Standing Committee
for Economic and Commercial Cooperation of the
Organization of the Islamic Cooperation

COMCEC

Designing Integrated Multimodal Transport Systems in OIC Member Countries

Conceptual Framework

26TH MEETING OF THE COMCEC TRANSPORT AND COMMUNICATIONS WORKING GROUP

20 APRIL 2026

Why focus on Multimodal Transport

- **Multimodal transport** is key to improving **trade, logistics efficiency, and connectivity**
- Critical for **enhancing intra-OIC trade** and economic integration
- Requires coordination across **road, rail, maritime, and air transport**
- Integration goes beyond infrastructure:
  - **Operations, governance, and digital systems**
- OIC countries face key challenges:
  - Infrastructure gaps & weak interconnectivity
  - Fragmented policies and institutions
  - Limited digital/data integration
  - Financial and operational constraints

➢ **Need for practical, context-specific guidance** tailored to OIC countries

Study Objectives & Scope

Objective:

- Develop a **practical guideline / policy guide** for multimodal transport integration
- Identify **key barriers and best practices** in OIC countries
- Provide **actionable, context-sensitive policy recommendations**

Scope:

- Focus on **multimodal freight systems** (road, rail, maritime, air), logistics hubs
- Cover integration dimensions:
  - Physical, operational, digital, institutional, financial
- Address **OIC-specific challenges** (fragmentation, connectivity, coordination)
- Include **case studies, performance indicators, and implementation guidance**

Methodology

- **Mixed-methods approach** combining qualitative & quantitative analysis
- **Literature review** (academic, multilateral, COMCEC sources)
- **Barrier & performance analysis** (infrastructure, policy, operational, financial)
- **Comparative case studies**
  - Field visits (OIC countries)
  - Desk analysis (OIC & global benchmarks)
- **Stakeholder engagement**
  - Surveys (transport authorities)
  - Expert consultations
- **Synthesis & policy development**
  - Guiding principles
  - Recommendations & policy guide

Introduction

- Global trade requires **speed, flexibility, and reliability** in transport systems
- Traditional **single-mode transport is no longer sufficient**
- Rise of:
  - E-commerce
  - Just-in-time delivery
  - Complex supply chains
- Driving need for **integrated multimodal transport systems**
- Multimodal systems enable:
  - **Seamless and cost-effective freight movement**
  - **End-to-end coordination across modes**
- Integration goes beyond infrastructure:
  - **Operational coordination**
  - **Institutional alignment**
  - **Digital and information systems**

➢ Multimodal transport is a **core enabler of global trade and economic efficiency**

Definitions & Concepts

Multimodal Transport

- Use of **2+ transport modes under a single contract**
- Managed by a **single operator (MTO)**

Intermodal Transport

- Cargo moves in **same unit (e.g., container)**
- No handling of goods during transfer

Combined Transport

- Long-distance via **rail/sea**, short-distance via road
- Focus on **sustainability & efficiency**

Integrated Multimodal Transport

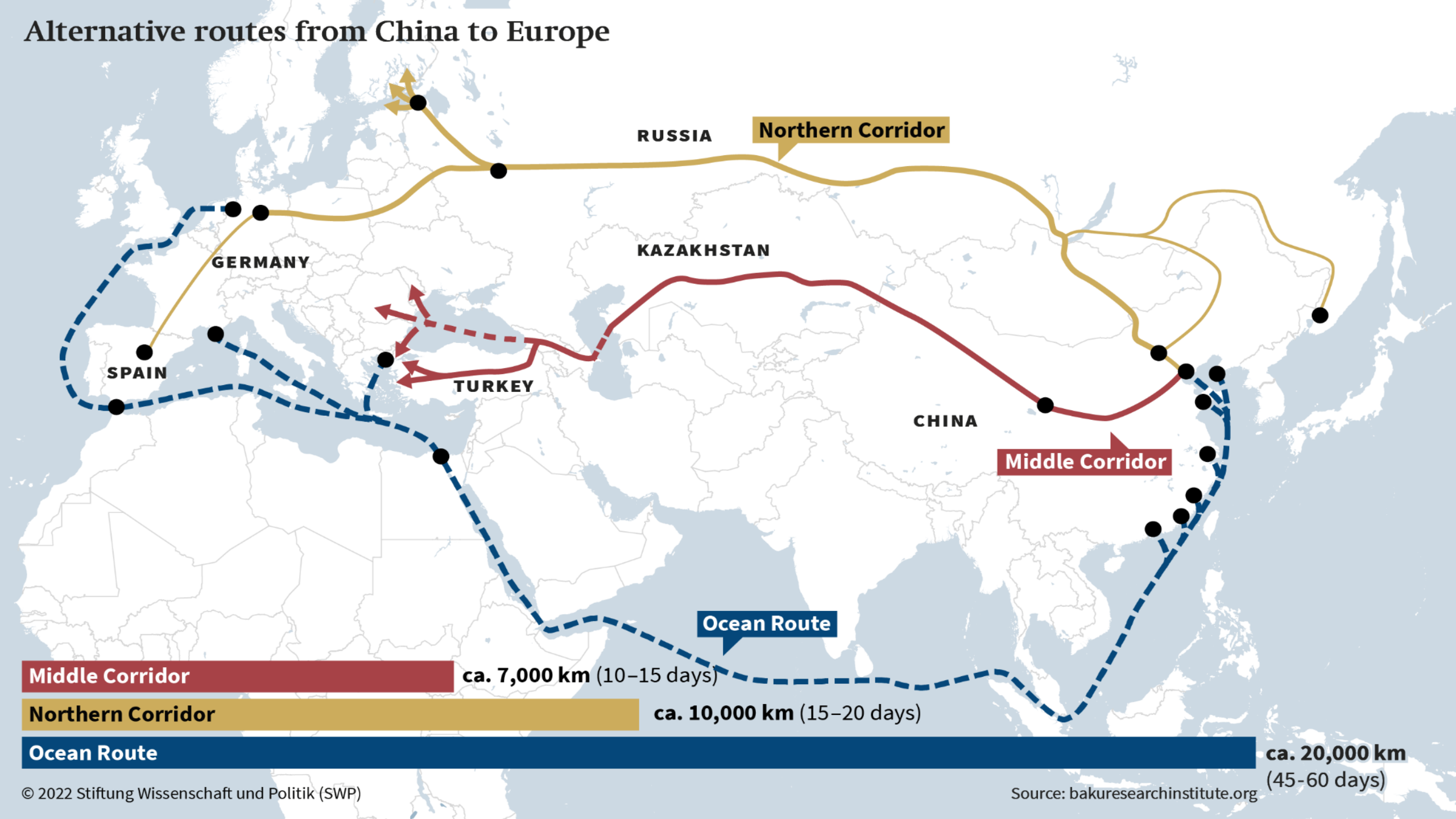
- Full integration across: Infrastructure, Operations, Information systems, Institutions

