International Transport Forum

ITF Research on Freight Connectivity

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What is the ITF approach to connectivity?

ITF connectivity studies for global regions

ITF regional connectivity studies published in 2025:

- Central Asia
- East Africa
- Southeast Asia

ITF's three pillars of freight transport

Connectivity

The efficiency and integration of infrastructure, services, and institutional frameworks that enable the seamless movement of goods across and within borders.

It encompasses:

- Physical connectivity
- Institutional connectivity
- Market connectivity

Decarbonisation

The reduction of greenhouse gas (GHG) emissions across logistics and supply chains while maintaining reliability and cost-effectiveness.

Key strategies include:

- Operational efficiency
- Low-carbon modes and fuels
- Sustainable infrastructure
- Policy and market incentives

Resilience

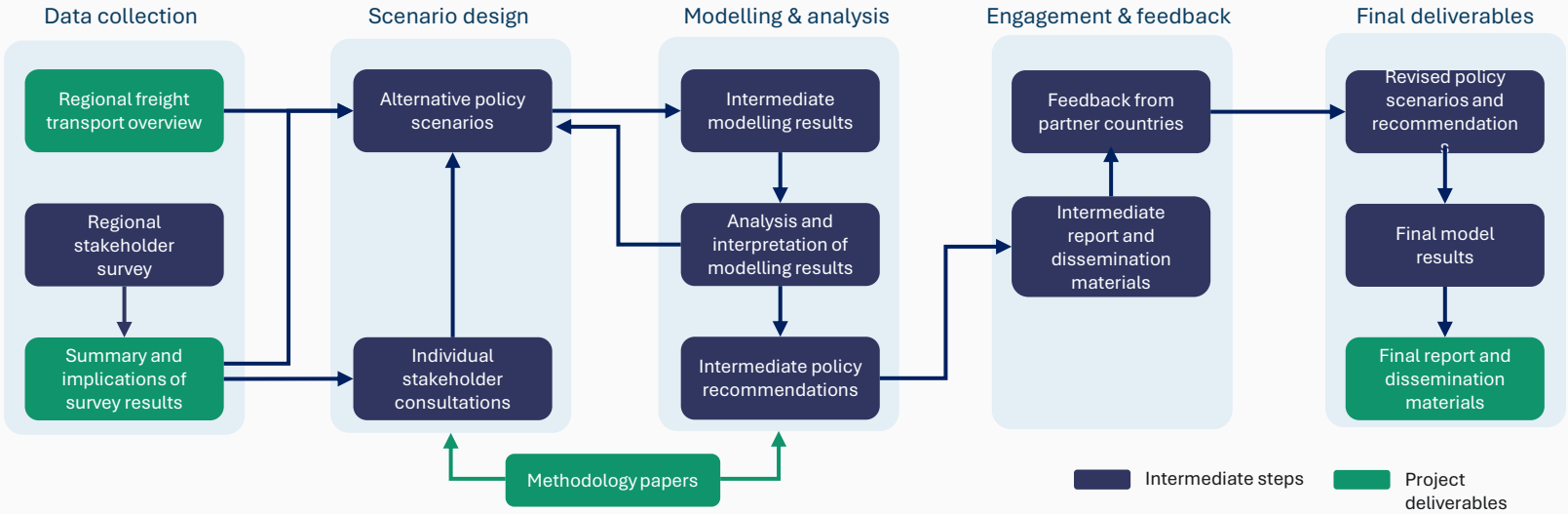
The ability of supply chains and logistics networks to withstand, adapt to, and recover from disruptions while maintaining efficient goods movement.

Key dimensions include:

- Infrastructure resilience
- Network resilience
- Operational resilience
- Organisational resilience

Study inputs, methods, and outputs

The methodology was structured to deliver actionable insights for improving freight transport connectivity, decarbonisation and resilience.



Data collection: Desktop research, stakeholder surveys, and interviews collected data on infrastructure, policies, and regulatory frameworks. This was complemented by fact-finding missions engaging regional experts to capture local insights and inform the remainder of the study.

Scenario design: The ITF's Global Freight Model was used to develop and refine future policy scenarios. This process involved consultations with public and private stakeholders to ensure the scenarios reflected real-world challenges and opportunities for ambitious policymaking.

Modelling & analysis: Gaps, bottlenecks, and sustainability challenges were identified through baseline projections and scenario testing. Modelling provides quantitative insights into trade-offs and synergies across connectivity, decarbonisation, and resilience.

