

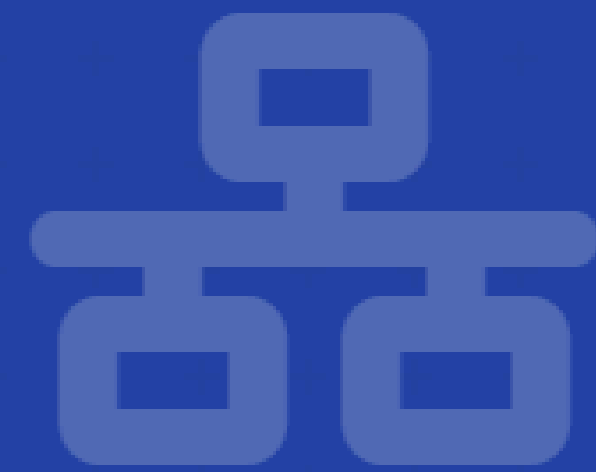
# Digital Logistics in Armenia

Opportunities for Regional Integration and  
Growth

## AUTHORED BY

👤 Tatul M. Mkrtchyan  
👤 Manuk E. Movsisyan  
👤 Tatevik G. Vardanyan

👤 Liliana Staver  
👤 Lusine V. Karapetyan



A | S | U | E

OPPORTUNITY. EXPERIENCE. OPPORTUNITY.

## The Digital Shift

### Logistics 4.0

Digitalization is fundamentally transforming global logistics systems, moving from traditional transport management to integrated "Smart Logistics" ecosystems.

#### KEY TECHNOLOGIES DRIVING CHANGE



#### Artificial Intelligence

Predictive analytics & optimization



#### Internet of Things (IoT)

Real-time tracking & monitoring



#### Blockchain

Transparency & secure documentation

## Strategic Impact

### Why Digitalization is Critical:

- ✓ **Trade Facilitation:** Streamlining customs procedures and reducing border delays through paperless systems.
- ✓ **Supply Chain Efficiency:** Optimizing routes and inventory management to lower operational costs.
- ✓ **Economic Competitiveness:** Enhancing connectivity to global markets despite geographical barriers.
- ✓ **Sustainability:** Enabling greener logistics through optimized loads and reduced empty miles.

#### Core Insight

“Logistics is no longer just about transport — it has evolved into a complex, data-driven ecosystem.”



Data



Process



Growth

PRIMARY RESEARCH QUESTION

# Can digital logistics effectively overcome Armenia's structural and geographical constraints?

Investigating the potential of digital transformation to mitigate landlocked challenges and enhance regional connectivity.

## Research Objectives



### Analyze Digital Impact

Evaluate how digital transformation reshapes Armenia's logistics sector performance and efficiency.



### Explore Integration

Assess opportunities for deeper regional integration within EAEU and global markets.



### Identify Growth Potential

Determine how logistics digitalization drives broader economic growth and sustainability.

RESEARCH SCOPE

Infrastructure

Policy

Technology

## Mixed-Methods Approach

### CONTEXTUAL



### Qualitative Analysis

In-depth examination of the regulatory environment, strategic documents, and expert perspectives to understand the "why" and "how" of logistics transformation.

#### KEY SOURCES

- Policy Documents
- Academic Literature
- Expert Interviews
- Legal Frameworks

### STATISTICAL



### Quantitative Analysis

Data-driven assessment of performance metrics, trade flows, and infrastructure capacity to measure current status and impact.

