UIRR
INTERNATIONAL UNION FOR ROAD-RAIL COMBINED TRANSPORT

EUROPEAN TRAINING CENTRE FOR RAILWAYS

COMBINED TRANSPORT: EFFECTIVELY INSERTING NON-ROAD MODES, SUCH AS RAIL FREIGHT, INTO LONGER DISTANCE TRANSPORT-CHAINS

Ákos ÉRSEK
Chief Policy Advisor

Brugge, 2 July 2025

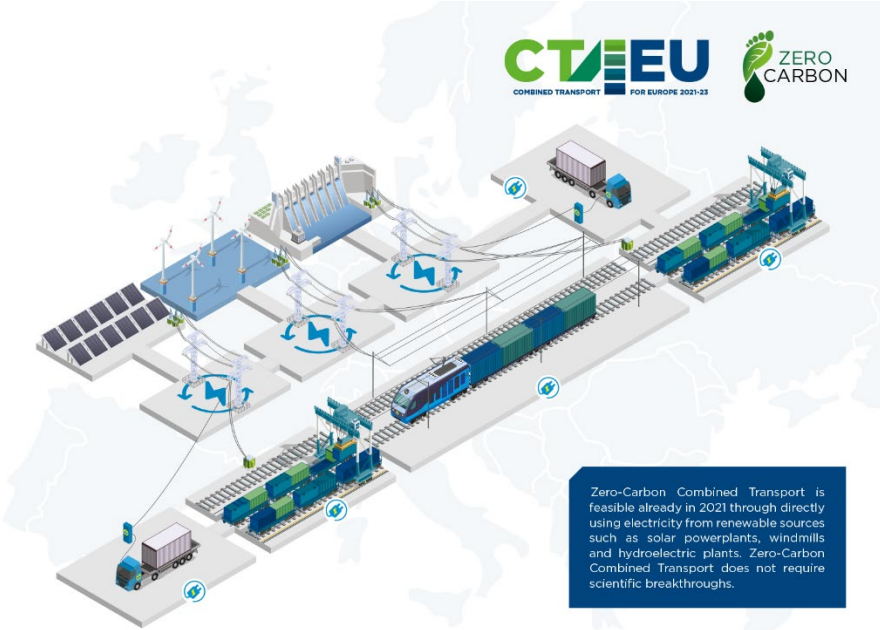
UIRR: the Community of European Intermodal Freight Transport

Quis es **door-to-door Combined Transport?**

--- the most efficient way to insert non-road modes of transport into longer distance transport chains

ECJ: „door-to-door Combined Transport is a transport mode in itself"

D2DCT: capable of efficiently connecting any origin-destination pair accessible by road only, yet using non-road modes of transport on the longest section



New political majority in Europe: **the Clean Industrial Deal**

Competitiveness: productivity, efficiency

Resilience: reducing external exposures

Re-industrialisation: manufacturing in Europe

+ **the European Green Deal**: preserving greening results

2024 study: The Efficiencies of Combined Transport

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.**

How does Combined Transport measure up?

Energy efficiency: **70% less energy needed per tonne-kilometre**

- ✓ **SOURCE OF PRESENT DAY EFFICIENCY** :
  - low friction of steel-on-steel or steel-in-water (compared to rubber-on-asphalt)
  - large sizes (trains: a 'platoon' of 40-50 truckloads, waterway vessels: 50-2000 truckloads)
  - high degree of electrification of railways (grid power, regenerative braking)
  - dedicated infrastructure (reduced need to brake, reduced need for start-and-stop)

- ✓ **OUTLOOK for Combined Transport** :
  - Uniform 740m train length and electrification (TEN-T)
  - Better traffic controlling (further reduction of graking action)
  - Further electrification of transhipment and road last mile (BEV trucks)
  - Increased share of locally generated renewable electricity (reduced transmission loss)

Infrastructure efficiency: **50% reduction of road maintenance expenses**

- ✓ **SOURCE OF PRESENT DAY EFFICIENCY** :
  - railway infrastructure is built for 22,5t axles – the axle range on railways is 18-22,5 tonnes (there are no „light" and „heavy" axles on rail)
  - heavy axles on roads cause exponentially greater wear-and-tear: 98% of road vehicles roll on axles of 5 tonnes or less (passenger cars: 1t axle), only 2% of road vehicles have 10t or heavier axles (presently 11,5t)
  - roads and bridges have historically not been built for 11,5 tonne axles, but much lower – the legislation increased maximum permissible axle load over the years
  - the ratio of overloaded heavy trucks was estimated at 10% -- these cause even greater degradation