Engagement & feedback: Partner countries provided iterative feedback through workshops, ensuring that recommendations were aligned with local priorities. This co-creation process helped refine policy options and enhance the policy relevance of the final recommendations.

Final deliverables: Refined policy scenarios and final model results were consolidated into this report. The report includes tailored recommendations and dissemination materials to support evidence-based policymaking at the regional and national levels.

Methodology papers

Describes the three pillars (connectivity, decarbonisation and resilience), and the interconnections between them.

- Conceptual frameworks
- Empirical insights
- Analytical tools
- Regional applications
- Selection of policy measures

Available via the ITF repository:

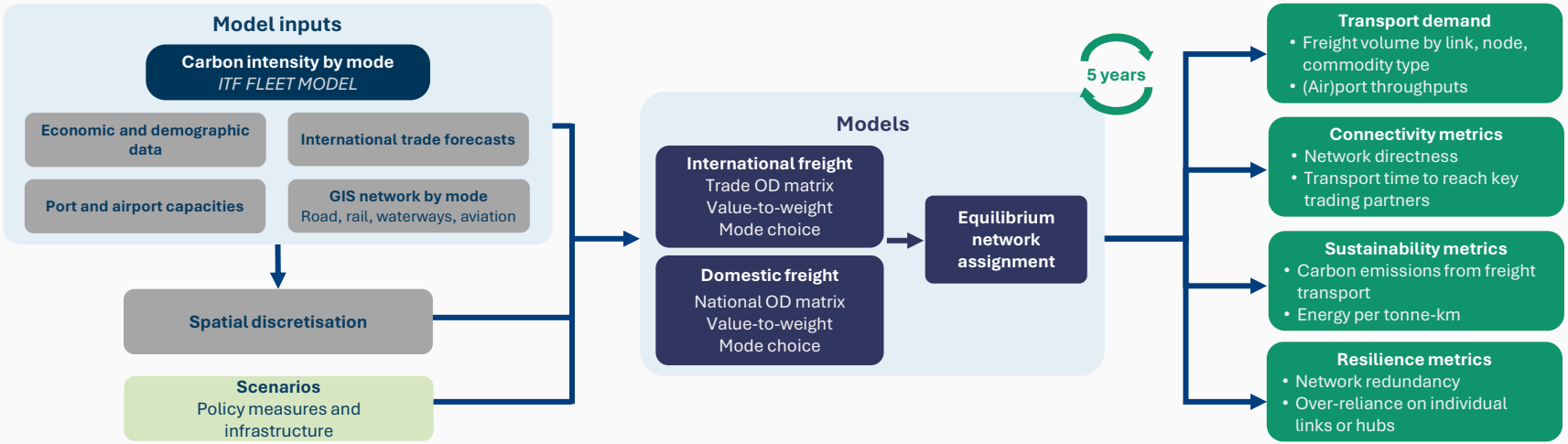
https://www.itf-oecd.org/repository/sipa-enhancing-regional-freight-connectivity

Accompanied by the ITF Academic Lecture Series:

Available via the ITF YouTube Channel

Modelling methodology

The model translates data inputs and scenario design into performance metrics on demand, connectivity, sustainability, and resilience to compare the effectiveness of each of the proposed scenarios.



Data collection: Existing and planned transport network data were gathered from national ministries, global freight databases, and multilateral organisations to assess freight transport infrastructure. For soft measures, the implications on freight movement patterns, transport costs, and trade logistics were collected. Only major country-level and most of the regional initiatives were considered.