#### KEY DATA SOURCES

- Statistical Committee of RA
- World Bank LPI
- EAEU Reports
- Trade Data



### Comparative Analysis

Benchmarking & Trends

### Regional

Armenia vs. EAEU / Neighbors

### Global

International Best Practices

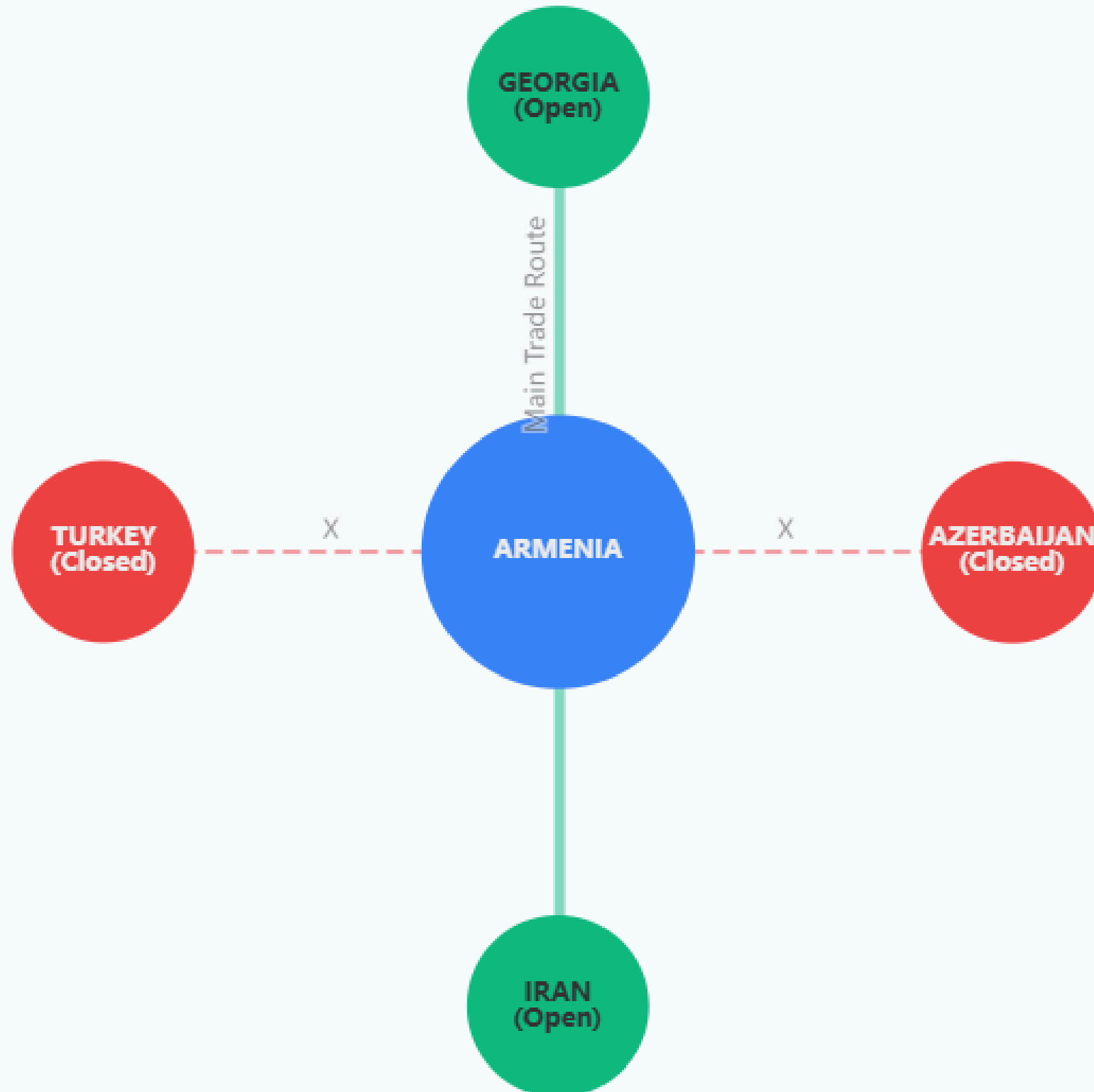
### Temporal

Trend Analysis Over Time

## Regional Connectivity Map

🔒 LANDLOCKED

Border Access Status



# 17.1%

OPERATIONAL BORDERS

Only ~300km of 1,570km total border length is open for trade

### ⚠️ Key Vulnerabilities

- 💰 High Transport Costs**  
Logistics expenses significantly higher than regional average, especially for Black Sea access.
- 🏗️ Limited Infrastructure**  
Heavy reliance on road transport; aging rail network and limited air cargo capacity.
- 📉 Small Domestic Market**  
Lack of scale economies makes efficiency improvements challenging without export focus.

### 🗣️ Strategic Perspective

"Geography is Armenia's constraint — digitalization is its opportunity. Virtual connectivity can transcend physical barriers."

- 🇦🇲 Armenia
- 🟢 Open Borders (Georgia/Iran)
- 🔴 Closed Borders

## GLOBAL RANKING (2023)



LPI Score  
**2.5**

Change  
**-0.11**

### 🚩 Weakest Dimensions

- Infrastructure Quality
- International Shipments
- Logistics Competence
- Tracking & Timeliness

### ✅ Positive Note

Customs efficiency remains relatively stable due to ongoing simplification at Georgia border crossings.