Key Concept: Interoperability

- **Technical** (infrastructure, equipment compatibility)
- **Institutional** (coordination among actors)
- **Legal** (harmonized regulations)

Integration improves **cost, time, and reliability of transport systems**

Alternative routes from China to Europe



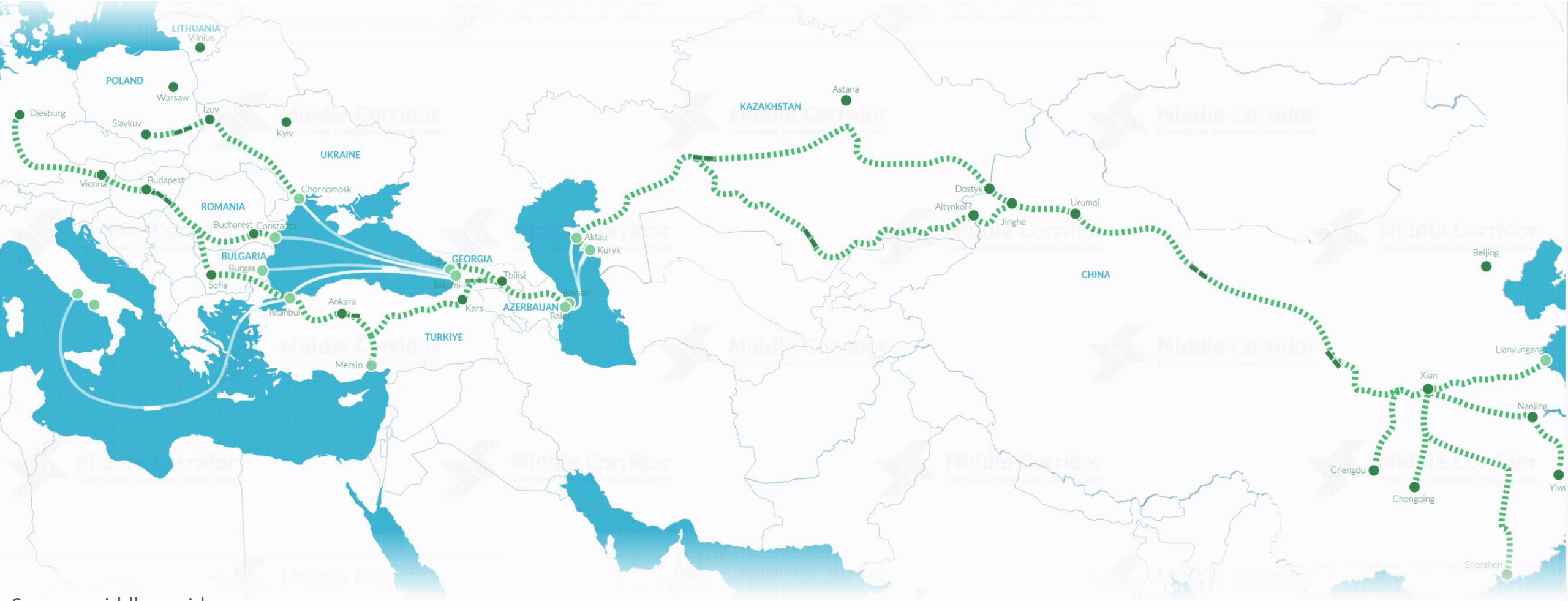
Middle Corridor **ca. 7,000 km** (10–15 days)

Northern Corridor **ca. 10,000 km** (15–20 days)

Ocean Route **ca. 20,000 km** (45-60 days)

