UIRR
INTERNATIONAL UNION FOR ROAD-RAIL COMBINED TRANSPORT

EUROPE-ASIA INTERMODAL LOGISTICS 2025

THE EFFICIENCIES OF INTERMODAL SOLUTIONS

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UIRR: the Community of European Intermodal Freight Transport

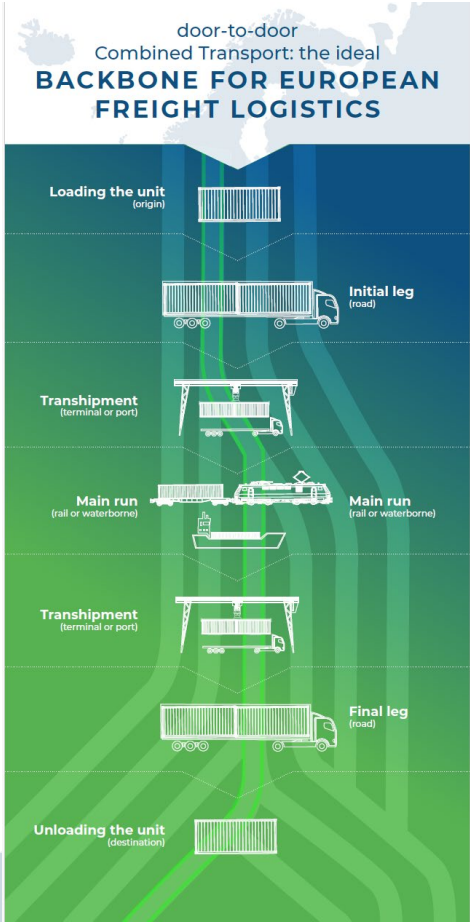
Baseline: the "backbone of land freight transport over 300km"

THREE QUESTIONS:

1. How does Combined Transport compare to unimodal trucking if performing in the capacity of "backbone of land freight transport over distances of 300km"?
   – *efficiency + productivity performance*

2. How much modal shift would be needed until 2050 to qualify Combined Transport as "the backbone"?
   – *1000 billion tonne kilometres*

3. Are the preconditions of Combined Transport to becoming "the backbone" realistic and affordable?



The Efficiencies of Combined Transport: a study done for UIRR

How does Combined Transport measure up?

EFFICIENCY AND COMPETITIVENESS

ENERGY / IMPORTED FOSSIL FUEL DEPENDENCY

Door-to-door Combined Transport uses **70% fewer kilowatt-hours of energy to produce a tonne-kilometre of transport performance** compared to the unimodal long-distance trucking alternative.

The energy used by Combined Transport is dominantly grid-electric, which means **a direct supply from Europe's increasingly carbon-neutral power generation**, thereby reducing the continent's dependence on imported fossil fuels.

INFRASTRUCTURE

The infrastructure of non-road means of transport is more suited to accommodate the heavy axles required by efficient freight transport than road.

The **per tonne-kilometre infrastructure degradation of door-to-door Combined Transport is thus a fraction of that of its unimodal road alternative.** Slower road degradation means less frequent roadworks resulting in reduced disruptions and works-related congestion.

LABOUR PRODUCTIVITY, WORK/LIFE BALANCE

The number of **tonne-kilometres produced per worker employed in a door-to-door Combined Transport operation is multiple times higher** than that of workers active in the unimodal trucking alternative. At the same time, Combined Transport jobs offer a **superior work/life balance** to the workers, especially in comparison to truck drivers, promising to alleviate the looming truck driver shortage.

SAFETY: ACCIDENTS AND CONGESTION

More Combined Transport not only slows road degradation, but also contributes to a dramatic reduction in accidents due to the superior safety performance of non-road modes. This has a further **positive impact on the frequency and extent of road congestions** thus reducing the external costs of freight transport.