## EAEU Comparative Performance

**CRITICAL GAP**

Score out of 5.0



### INTL. FREIGHT QUALITY

**2.2**

Lowest in EAEU



### CARGO MONITORING

**2.3**

Critical Issue



## 2023 Performance

YoY Change



↑ 8.7%

### Road Freight

Dominant mode continues to grow, handling majority of cargo volume.



↑ >45%

### Air Freight

Massive surge (~2.3x) driven by high-value exports & imports.



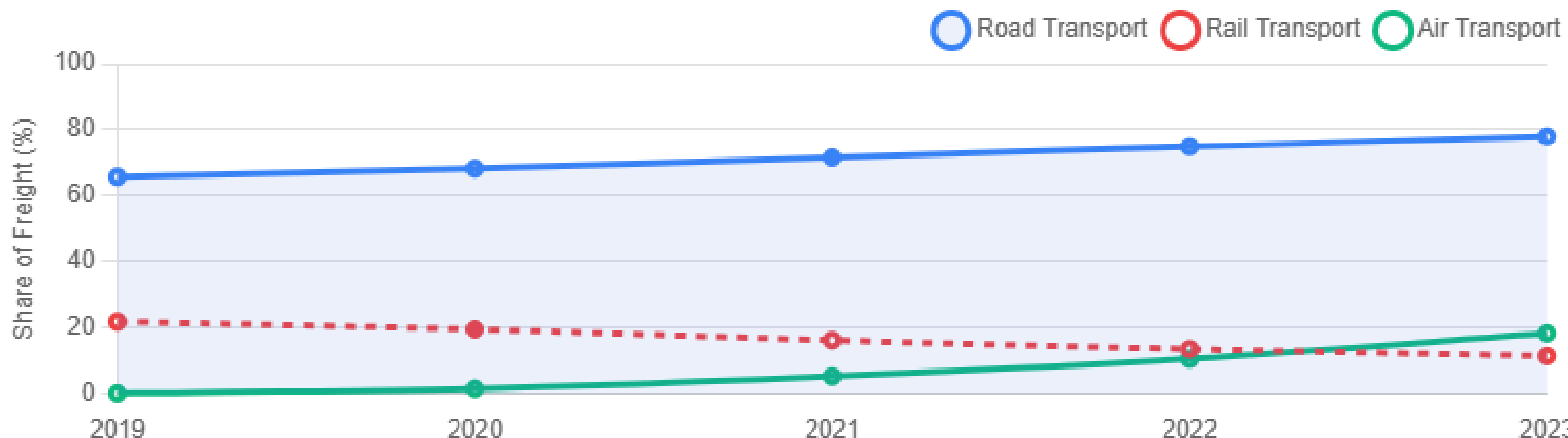
↓ 42.1%

### Rail Freight

Sharp decline due to reduced transit & export shipments.