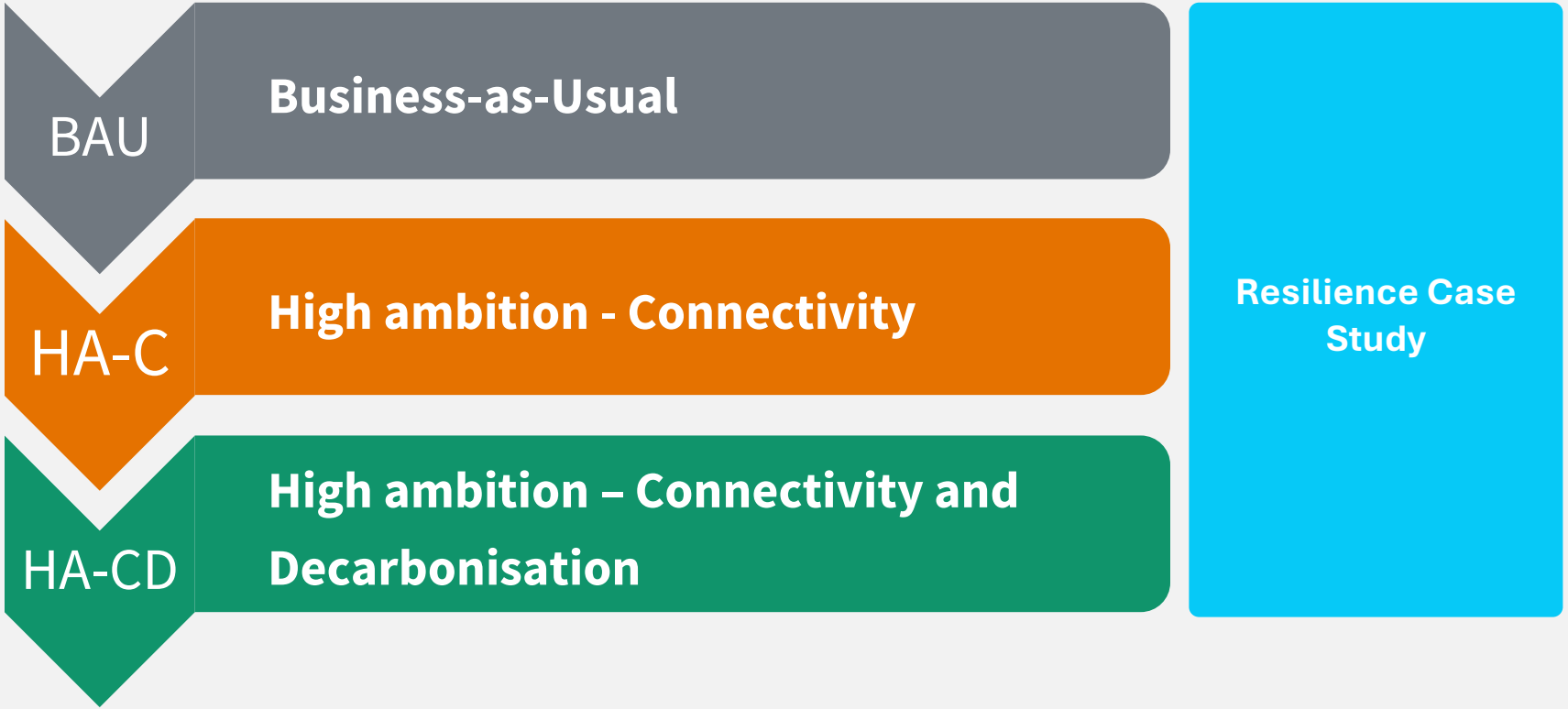
Scenario design: Scenarios were developed to reflect economic growth, trade policies, and environmental commitments. Three scenarios are assessed: a Business-as-Usual projection reflecting current trends and commitments, a connectivity-focused scenario with new policies and infrastructure, and a sustainability-focused scenario prioritising low-carbon transport. A resilience case study is also evaluated.

Tailored strategic freight transport model: The ITF Global Freight Model incorporates regional data on trade flows, infrastructure capacity, and regulatory conditions. The model projects freight demand up to 2060, assessing the efficiency of current and planned transport networks under different scenarios. It evaluates the impact of decarbonisation strategies, operational improvements, and policy reforms.

Policy recommendations: The results from the forecasting of future transport needs and policy impacts are used to make evidence-based recommendations for the region and for each of the key countries in the study. These granular recommendations focus on potential infrastructure bottlenecks and concrete policies that are expected to have the greatest impact on connectivity, decarbonisation and resilience.