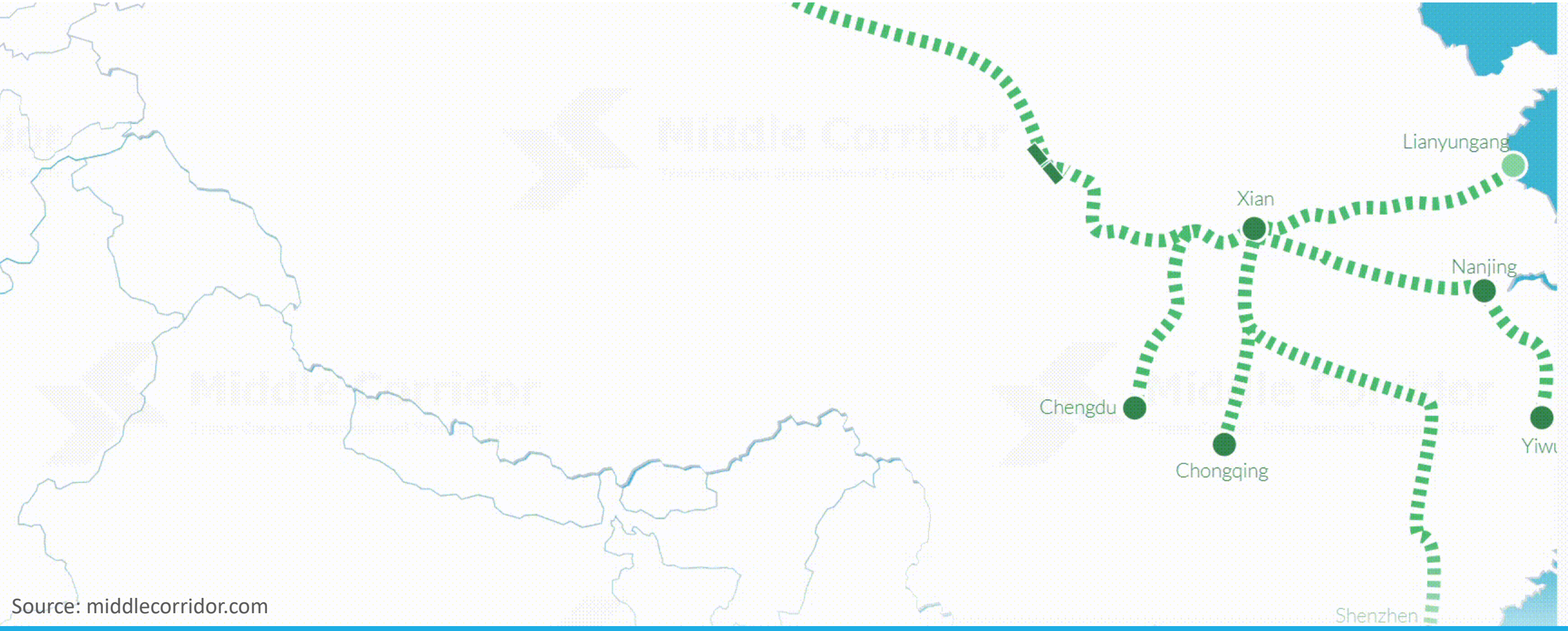
Source: bakuresearchinstitute.org

Multimodal Nature of Transit Corridors



Source: middlecorridor.com

Multimodal Nature of Transit Corridors



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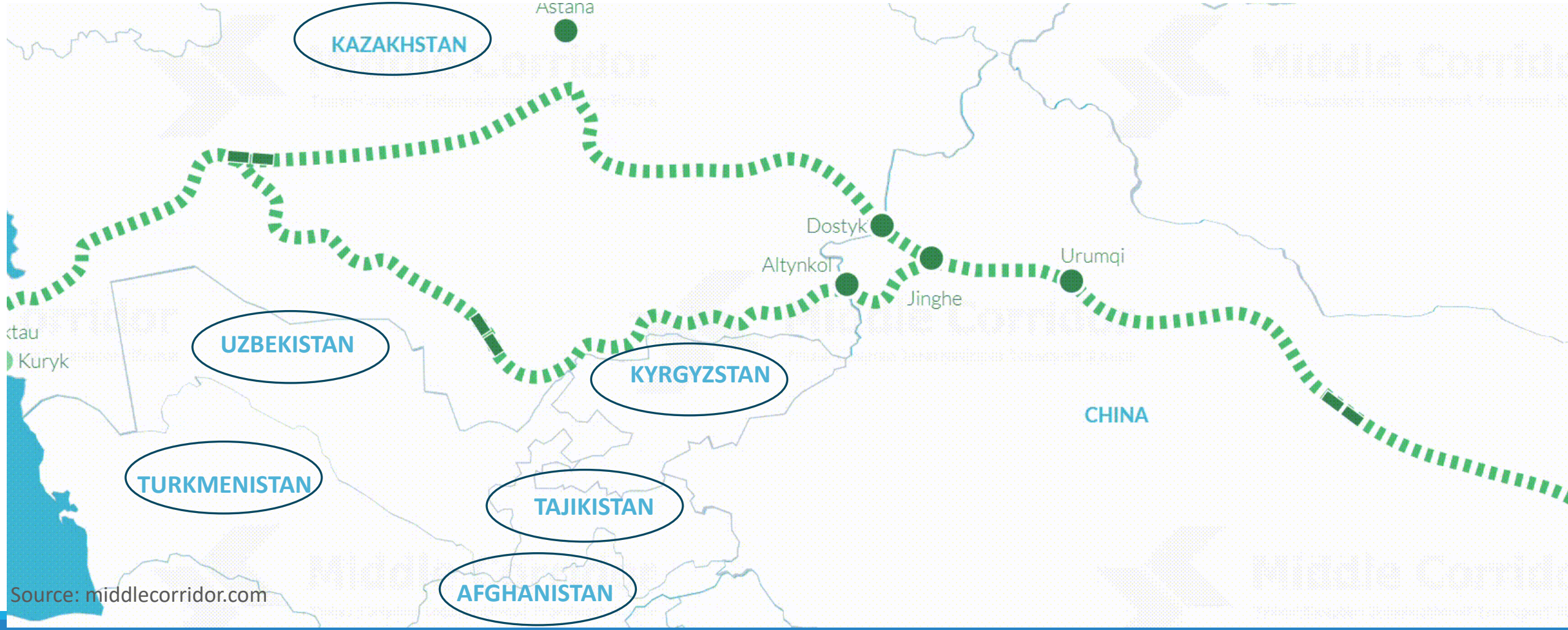
Multimodal Nature of Transit Corridors



Source: middlecorridor.com

Multimodal Nature of Transit Corridors

Source: middlecorridor.com

System Components

- **Physical Infrastructure & Nodes**
  - Transport networks: **road, rail, sea, inland waterways**
  - Nodes: **ports, terminals, logistics centers, dry ports**
- **Transport Equipment & Technologies**
  - Standardized units (**containers, swap bodies**)
  - Handling systems (**cranes, rail-road technologies**)
- **Organizational Structure & Actors**
  - Multiple stakeholders (operators, terminals, customs)
  - Role of **Multimodal Transport Operator (MTO)**
  - Integrated **pre-haul, main-haul, end-haul operations**
- **Digital Systems (ITS & ICT)**
  - Real-time data, tracking & coordination
  - Platforms for **planning, monitoring, and optimization**