## Modal Share Evolution (2019-2023)

Shift to Road



## Trade Imbalance (2022)



## Infrastructure Network

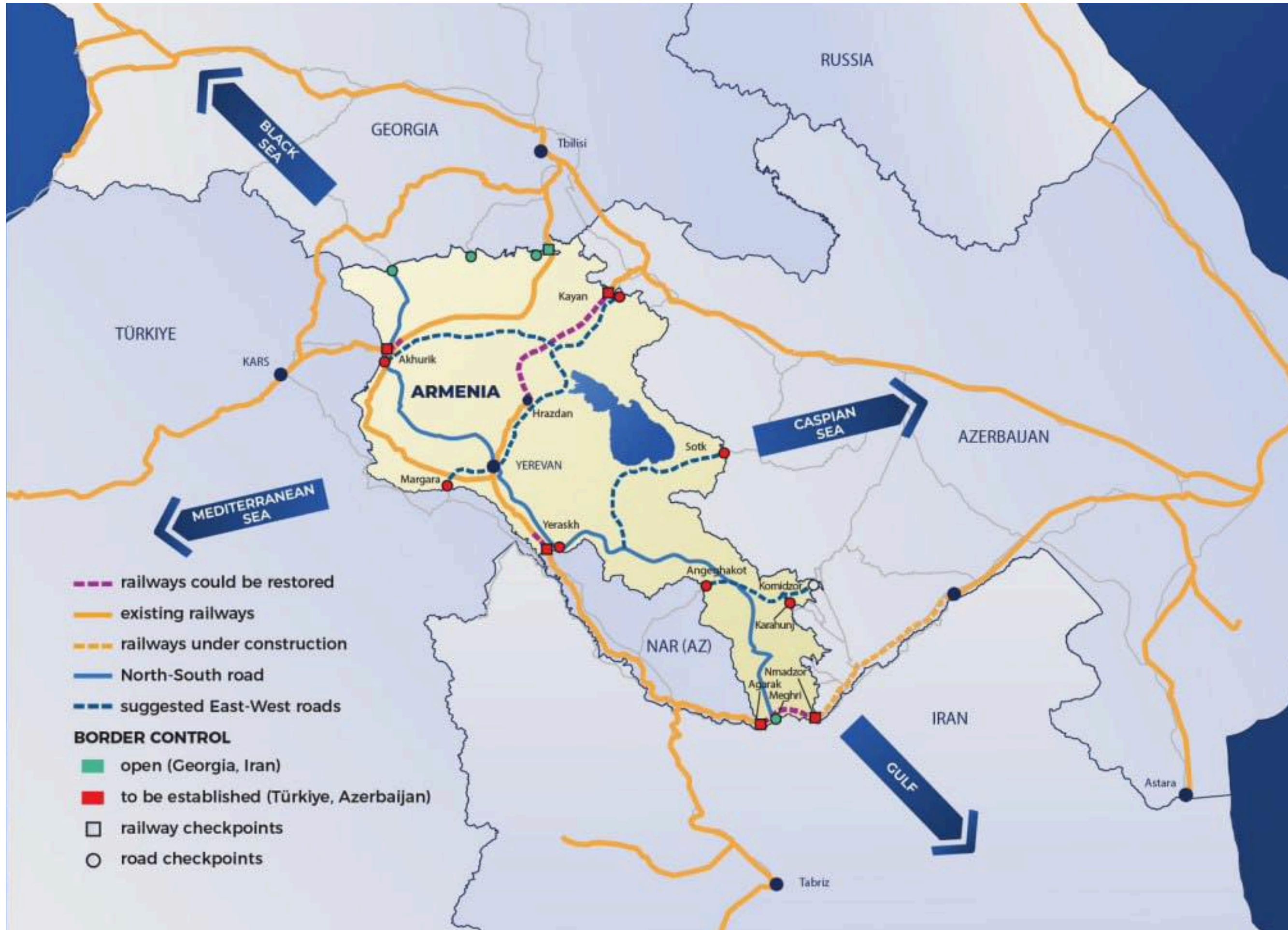


4  
Road Checkpoints

1  
Rail Checkpoint

**Critical Issue**  
Severe lack of multimodal balance. Heavy reliance on

# "Crossroads of Peace" project



## Logistics 4.0

The integration of cyber-physical systems, decentralized decision-making, and advanced data analytics.

SMART

CONNECTED

AUTONOMOUS



### GIS & Mapping

Route optimization, spatial analysis for infrastructure planning, and real-time asset tracking on digital maps.



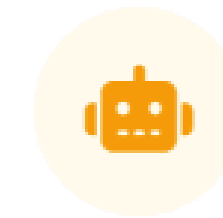
### Big Data Analytics

Predictive modeling for demand forecasting, supply chain visibility, and identification of bottlenecks.



### Smart Platforms

Centralized management systems (Single Window), cloud-based collaboration, and API integration.



### Automation

Robotic Process Automation (RPA) for documentation, automated warehousing, and IoT sensors.