Insights from Central Asia Region

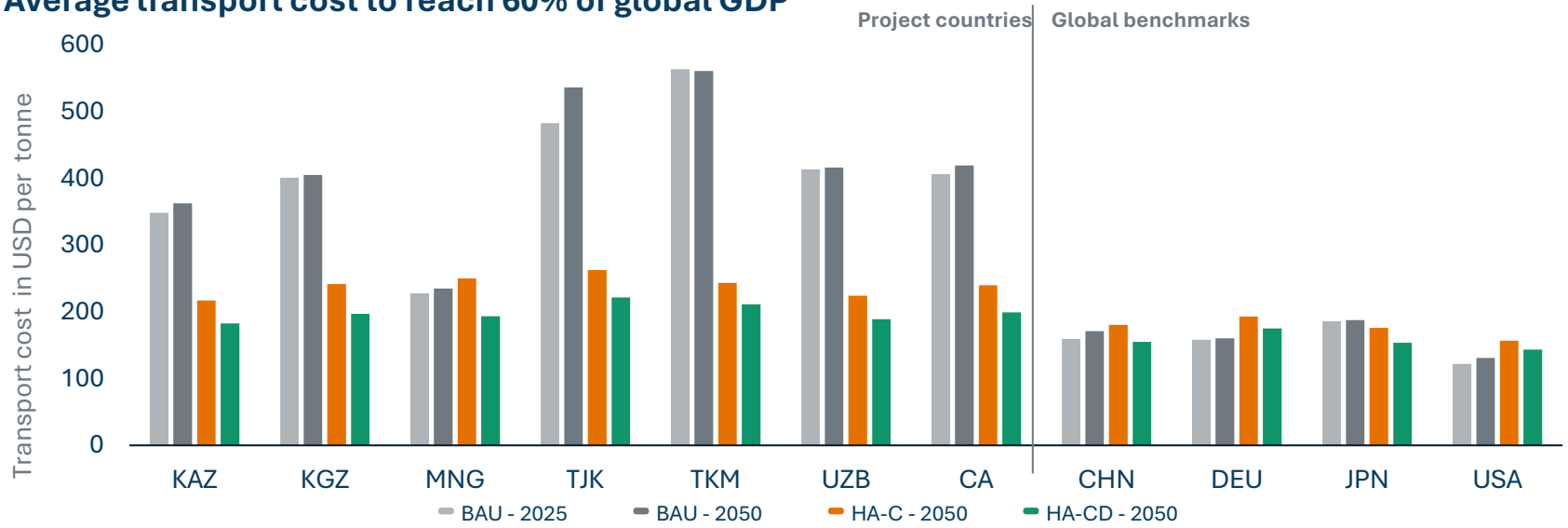
Transport modelling: policy scenarios considered in this study



Connectivity indicator: improving access to markets

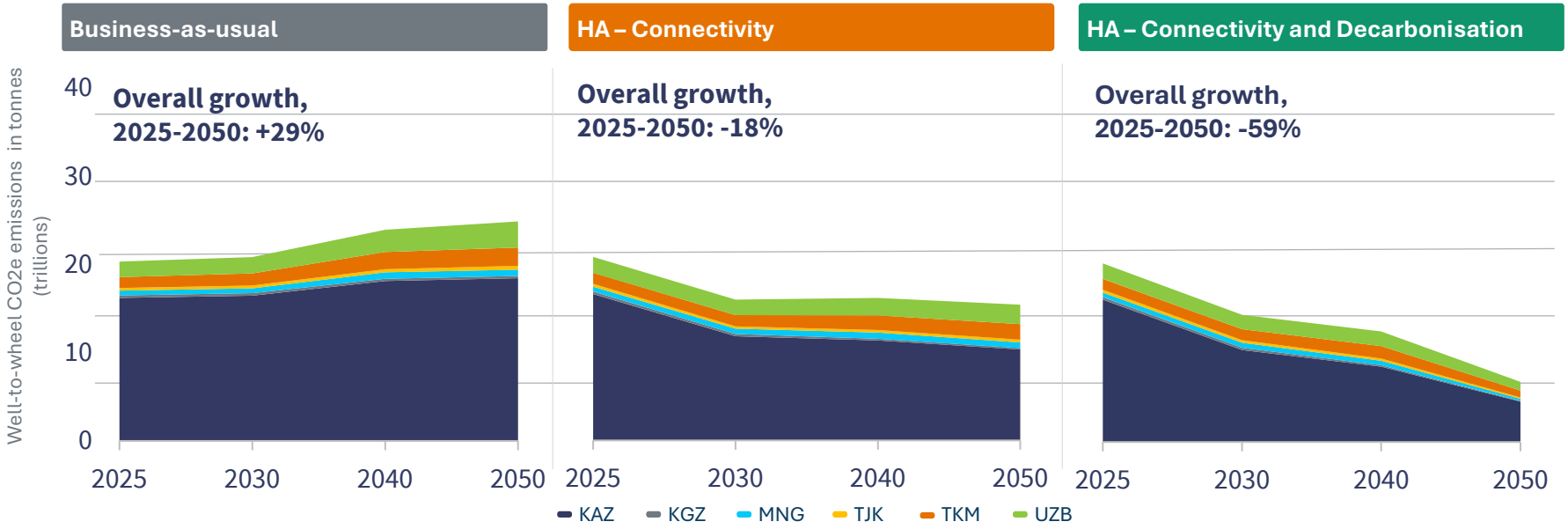
- High transport costs limit global competitiveness.
- Ambitious policy scenarios reduce costs significantly.
- Efficiency gains matter as much as infrastructure.