➢ Effective systems require **coordination across infrastructure, operations, and digital layers**

Role of Logistics Hubs

Logistics hubs are **key nodes** connecting different transport modes

Enable **transfer, consolidation, and distribution** of freight

Act as **integration points** between:

- Transport networks (road, rail, sea)
- Supply chain operations

Improve system performance by:

- Reducing **transport costs and time**
- Enhancing **connectivity and efficiency**
- Increasing **system resilience**

Support **economies of scale** through clustering of:

- Logistics facilities
- Distribution centers

Critical for:

- **Hinterland connectivity**
- Reducing road congestion & environmental impact

➢ System efficiency depends on how well **nodes and networks are integrated**

Types of Logistics Hubs

Seaports

- Main gateways for **international trade**
- Interface between **global and regional transport networks**
- Require strong **hinterland connections**

Inland Terminals & Dry Ports

- Extend port functions **into inland regions**
- Enable **customs, storage, and consolidation**
- Reduce **port congestion & delays**

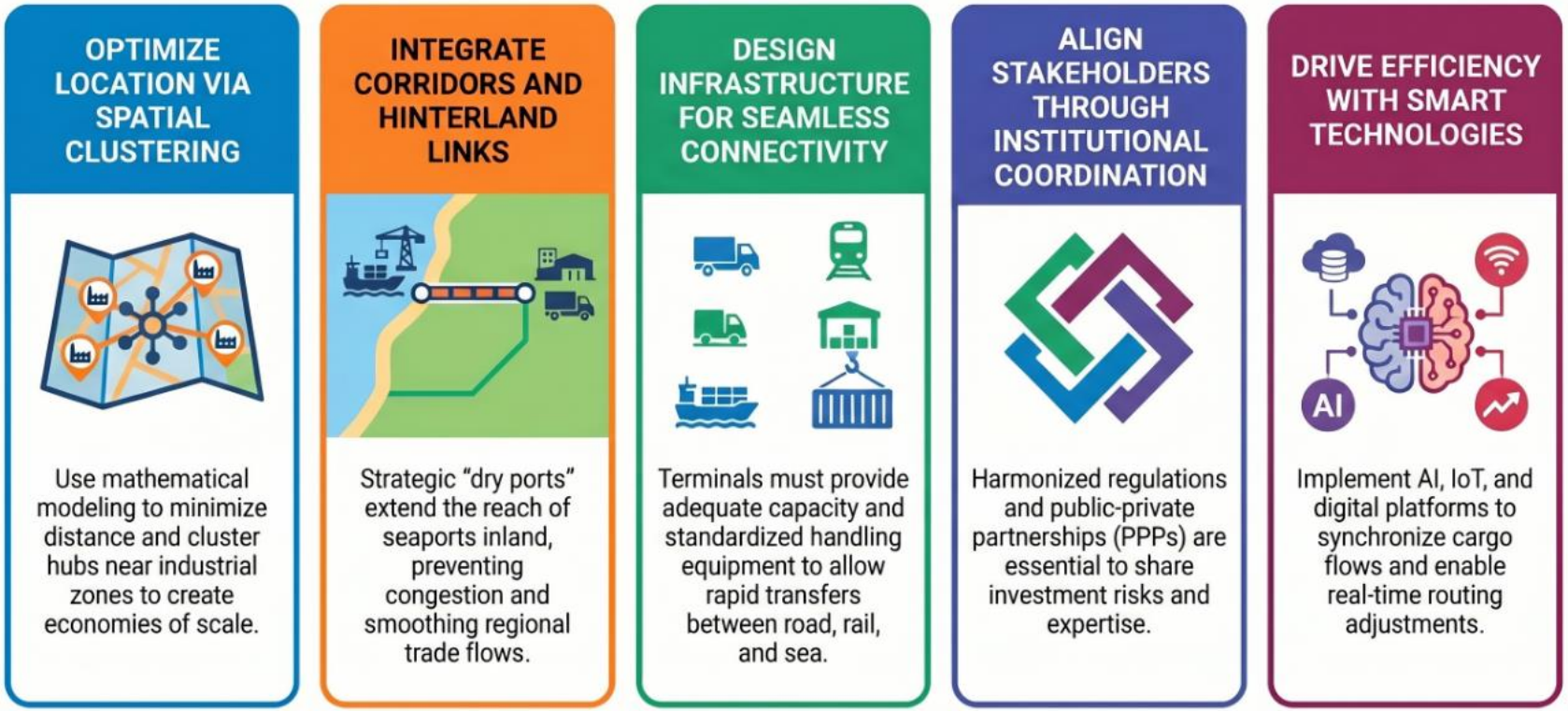
Logistics Centers / Distribution Hubs

- Focus on **storage, sorting, and value-added services**
- Support **order fulfillment and distribution**
- Use **hub-and-spoke model** for efficiency

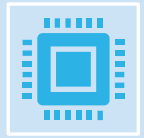
➢ Integrated hub systems enable **efficient, scalable, and flexible freight distribution**

Planning of Multimodal Transport & Logistics Hubs

- Successful multimodal planning transforms disconnected transport modes into a single, synchronized supply chain network



Digitalization & Data Integration



Digital Logistics Platforms

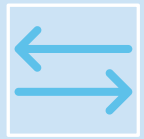
Integrate stakeholders (operators, customs, terminals)

Enable **real-time coordination & planning**

Cargo Tracking & Visibility

Real-time **track & trace systems (IoT, GPS, RFID)**

Improve **transparency, reliability, and security**



Customs Digitalization

Single Window & EDI systems

Reduce delays, costs, and manual processes

Advanced Technologies

AI & Big Data → dynamic routing (synchro modality)

Blockchain → secure, paperless transactions

➢Digitalization transforms systems into **integrated, real-time, and intelligent networks**