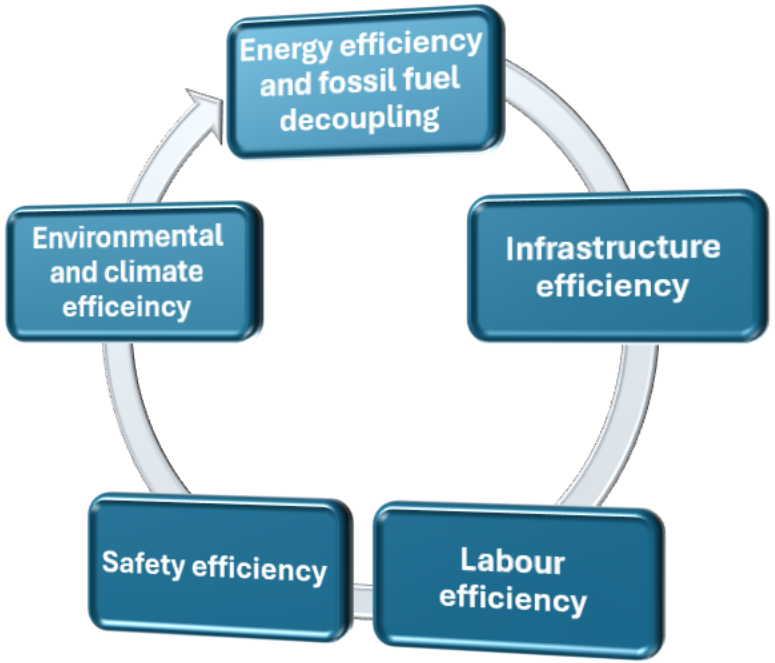
CLIMATE AND THE ENVIRONMENT

The harmful emissions of door-to-door Combined Transport, such as **PM10, PM2,5, NOx and ozone, are a fraction of those produced by unimodal trucking.** The greenhouse gas emissions of Combined Transport are up to **90% lower than that of the unimodal trucking alternative.** Zero-carbon door-to-door Combined Transport has been demonstrated to be viable with products and technologies already on the market today, making it **the most cost-effective solution for Europe.**

The results in numbers: exceptional performance

Combined transport – compared to unimodal truck transport – can deliver meaningful results in every examined dimension:

- **70%** better energy efficiency
- **Up to 50%** road infrastructure maintenance expense saving
- **60%** better labour productivity and improved work/life balance
- **95%** fewer accidents per tonne-kilometres
- **Up to 84%** fewer air pollutant and greenhoue gas emissions
- **50%** reduction of road congestion related to maintenance works and accidents



What does this mean for the European economy in monetary terms?

ANNUAL SAVINGS FROM 2050

- ✓ 70% better energy efficiency = **€70 billion**
- ✓ 50% road infrastructure maintenance expense reduction = **€20 billion**
- ✓ 60% better labour productivity + improved work/life balance = **€47 billion**
- ✓ 95% fewer accidents per tonne-kilometres = **€70 billion**
- ✓ Up to 90% fewer air pollutant and greenhouse gas emissions = **€17 billion**
- ✓ 50% estimated reduction of road congestion = **€90 billion**

The annual contribution to the public budgets and to European economic actors would amount to €314 billion, which is equal to €222 billion net of present day internalisation charges (paid through taxes and charges).

Infrastructure capacity / bottlenecks: more and better-quality train paths for freight

	TEN-T Guidelines Regulation	New Rail Infrastructure Capacity Management Regulation*	Combined Transport Directive revision (COM proposal)*
Short run	Key Performance Indexes for (i) cross-border freight train punctuality and for (ii) railway border crossing procedure for internal EU borders	New rules for train path allocation during annual timetabling and when circumventing TCRs (bottlenecks) characterised by: - *European framework* (which is to prevail over *strategic guidance* of the Member States) - Socio-economic and environmental cost-benefit criteria as a decision support tool	Broader and enhanced defintion of *combined transport operation* to include domestic operations and should enable terminal competition (within 150km range). Studies by Member States should declare the short-, medium- and long-term modal shift objectives, which should be achieved through: - EU-wide benefits - MS-specific state aid regime, which is commensurate to the objectives
Long run	Upgrades of existing intermodal terminals, including road and rail last mile access, and construction of missing terminals (national study and action-plan, harmonised technical parameters and functionality) Rail infrastructure upgrades to harmonised technical parameters: 22,5t axle load, 740m train length, 4m loading gauge, electrification		

* Legislation not yet complete – proposed changes yet to be achieved

UIRR vision: The existing railway infrastructure is sufficient to provide the capacity and the quality of service required by the additional freight trains that can deliver the envisioned modal shift.

Shippers and consignors should implement philosophical changes

- ✓ **Critical Mass** to be achieved by entrusting all regular cargo flows to Combined Transport
  - **Increased frequency** -> improved reliability and journey speed -> reduces working capital need
  - **Regular trains** -> better, routine handling by both traffic managers and traction service providers -> better punctuality
  - **Routine reception at terminals** -> emergence of dedicated CT road-leg hauliers -> improved positioning of consignments
- ✓ **Mixed cargo to Combined Transport:** not only heavy (high density) but also light (low density) cargo
  - **740m long trains** can not be filled by exclusively heavy consignments (-> longer trains reduce costs and thus lower prices)
  - **Mixed cargo within the intermodal loading unit** -> high- and low-density cargo can enable optimal loading room utilisation

Limited investments targeted to freight needs

- ✓ **TEN-T railway infrastructure** on selected lines and with a focus on technical parameters for freight
  - **Train length and axle load** -> 740m long trains and 22,5t axles
  - **4m loading gauge** -> needed for the carriage of semi-trailers in regular pocket wagons
  - **Electrification** -> both main lines and last mile rail connnections to/from terminals

- ✓ **Intermodal assets** such as rolling stock, loading units, terminals and digitalisation
  - **Various types of intermodal wagons**
  - **Intermodal loading units** -> high- and low-density cargo can enable optimal loading room utilisation
  - **Terminals** -> upgrades to existing terminals and the construction of new terminals with state aid
  - **Digitalisation** -> both operators and terminals -> enhanced transparency, traceability of intermodal consignments and direct communication with customers

Modal shift of 1000bn tkm: what are the preconditions?

