 18–24 months to maintain political, social, and investor momentum.

10. Roadmap for Implementation

The implementation roadmap follows the same four-stage transformation logic outlined in Section 5.3: Georgia must first establish credibility (Stages 1–2), then build capabilities (Stage 3), and finally institutionalize EU-aligned industrial governance (Stage 4). Each phase of the roadmap therefore represents a system-wide shift rather than a collection of isolated reforms.

10.1. Phase I - Institutional Anchoring (Years 1–2)

This phase establishes the minimum enabling conditions needed for industrial finance, private-sector upgrading, and cluster development.

- Establish an EU-trained Commercial Court Division with binding timelines for industrial disputes.
- Launch a ring-fenced Industrial Finance Window with transparent project-selection criteria and external audits.
- Deploy the Fast-Track Licensing Regime for industrial zones surrounding Poti, Anaklia, Rustavi, Kutaisi, and Tbilisi Airport.
- Implement emergency grid-stabilization measures and cross-border electricity balancing agreements.
- Mandate annual Skills–Industry Alignment Dashboards for all universities and VET centers.

Outcome: Georgia becomes *credible* in the eyes of investors, development partners, and domestic firms.

10.2. Phase II - Capability Expansion (Years 2–7)

This phase builds the productive and knowledge capabilities required for structural transformation.

- Establish five to seven sector-specific micro-R&D centers co-located with industrial partners.
- Develop three priority industrial clusters tied directly to existing logistics hubs.
- Introduce differentiated financial instruments for scaling competitive firms and stabilizing essential sectors.
- Build sectoral talent pipelines in logistics engineering, agritech, green construction materials, and digital business services.
- Implement a national green-corridor certification system linking customs, logistics firms, and exporters.

Outcome: Georgia transitions from a low-complexity service economy into a *upgraded-driven industrial ecosystem*.

10.3. Phase III - EU-Ready Industrial State (Years 7–15)

This final phase embeds advanced institutional and industrial capacities consistent with EU member-state expectations.

- Implement sector-specific decarbonization plans aligned with CBAM and EU Green Deal standards.
- Digitize customs, ports, and corridor operations using AI and blockchain-based traceability systems.
- Integrate Georgian clusters into EU supply chains through bilateral industrial alliances and innovation partnerships.
- Establish a sovereign Industrial Intelligence Agency for monitoring global technological and market trends.
- Professionalize industrial governance through EU-standard performance evaluation, risk assessment, and mission-driven policy units.

Outcome: Georgia becomes a trusted, resilient, *export-oriented, EU-aligned industrial state*, capable of sustained transformation.

Conclusion

Georgia stands at an important moment in its economic development. The country has made visible progress in governance reforms, international integration, and market liberalization over the last decades, yet many structural weaknesses still limit the development of a stronger and more diversified industrial base. This study introduced the GIPTM-7 framework as an attempt to bring these interconnected challenges into a single context-specific model shaped around Georgia's institutional realities, economic structure, and European aspirations.

Using systematic literature review, thematic synthesis, grounded contextual analysis, and scenario-based reasoning, the research identified seven closely connected areas that shape Georgia's long-term industrial development: institutions, industrial finance, private-sector capacity, human capital, infrastructure, sustainability, and international integration. The findings suggest that Georgia's future competitiveness will depend less on isolated reforms and more on whether these areas evolve together in a coordinated and credible way.

The study also shows that industrial development in Georgia cannot be understood only through economic indicators or sectoral policies. Institutional trust, long-term financing, administrative consistency, educational alignment, logistics reliability, and export integration all influence one another over time. Progress in one area often depends on progress in another. For this reason, fragmented or short-term approaches are unlikely to produce durable industrial upgrading.

Scenario analysis further highlighted how different political and economic conditions can reshape development outcomes. Across all scenarios, institutional credibility and long-term strategic coordination remained central factors. Where institutions weakened, industrial finance, private-sector confidence, and integration capacity also weakened. Where governance improved and integration deepened, the returns to infrastructure, skills, and productive investment became significantly stronger.

Summary of Contributions

This research contributes to the broader discussion on industrial policy in small open and late-developing economies in several ways. First, it presents the GIPTM-7 framework as an integrated structure that brings together institutional, financial, productive, human-capital, infrastructural, sustainability, and integration-related dimensions within a single analytical model. Second, it approaches industrial development not simply as a sectoral issue, but as a long-term coordination challenge involving the state, firms, financial systems, and knowledge institutions. Third, the study combines conceptual analysis with scenario-based reasoning to examine how industrial policy may function under uncertainty, geopolitical pressure, and uneven institutional conditions. Finally, the paper provides a Georgia-specific interpretation of these issues rather than relying entirely on generalized industrial-policy models developed for larger economies.

Why Georgia Needs a 7-Pillar Model

Georgia's economic challenges are interconnected. Weak industrial depth, external dependency, infrastructure limitations, energy vulnerability, demographic pressures, and exposure to regional instability cannot be solved

through isolated reforms alone. The purpose of the GIPTM-7 model is therefore to show how these issues interact and why long-term industrial development depends on coordination across multiple areas at the same time. The framework also reflects the growing importance of Georgia's European integration path. EU-related standards, sustainability requirements, financing structures, and competitiveness pressures increasingly shape domestic economic decisions. In practice, industrial policy and European integration are no longer separate discussions for Georgia; they are becoming part of the same strategic process.

Unique Role of State Architecture

The findings of this study suggest that the state plays a particularly important role in smaller late-developing economies. In Georgia's case, industrial progress depends not only on market openness, but also on the ability of public institutions to provide credibility, policy continuity, long-term coordination, and strategic direction.

This does not necessarily require a larger state. It requires a more capable and predictable one. Transparent institutions, better coordination across agencies, targeted industrial finance, and clearer long-term priorities are especially important in economies exposed to external shocks and limited domestic scale. Without this level of institutional coherence, many industrial reforms remain fragmented or temporary.

Suggestions for Future Research

Future research can expand the GIPTM-7 framework in several directions. One area is empirical testing through sectoral case studies, firm-level evidence, or comparative studies involving other countries undergoing EU-oriented economic restructuring. Another direction involves deeper modeling approaches such as system-dynamics analysis or input–output modeling to better examine how the seven pillars interact over time.

Additional research may also explore how geopolitical developments, regional trade corridors, technological shifts, and sustainability pressures influence Georgia's industrial options in the coming decades.

Interdisciplinary work connecting industrial policy, political economy, innovation systems, and public administration would further strengthen understanding of how long-term institutional capability can be developed under conditions of uncertainty and external dependency.

Closing Reflection

Georgia's industrial future will depend not only on reforms themselves, but on whether those reforms are coordinated, sustained, and aligned with the country's long-term priorities. The country already

possesses several important foundations, including strategic geography, reform experience, growing international integration, and significant human potential. The challenge now is to connect these advantages more effectively through institutions that are credible, consistent, and capable of supporting long-term economic development.

Industrial development is ultimately more than an economic process. For countries like Georgia, it is closely tied to state capacity, social stability, technological relevance, and national resilience. Whether Georgia succeeds in building a stronger and more competitive industrial economy will depend on the quality of the choices, coordination, and institutional discipline developed in the years ahead.

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