Key Challenges

Institutional Fragmentation

- Lack of coordination between agencies & operators

Infrastructure Gaps

- Weak connectivity between transport modes
- Limited intermodal facilities

Operational Inefficiencies

- Poor synchronization at terminals & corridors
- High delays and handling times

Digital & Data Limitations

- Low interoperability between systems
- Limited real-time data sharing

Regulatory Barriers

- Inconsistent customs procedures
- Complex cross-border regulations

➢ Weakness in any component reduces **overall system performance**

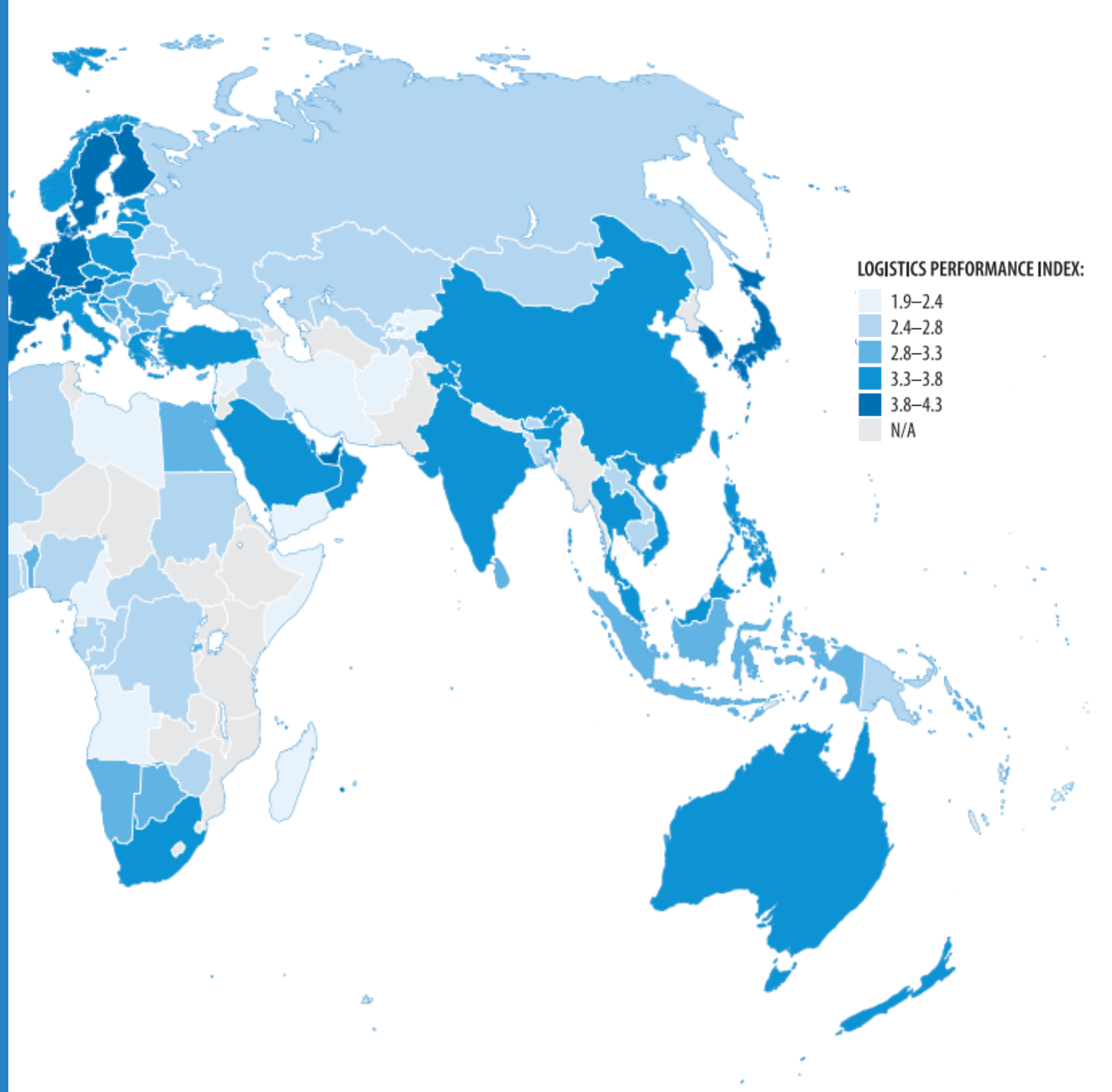
The Logistics Performance Index (LPI)

It measures how efficiently goods move across borders (World Bank).

It consists of 6 key components:

- **Customs** → efficiency of clearance processes
- **Infrastructure** → quality of ports, roads, rail
- **International shipments** → ease of arranging transport
- **Logistics competence** → quality of logistics services
- **Tracking & tracing** → shipment visibility
- **Timeliness** → on-time delivery performance

