25 CAREC
Central Asia Regional Economic Cooperation

10th Railway Working Group Meeting

3-5 June 2026 |Ulaanbaatar, Mongolia

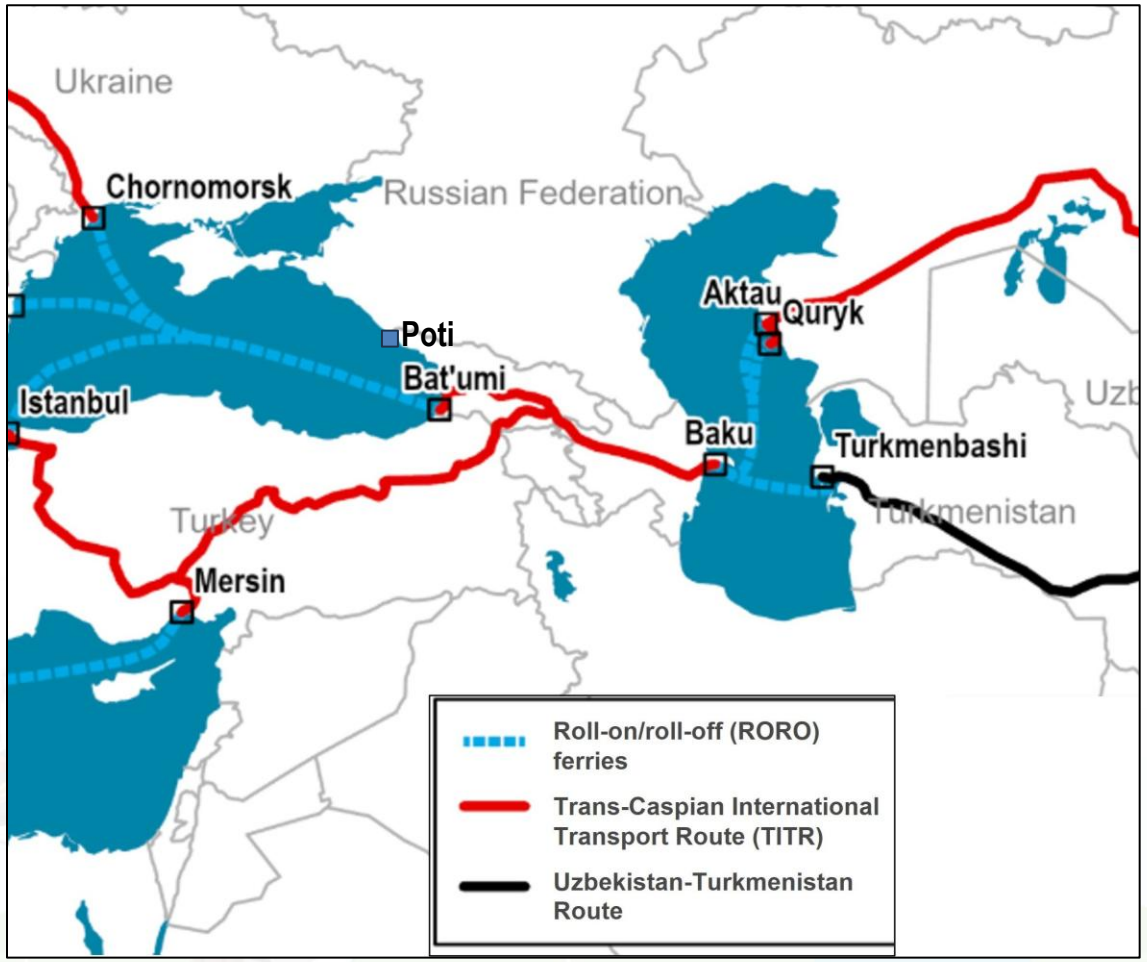
10-е заседание Рабочей группы по железнодорожному транспорту

3-5 июня 2026 года | Улан-Батор, Монголия

Rail–Port Interoperability in the CAREC Region: Current Conditions and Bottlenecks