Average transport cost to reach 60% of global GDP



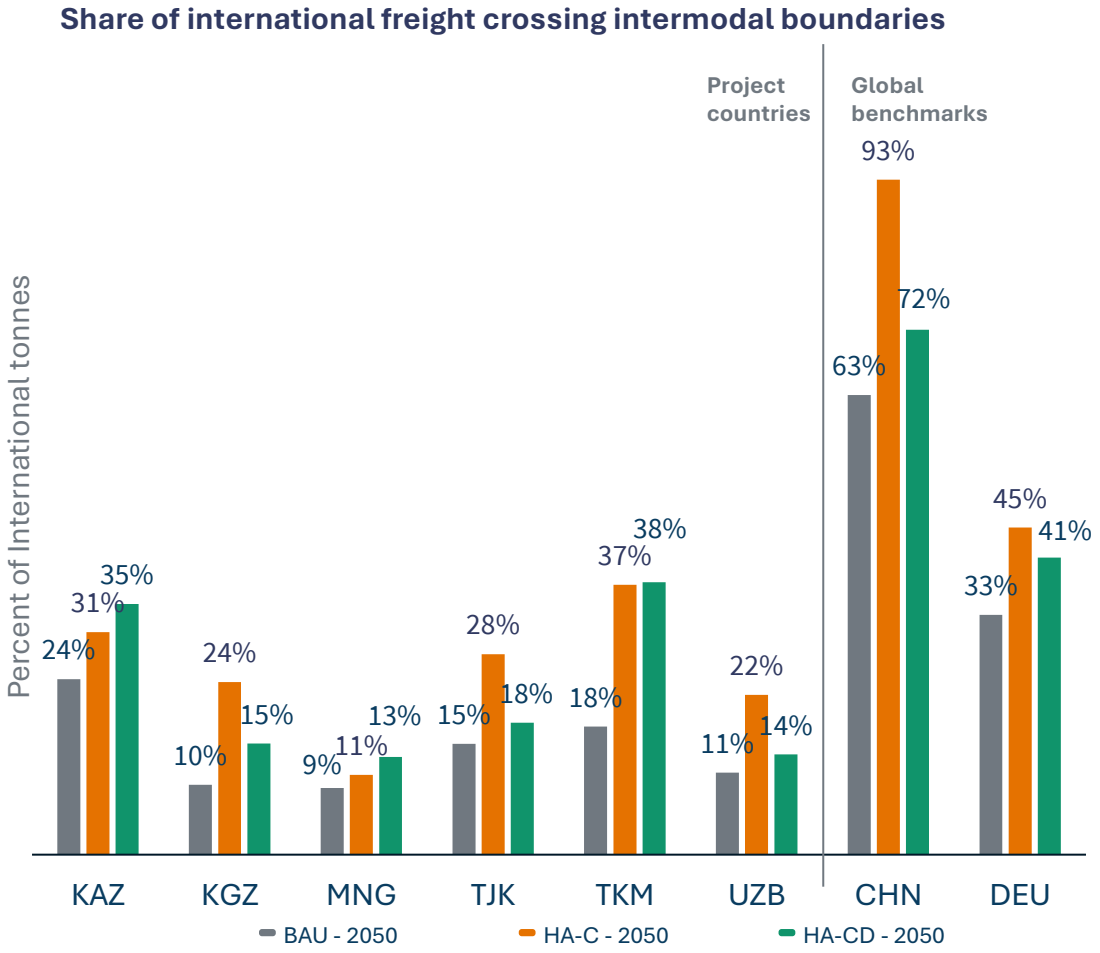
Decarbonisation indicator: mitigating carbon emissions

- Business-as-usual locks in rising freight emissions.
- Connectivity-focused measures curb emissions growth
- Only integrated strategies align freight with climate goals



Resilience indicator: enhancing flexibility through intermodality

- Intermodal growth signals a shift toward more flexible and efficient networks.
- Diverging futures emerge by 2050: some expand intermodality, while others lean on single-mode corridors.
- Balancing efficiency and resilience is critical.