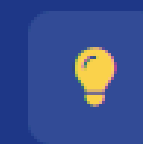
Strategic  
Impact



OPERATIONAL  
Cost Reduction



PROCESS  
Automation



EFFICIENT  
Decision Making

## INSPECTION RATE REDUCTION

# 4.98%

↓ From -20%

Dramatic decrease in physical inspections (Q3 2024)

Clearance Time

## 66 min

Down from 90 minutes average

Improvement

## -26%

### Key Implementations

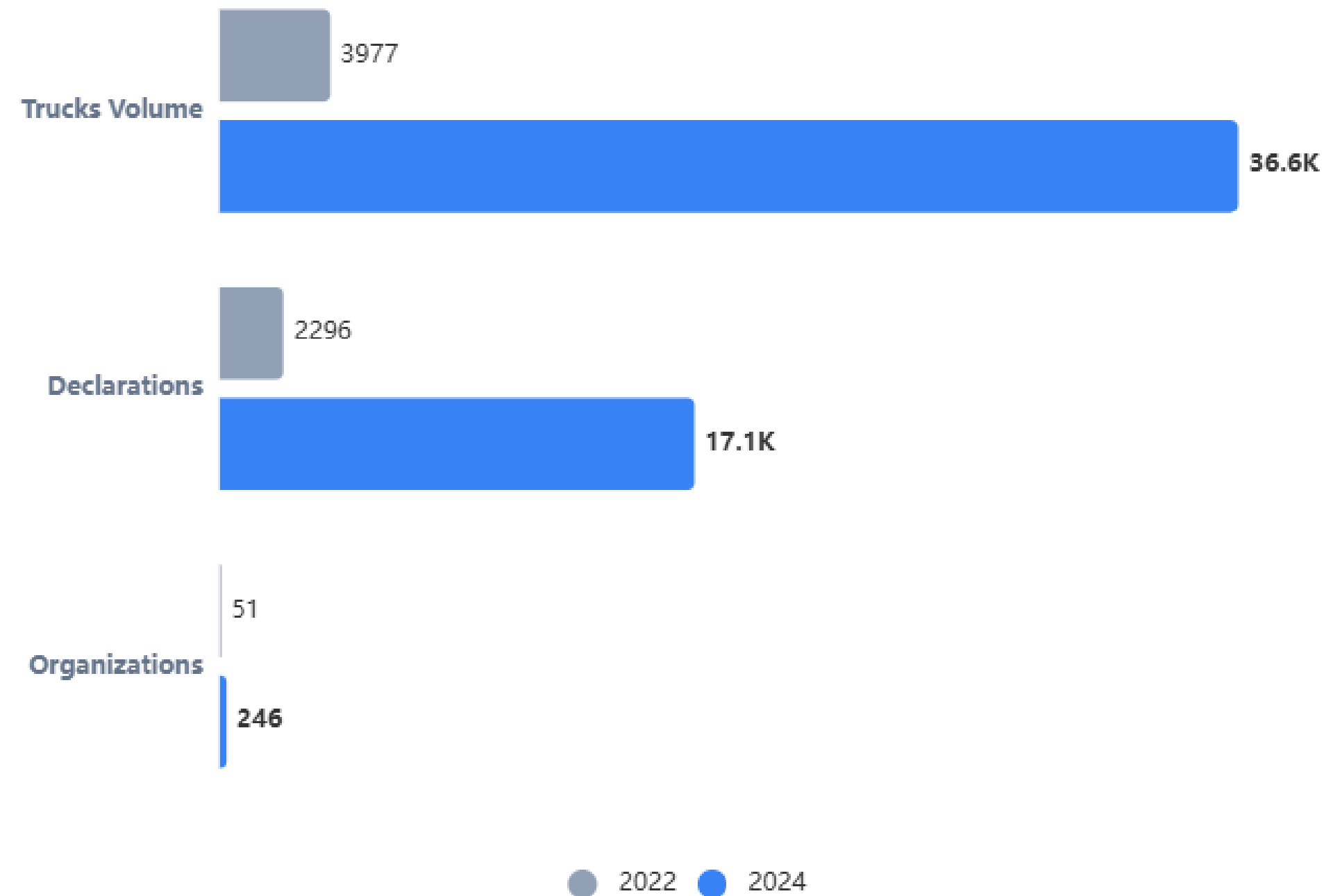
- ✓ **National Single Window:** One-stop e-platform for all trade procedures (since 2015)
- ✓ **CRMS:** Targeted Green/Yellow/Red channel risk management
- ✓ **e-Declarations:** Electronic & preliminary submission

✓ Recent Innovation (June 2024)

## Preliminary Customs Declaration (PCD) Growth

2022-2024

Rapid Adoption



USERS



DECLARATIONS



TRUCKS



## Technological Barriers

### Data & Systems

Despite progress in e-governance, the private logistics sector faces significant fragmentation and interoperability issues.