Adrian Sammons
Senior Transport Specialist
SD-1 / Transport Office

WHY THIS MATTERS



- Landlocked CAREC economies depend on efficient port–rail–logistics systems
- Corridor performance is no longer defined by rail alone
- It is determined by how well rail, ports, and shipping connect and perform together
- Trade depends on efficient port access and modal transfer
- Corridor competitiveness now defined by end-to-end reliability

CHANGING CONTEXT

- Post-2021 disruptions reshaped transport systems – particularly shipping routes
- Trade routes are shifting and diversifying
- Climate pressures increasing/physical risks
- Amplified by global developments disruptions, rerouting, cost/delay pressures

Implications:

➡ Existing systems are under stress
➡ Structural weaknesses are fully exposed
➡ Rising freight costs are passed through
➡ Interface failures become focal points

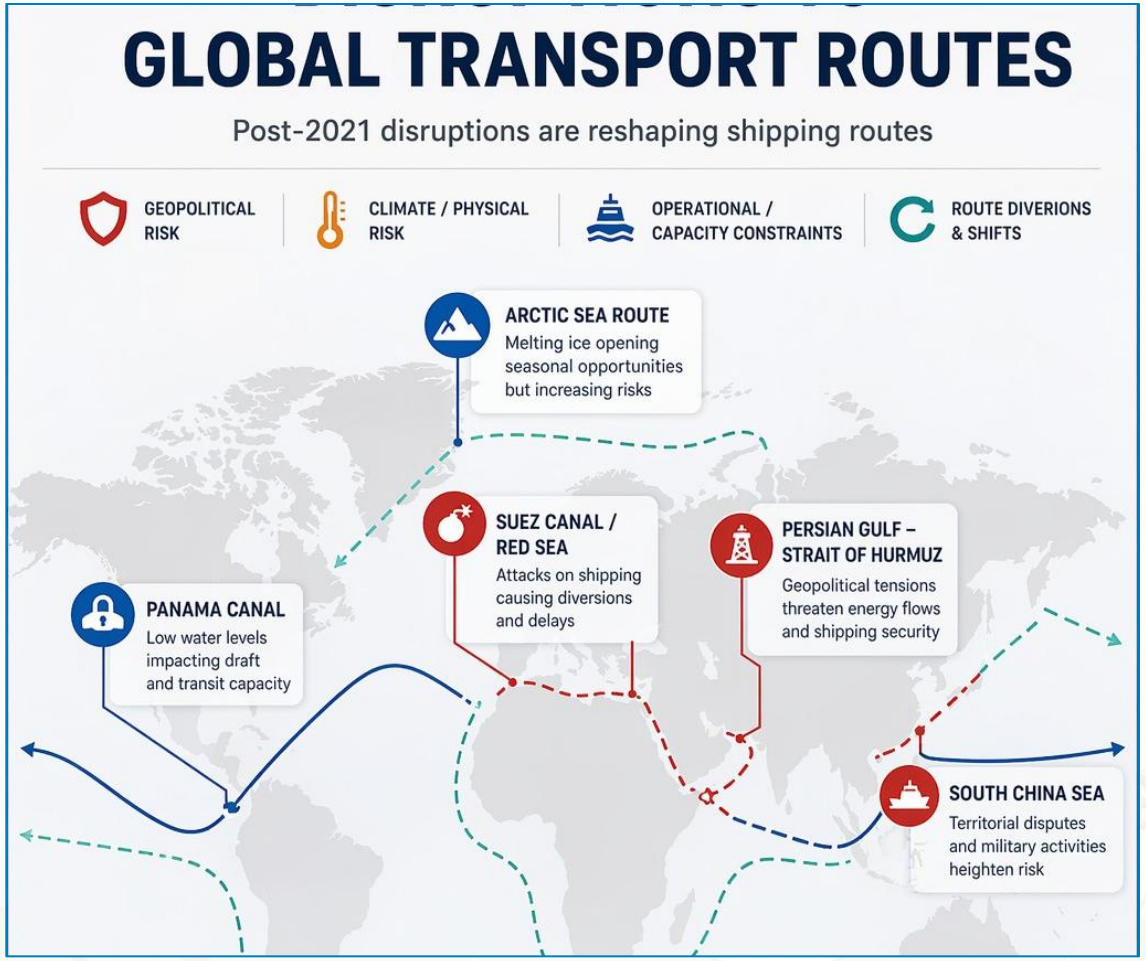
GLOBAL SHOCKS TRANSLATING INTO CAREC PRESSURE

Recent events directly affecting CAREC corridors:

- Red Sea / Suez disruption → rerouting of Europe–Asia flows
- Increased reliance on Trans-Caspian and Caucasus routes
- Surge volatility in demand on already constrained system
- Rising insurance, security, and shipping costs
- Greater reliance on secondary / feeder systems (Black Sea, Caspian)

Implications:

- ➡️ CAREC corridors are no longer marginal alternatives
- ➡️ They are under real, immediate stress
- ➡️ Structural bottlenecks are now binding

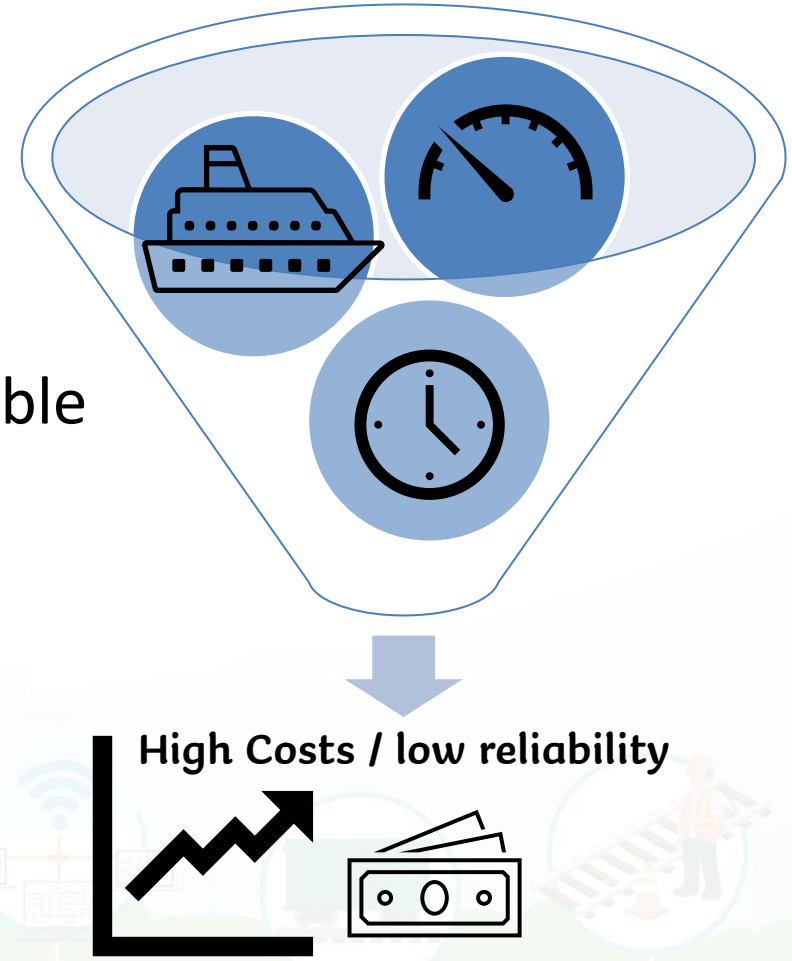


CAREC MULTIMODAL SYSTEM

- Caspian system: rail ferry dependent
- Black Sea system: feeder shipping dependent
- Arabian Sea: gateway dependence
- Impacts most visible across CAREC Corridors 2, 3 and 6
- Highly fragmented system across:
  - infrastructure
  - operations
  - institutions

CASPIAN SEA SYSTEM REALITY

- Draft and channel constraints limit vessel capacity
- Rail ferries dominate operations
- Vessel scheduling is irregular
- Climate pressures (falling water levels) increasing
- System is capacity constrained & structurally inflexible



Implications: Interface Failure

➡ System throughput is structurally capped
➡ End-to-end reliability is fundamentally weak
➡ Cost structure is high and non-linear
➡ Less competitive against other end-to-end routes

CASE EXAMPLE — AKTAU (CASPIAN SYSTEM)

Kazakhstan gateway on the Caspian — core node in Trans-Caspian flows

System characteristics:

- Rail–ferry dependent interface dominates operations
- Limited berth / vessel interface flexibility
- Irregular ferry scheduling → weak synchronization with rail arrivals

Observed constraints:

- Wagon accumulation due to vessel uncertainty
- High dwell at interface during vessel turnaround gaps
- Limited ability to scale throughput during demand surges

Implications:

- Throughput constrained by vessel cycle, not rail supply
- Reliability driven by maritime leg, not inland corridor
- System cannot absorb surge re-routing demand

CASE EXAMPLE — BAKU / ALAT (CASPIAN SYSTEM)

Primary Caspian hub — critical connectivity / transshipment point

System characteristics:

- High dependence on synchronized cross-Caspian flows
- Modern infrastructure but system-dependent performance

Observed constraints:

- Transfer coordination gaps between arriving rail and departing vessels
- Cascading delays across both sides of the Caspian
- Queueing effects under peak demand conditions

Implications:

- Efficiency depends on corridor-wide synchronization
- Bottlenecks propagate across borders, not contained locally
- Capacity exists — but effective throughput constrained

Operational Bottlenecks (Port–Rail Interface)

- Misaligned rail / vessel schedules
  - Unreliable transfers, missed connections
- High dwell at port–rail interface
  - Idle wagons, extended turnaround times
- Excess handling & shunting steps
  - Slow transfer train-yard-quay
- Fragmented stakeholder coordination
  - Rail, port, shipping operate in silos
- Weak data & digital integration
  - Limited visibility, reactive operations

BLACK SEA SYSTEM

Feeder-dominated shipping network	Limited scale; constrained vessel size and frequency
Port competition fragments volumes	No dominant hub - fragmentation reduces economies of scale
Congestion and space limits at legacy ports	Capacity inefficiencies despite overall network throughput -
Uneven hinterland connectivity & integration	Weak linkage between ports and inland corridors; delays persist
Interoperability and operational inefficiencies	Multimodal transfers remain slow, costly, and unreliable - interface failure

CASE EXAMPLE — POTI (BLACK SEA SYSTEM)

Key Black Sea gateway for Caucasus and Central Asia

System characteristics:

- Feeder-dominated shipping model
- Limited hinterland rail integration depth
- Competing terminals fragment flows

Observed constraints:

- Weak synchronization between rail arrival and feeder vessel windows
- Dwell time driven by shipping schedule, not port handling capacity
- Limited hub function — no strong cargo consolidation point

Implications:

- Port performance constrained by shipping network structure
- Fragmentation reduces scale and efficiency
- Corridor reliability depends on external shipping schedules

CASE EXAMPLE — KARACHI (ARABIAN SEA GATEWAY)

Primary maritime gateway for southern CAREC flows

System characteristics:

- High-volume seaport with established shipping connectivity
- Rail connectivity exists but operational network integration is weak
- Strong maritime side / private terminals — weaker inland interface

Observed constraints:

- Port–rail transfer inefficiencies and slow evacuation
- Congestion impacts intermodal transfer reliability
- Operational disconnect between port and rail scheduling

Implications:

- Maritime capacity not fully translated into corridor performance
- Inland inefficiencies drive total transit time and cost
- Interface constraints limit system-wide competitiveness

GOVERNANCE CONSTRAINTS

Fragmented institutional mandates	• Ports, rail, shipping governed separately
Weak corridor-level coordination	• No authority managing end-to-end flows
Limited cross-border alignment	• Inconsistent rules, procedures, priorities
Siloed planning and investment decisions	• Modal projects not designed as integrated systems
Lack of shared operational accountability	• No ownership of corridor performance