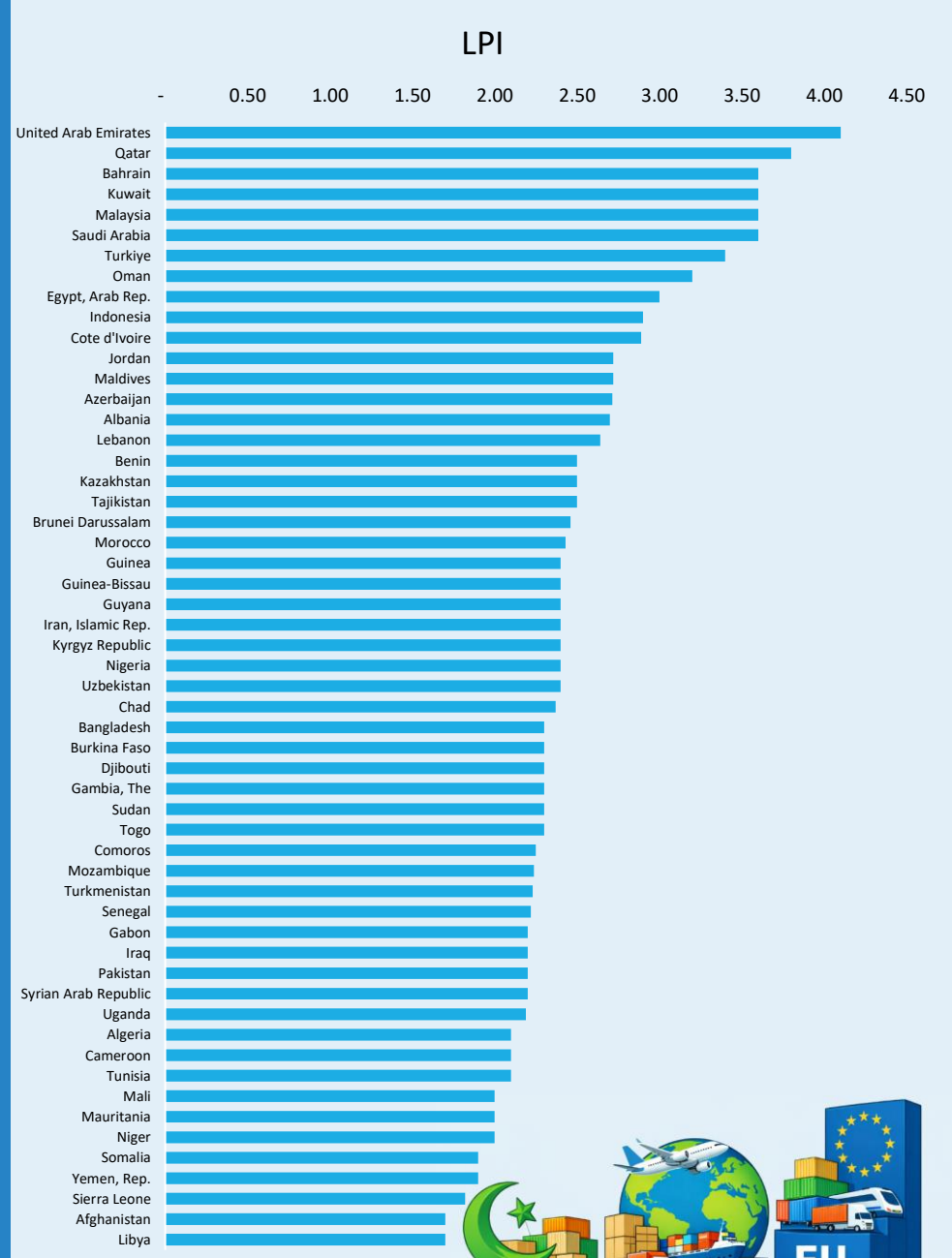
LPI reflects how effectively a country integrates multimodal transport systems to ensure seamless, reliable, and efficient movement of goods.



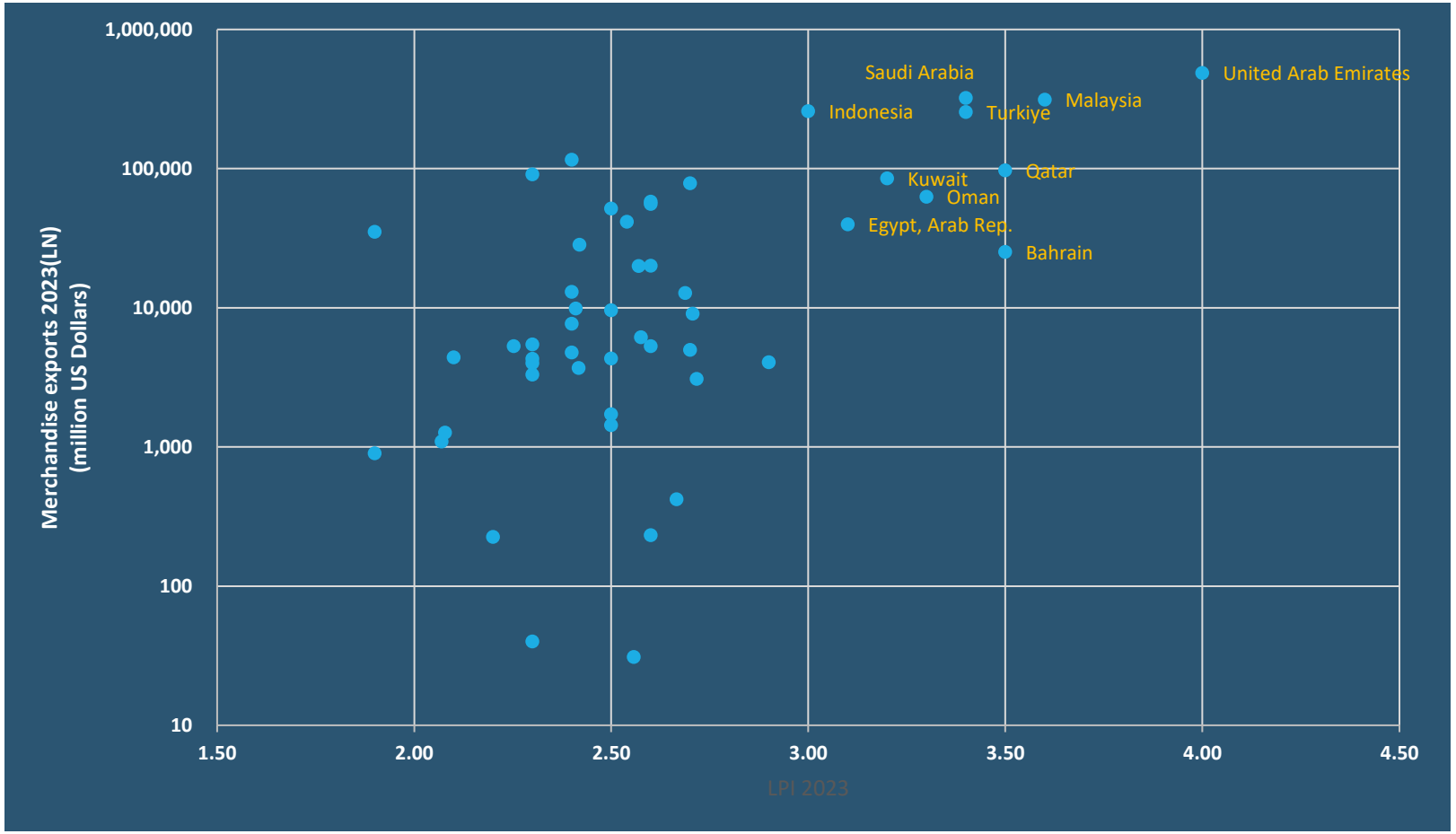
Why Multimodal Transport is Critical for OIC Countries