No need for unaffordable public or private investments

- The estimated annual public investment need into the TEN-T transport infrastructure is about **€15 billion**.
- The estimated annual private investment into intermodal assets like terminals, rolling stock and digitalisation amounts to **€1,5 billion**.

Philosophical changes to freight transport choices

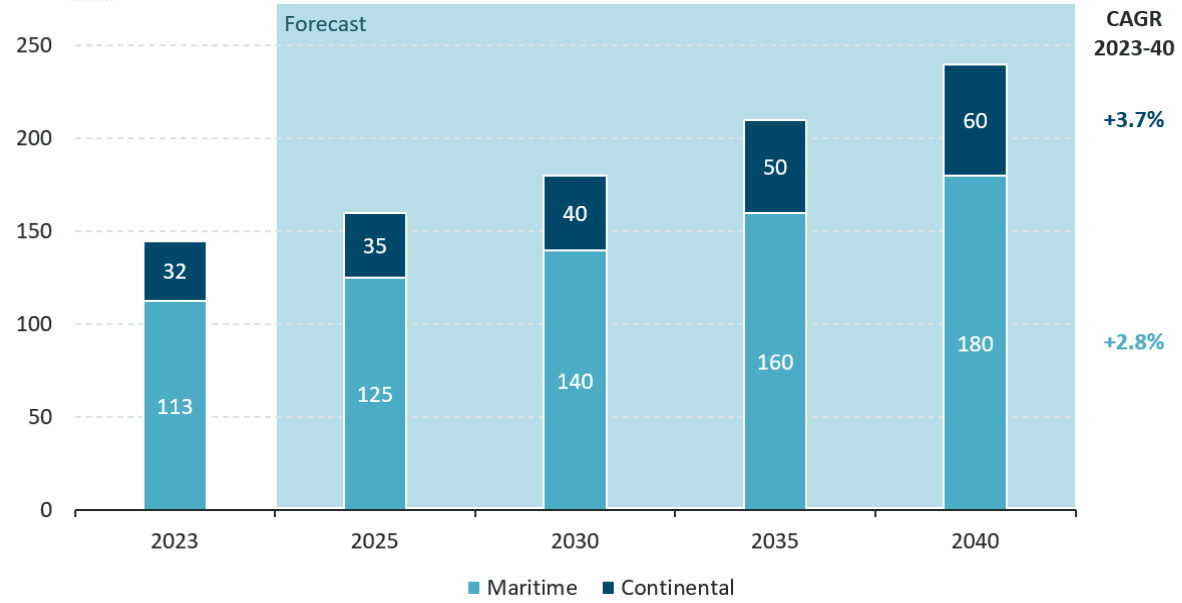
- **Critical mass**: regular cargo flows should be carried by Combined Transport (non-road modes), while unimodal trucking should only carry the irregular, last minute shipments.
- **Mixed cargo**: heavy (high density) and light (**low density**) cargo should both be entrusted to Combined Transport as this will be needed to fill 740m long trains.

Legislative and regulatory steps

- Adoption of the **new Rail Infrastructure Capacity Management Regulation** with the right content to ensure that cross-border intermodal freight trains are granted **more and better quality train paths**, as well as that the **hierarchy of these trains is elevated** in the eye of rail traffic managers.
- Revision of the **Combined Transport Directive** with a **broader, enhanced definition** of a *combined transport operation*, and the required compensatory and promotional **state aid measures**
- The correct and timely implementation of the **TEN-T Guidelines Regulation**.
- **Standardisation and digitalisation** in the field of railway transport would need to be advanced throughout Europe. The correct and timely implementation of the **Electronic Freight Transport Information Regulation** and the **TSI Telematics** are needed.

The market for Combined Transport by rail is forecast to grow by 3% p.a. until 2040

Development of unaccompanied CT rail transport performance by transportation type
(billion tkm)



Source: SCI Verkehr Rail Freight Market Forecast

- SCI Verkehr expects further growth of unaccompanied Combined Transport by rail until 2040. **In 2040, the market will be around two thirds bigger than in 2023.**
- With a compound annual growth rate of 3.7% between 2023 and 2040, **continental transport should grow at a higher rate than the overall market** and almost double by 2040. This development should be mainly driven by the currently planned and further expected expansion of the continental network, especially in markets like Spain, France and Poland. In 2040, continental transport's share of the Combined Transport market will be 25% compared to 22% in 2023.

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THANK YOU

For your attention