WHAT NEEDS TO CHANGE – PRACTICAL PRIORITIES

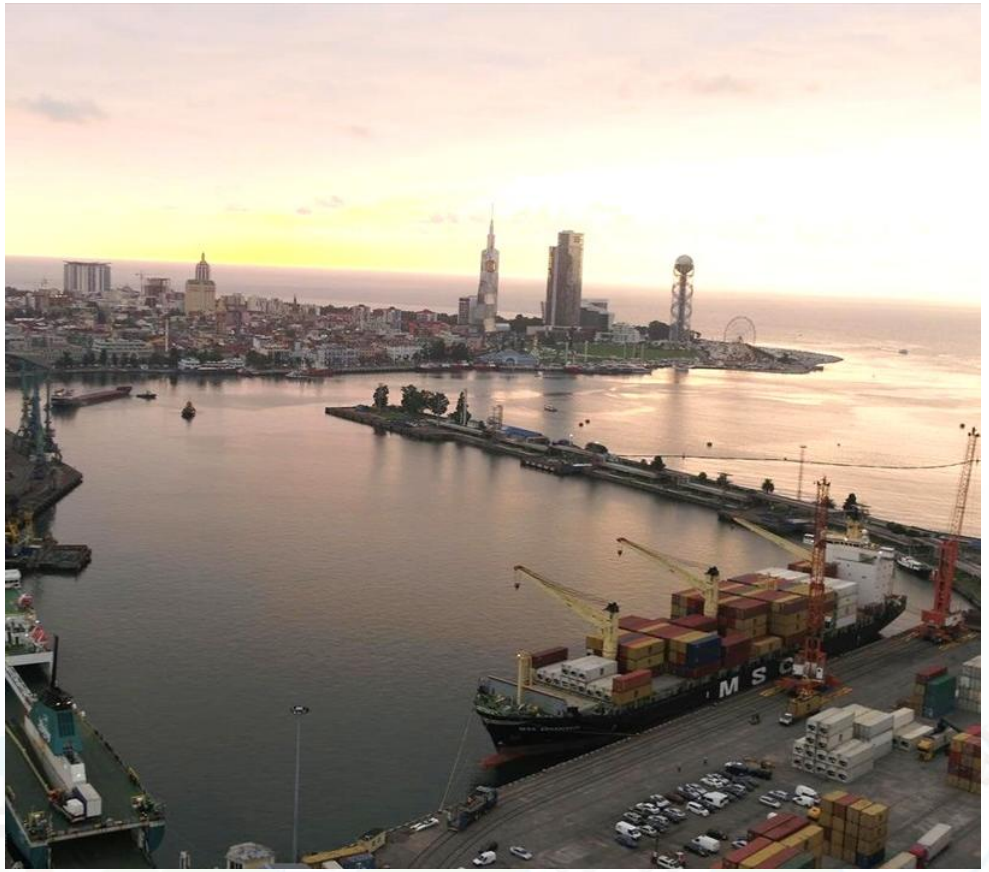
Fix the interface (short-term, high impact)	Improve system assets and capacity	Improve data & digital integration	Strengthen corridor governance
• Align rail and vessel scheduling • Reduce dwell and transfer delays • Streamline yard–quay operations	• Upgrade port handling systems for rail integration • Modernize ferry fleets and terminal interfaces (Caspian) • Address key bottleneck nodes	• Shared data platforms across rail–port–shipping • Real-time visibility of flows and connections • Corridor-level performance monitoring	• Align cross-border procedures and operations • Assign accountability for end-to-end performance • Requires coordinated action across governments, railways, port authorities and development partners

- **If we cannot guarantee:**
- **Predictable transfer times > Reliable scheduling across modes > Coordinated operations across borders**
- **Then: Are CAREC corridors truly competitive for international logistics?**

CORE DIAGNOSIS

- **Three binding system constraints:**
- **Waterborne system limitations**
  → Feeder dependence, capacity & reliability constraints
- **Port interface inefficiencies**
  → Dwell, handling delays, weak synchronization

  → Not primarily a capacity problem, a system integration failure (scheduling, coordination, interface design
- **Rail–port integration gaps**
  → Poor coordination across modes and operators



TRANSITION

👉 These constraints are not static

→ They evolve with demand, traffic, and system stress

👉 They are being amplified by global developments

→ Disruptions, rerouting, and growing corridor pressure

👉 They are becoming binding at corridor level

→ Previously manageable constraints are now actively constraining trade

WHAT NOW FOR CAREC RWG / TA PROGRAM

- RWG role must shift from modal → corridor system performance
- Need port–rail–shipping integration focus in TA pipeline
- Priority actions:
- Corridor-level diagnostics (not modal studies)Pilot interface improvements (selected nodes)Data/digital integration pilots
- Link to ongoing/new TA activities

Thank you for attending

Questions