- There is a **significant performance gap**, → highlighting the need for **multimodal development**

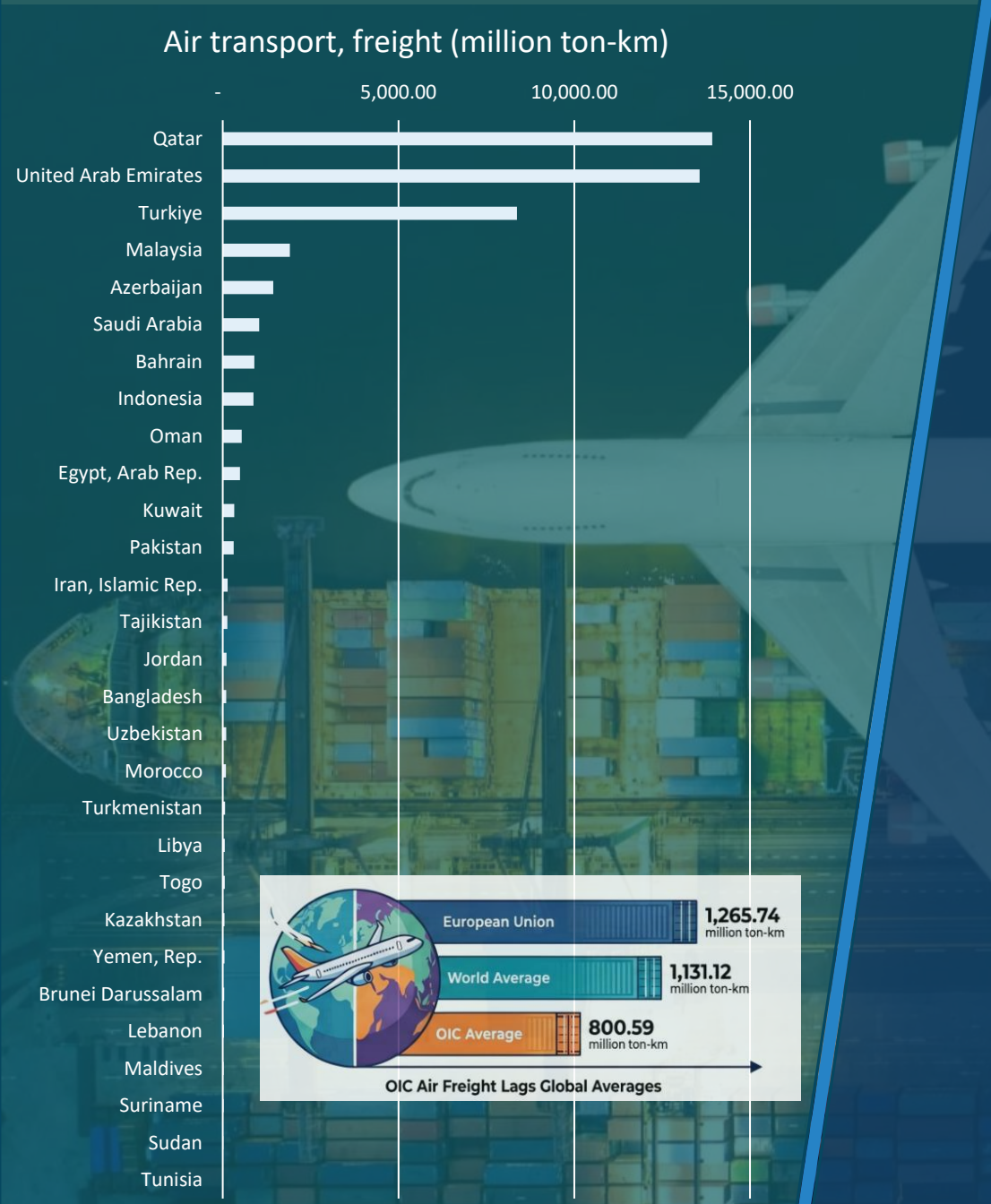
- Multimodal Transport
  - Improves **connectivity across regions (Asia–Africa–Europe)**
  - Enables **efficient integration of ports, rail, and road**
  - Reduces **logistics costs and delays**
  - Supports **landlocked member countries**
  - Strengthens participation in **global value chains**



LPI vs Merchandise export



Air Transport



- Enables fast, high-value, and time-sensitive freight movement
- Critical for sectors such as e-commerce
- Complements other modes in multimodal chains:
  - Air + road/rail for last-mile delivery
  - Enhances speed and flexibility of logistics networks
- Supports global market access and integration into supply chains
- Increases reliability in long-distance and urgent shipments
- Limited air freight capacity and infrastructure in OIC Countries

➢ Strengthening air freight is essential to improve speed, connectivity, and competitiveness in multimodal transport systems