Highlighted policy recommendations: regional level

Enhancing regional connectivity

- Cross-border corridors
- Dry ports and logistics centres
- Digital platforms
- Harmonised regulations
- Private sector engagement

Accelerating decarbonisation

- Increase rail's freight share
- Promote fuel efficiency standards
- Launch green freight incentives
- Improve operational efficiency
- Utilise decarbonising fiscal tools

Strengthening resilience

- Enhance link capacity and diversity
- Integrate multimodal networks
- Apply climate-resilient design
- Improve crisis preparedness
- Strengthen regional co-ordination

Kazakhstan

- Upgrade Aktau and Kuryk ports
- Modernise and electrify rail
- Develop the Digital Trade Corridor
- Optimise freight asset utilisation

Mongolia

- Upgrade links with neighbours
- Develop dry ports and inland hubs
- Expand the secondary network
- Enhance customs with automation

Uzbekistan

- Upgrade key intermodal links
- Promote green corridors
- Expand logistics hubs
- Advance smart logistics

Advancing Digital Freight Connectivity

ITF Ministers' Policy Recommendation on digitalising international freight transport connectivity, adopted in Leipzig, 7 May 2026.

What the Policy Recommendation sets out

A government action agenda for faster, safer and more resilient cross-border freight flows.

Core message

Digitalisation can cut transit friction, strengthen resilience and improve visibility of cross-border freight flows - but only when systems are interoperable, trusted and backed by capacity.

FIVE POLICY LEVERS

1 Digital freight flows

E-documents, automated exchange and platforms replace fragmented paper processes.

2 Safety & security

Reliable, verifiable and cyber-secure digital processes build operational trust.

3 Interoperability

Common data standards, APIs and semantic models connect systems across borders.

4 Sustained funding

Investment covers digital infrastructure, skills and security risk mitigation.

5 Governance

Corridor cooperation, public-private data exchange and proportionate rules enable adoption.

Source: ITF (2026), Policy Recommendation on Digitalisation of International Freight Transport Connectivity

From paper-bound borders to trusted digital corridors

A practical pathway for improving cross-border freight connectivity.

Today: fragmented processes

- Paper documents
- Re-keyed data
- Bilateral workarounds
- Limited real-time visibility

Higher dwell time, duplicated checks and weak resilience

1. **Digital strategy**
   Prioritise public authority processes for digitalisation.
2. **One-stop systems**
   Single windows, port community systems and testbeds.
3. **Open standards**
   Interoperable APIs, common data and semantic reference models.
4. **Legal equivalence**
   Electronic documents, signatures and recognition arrangements.

Target: seamless digital corridors

Faster flows

Trusted data

Shared visibility

Resilient operations

Source: ITF (2026), Policy Recommendation on Digitalisation of International Freight Transport Connectivity

Implementation package for governments

Turn digitalisation from isolated projects into a scalable connectivity capability.

1. Set direction and build capacity

Adopt a national strategy, assess digitalisation opportunities in public authorities, and support upskilling for customs, border and inspection staff.

2. Make digital trade trusted

Align safety, information security and cyber-security standards with regional and global frameworks, supported by monitoring and risk oversight.

3. Design for interoperability

Create legal and institutional frameworks for digital documentation, open architectures, common messaging standards and semantic interoperability.

4. Fund the transition

Use dedicated public investment, public-private partnerships and integrated physical-digital infrastructure funding to sustain implementation.

5. Govern across corridors

Strengthen cooperation across agencies, borders and corridors, and encourage proportionate exchange of high-quality public-private data.

Connectivity dividend

Reduced transit friction, improved reliability, better resilience and stronger trade competitiveness.

Relevance for ITF connectivity work

Position digitalisation as a corridor-level enabler, not a standalone technology agenda: connect physical networks, border procedures, data standards and institutional capacity in one policy offer.

Source: ITF (2026), Policy Recommendation on Digitalisation of International Freight Transport Connectivity

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Thank you

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