#### CRITICAL TECHNICAL GAPS



#### Limited Visibility

Lack of end-to-end cargo tracking & monitoring



#### Fragmented Data

Weak interoperability & API integration



#### Cross-Border Info

Underdeveloped pre-arrival exchange (Georgia/Iran)

## Institutional Constraints

### Strategic & Capacity Challenges:

-  **Strategic Void:** No unified national digital logistics strategy to guide long-term development.
-  **Coordination Issues:** Limited interagency coordination between customs, transport, and tech bodies.
-  **Capacity Gaps:** Shortage of high-quality 3PL providers and declining rail competitiveness.
-  **Infrastructure Costs:** High air freight costs limit the viability of air transport for non-premium goods.



Customs



Private Sector



Carriers

**Information Silos**

### Key Insight



"Current digital tools exist in silos. The challenge is moving from isolated systems to a connected national ecosystem."

## Implementation Framework

### ➔ POLICY & GOVERNANCE

1



#### Institutional Framework

- ✓ Adopt **National Digital Logistics Strategy** with clear KPIs
- ✓ Establish **Digital Transport & Logistics Council** for interagency coordination
- ✓ Enact **Legal Act on Electronic Freight Information** (e-CMR) to enable paperless trade

### 🔧 DIGITAL INFRASTRUCTURE

2



#### Technical Architecture

- ✓ Implement **Federated Data Model** with Open APIs on top of Single Window
- ✓ Build **Inland Port Community System** integrating borders, terminals & warehouses
- ✓ Enable **Cross-Border Data Exchange** with Georgia & Iran (pre-arrival info)

### 📈 MARKET & FINANCING

3



#### Sustainable Growth

- ✓ Develop **PPP Models** for digital infrastructure investment
- ✓ Provide **Tax Incentives** for companies adopting paperless logistics
- ✓ Attract international **3PL Providers** to upgrade service quality



#### Strategic Goal

Create a unified digital ecosystem that aligns with **EU ICS2 standards** and **EAEU digital corridors**, transforming Armenia into a reliable transit hub despite physical constraints.

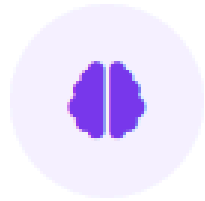
## Smart & Green Synergy

Aligning digital transformation with environmental goals to create resilient supply chains.

ECO-FRIENDLY

INTELLIGENT

EFFICIENT



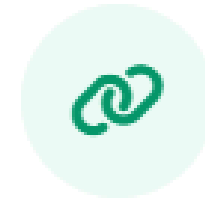
### Artificial Intelligence

Big data analysis for demand prediction, dynamic pricing strategies, and route optimization.



### IoT & Tracking

Real-time tracking of shipments, condition monitoring, and predictive infrastructure maintenance.



### Blockchain

Ensuring transparency, traceability in supply chains, and secure smart contracts.



### Robotics

Automated warehousing systems, robotic sorting/packaging, and autonomous transport vehicles.

**Green  
Logistics**



**CLEAN TRANSPORT**  
Electric Vehicles & Cargo Bikes



**EFFICIENCY**  
Multimodal Transport Systems



**CIRCULAR**  
Biodegradable Packaging

## Strategic Path Forward

### A New Opportunity

Digital logistics offers a unique pathway for Armenia to mitigate physical geographical constraints and integrate deeper into global value chains.

#### CRITICAL ENABLERS



#### Policy Reforms

Regulatory streamlining & e-governance



#### Infrastructure Investment

Digital connectivity & smart terminals



#### Human Capital

Training in digital logistics management

## Projected Outcomes

### Benefits of Digital Transformation:

- ✓ **Cost Reduction:** Optimizing transport networks to lower logistics overheads.
- ✓ **Operational Efficiency:** Eliminating paper-based delays and automating routine processes.
- ✓ **Transparency:** Enhancing supply chain visibility through tracking and blockchain.
- ✓ **Competitiveness:** Strengthening Armenia's position in EAEU and international trade.



### Future Vision

*"Digital transformation has the power to evolve Armenia from a geographically constrained economy into a digitally connected regional logistics hub."*



# Thank You

for your attention and interest.

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## Questions & Discussion

*"I will be happy to answer your questions."*



**ASUE**

Armenian State University of Economics



**Research Team**

Tatul M. Mkrtchyan et al.



**Contact**

info@asue.am