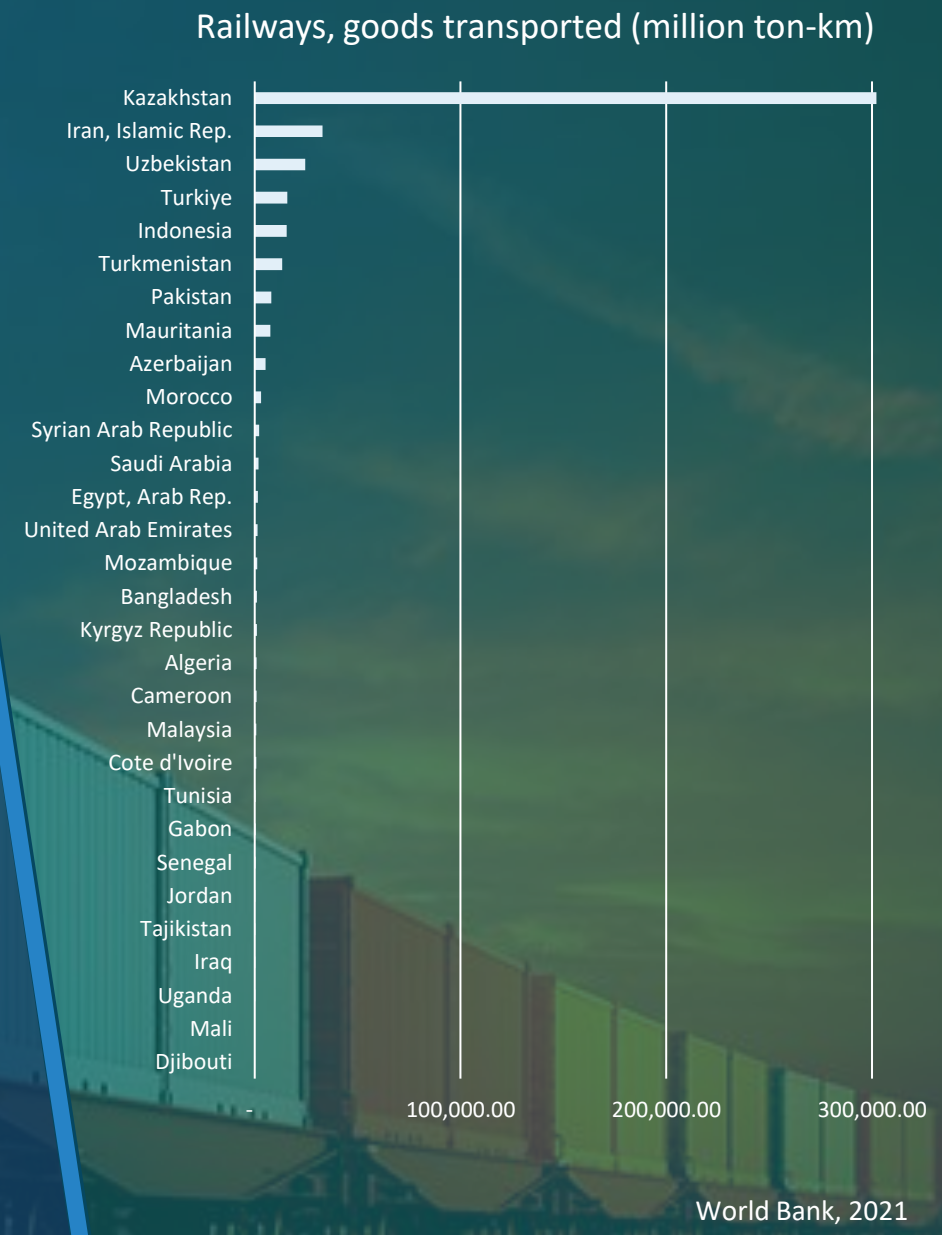
Rail Transport

- Enables high-capacity, cost-efficient freight movement over long distances
- Key for linking ports, dry ports, and inland logistics hubs
- Supports multimodal chains:
  - Rail + maritime for bulk and container transport
  - Rail + road for efficient hinterland distribution
- Reduces transport costs, congestion, and emissions
- Improves reliability and corridor efficiency

<u>Key Gap in OIC Countries</u>

- Very limited rail freight utilization across most countries
- Lack of rail infrastructure and intermodal terminals
- Weak integration of rail into logistics networks

➢ Expanding rail freight is critical for scalable, efficient, and sustainable multimodal transport systems



Container Port Traffic

- Measures container flow between land ↔ sea transport
- Expressed in TEU (standard container unit)
- Reflects the scale and efficiency of global freight flows

Key OIC Port Hubs: Based on 2022 data,

- Malaysia: ~27.2 million TEUs (ranked 5th globally).
- UAE: ~20.3 million TEUs (ranked 8th globally).
- Indonesia: ~12.3 million TEUs.
- Turkiye: ~12.3 million TEUs.
- Saudi Arabia: ~10.4 million TEUs.

Impact of Multimodal Transport on Performance

- Reduces port congestion and dwell time
- Improves throughput and capacity utilization
- Lowers logistics costs per unit
- Enhances speed and reliability

OIC Context

- Limited multimodal integration in port systems
- High dependence on road transport
- Need for stronger rail links and dry ports

➢ Multimodal transport is essential to maximize port efficiency and global trade competitiveness

Multimodal Transport & Geopolitical Conflicts

Multimodal systems are critical for resilient logistics during geopolitical disruptions

Enable route diversification (sea, rail, road alternatives) when corridors are blocked

Impact of Recent Conflicts

- Disruption of Northern Corridor
- Disruption of Strait of Hormuz ->Significant reduction in shipping and energy trade flows
- Increased reliance on alternative multimodal corridors (rail/land routes)

Vulnerability of key corridors:

- Northern Route (Russia–Europe–Asia)
- Hormuz & Middle East corridors

Increased importance of:

- Multimodal flexibility (rail + road alternatives)
- Redundant corridors and diversified routes

Shift toward:

- Overland corridors
- Integrated multimodal networks for resilience

➢Multimodal transport is essential to mitigate geopolitical risks, ensure continuity, and enhance supply chain resilience

Thank You

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