- ✓ **OUTLOOK for Combined Transport** :
  - 22,5-tonne axles are adequate for Combined Transport – no increase is sought
  - alternative fuelled road vehicle drive axles need to be 12,5 tonnes

Labour productivity: **60% fewer manhours per tonne-kilometre**

- ✓ **SOURCE OF PRESENT DAY EFFICIENCY** :
  - rail: 40-50 truckloads per driver, waterborne: 50+ truckloads per crew member
  - trucks: 1 driver per truckload
  - resting time: enforcement gaps in road haulage; no issues in rail or waterborne

- ✓ **OUTLOOK for Combined Transport** :
  - average speed of freight trains and trucks performing Combined Transport road legs can increase considerably
  - self-drive technologies in all modes and in transhipment are under development

Safety efficiency: **95% fewer accidents, fatalities and injuries**

- ✓ **SOURCE OF PRESENT DAY EFFICIENCY** :
  - rail and waterborne: accidents/fatalities/injuries per tonne-kilometre are very low due to built-in safety systems (active train control systems)
  - trucks: the role of the human factor in accidents is very high + severity of accidents by heavy goods vehicles is exponentially higher (3.000 road fatalities and over 20.000 serious injuries are caused by heavy goods vehicles in the EU annually – most of them on motorways)

- ✓ **OUTLOOK for Combined Transport** :
  - ERTMS deployment will further boost safety performance

Pollution: **90% lower emissions per tonne-kilometre**

- ✓ **SOURCE OF PRESENT DAY EFFICIENCY**:
  - rail and waterborne: energy efficiency + use of electric propulsion in rail freight
  - trucks: internal combustion and rubber-on-asphalt causes most harmful emissions

- ✓ **OUTLOOK for Combined Transport**:
  - longer trains
  - regenerative braking – electric brakes to replace pressure air braking

Congestion: **50% reduction of road congestion**

- ✓ **SOURCE OF PRESENT DAY EFFICIENCY** :
  - rail and waterborne: active route- and traffic management
  - trucks: free driving on motorways causes traffic overloads + frequent accidents and infrastructure works cause congestion

- ✓ **OUTLOOK for Combined Transport** :
  - improved rail traffic management – better bypass planning for infrastructure works

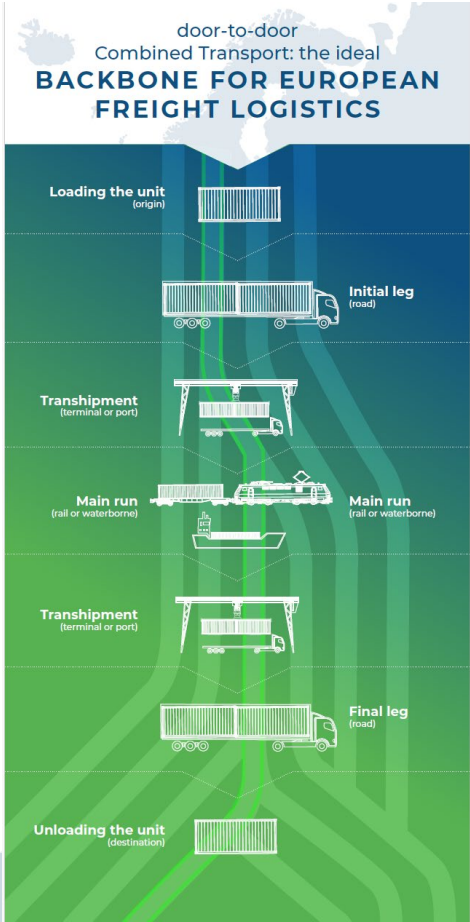
Vision: **the "backbone of land freight transport over 300km"**

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"?
   – 1.000 billion tonne kilometres

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



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).

Challenge of the day: **tariffs, trade war, deglobalisation**

Combined Transport has the answer

Maritime hinterland		Continental
Port to inland and back	**Points connected**	Any two points within Europe
ISO containers, tank containers	**Loading units**	PWHQ containers and swap bodies, semi-trailers
Long standing practice	**Know how**	Learning phase
Port access capacities, lack of train paths, water levels	**Bottlenecks**	Shortage of inland terminals, lack of train paths, water levels
Modest	**Growth potential**	**Large**

Military Mobility

Wagon fleet: 5000+ pocket wagons designed and built for the carriage of rubber wheeled vehicles (trailers)

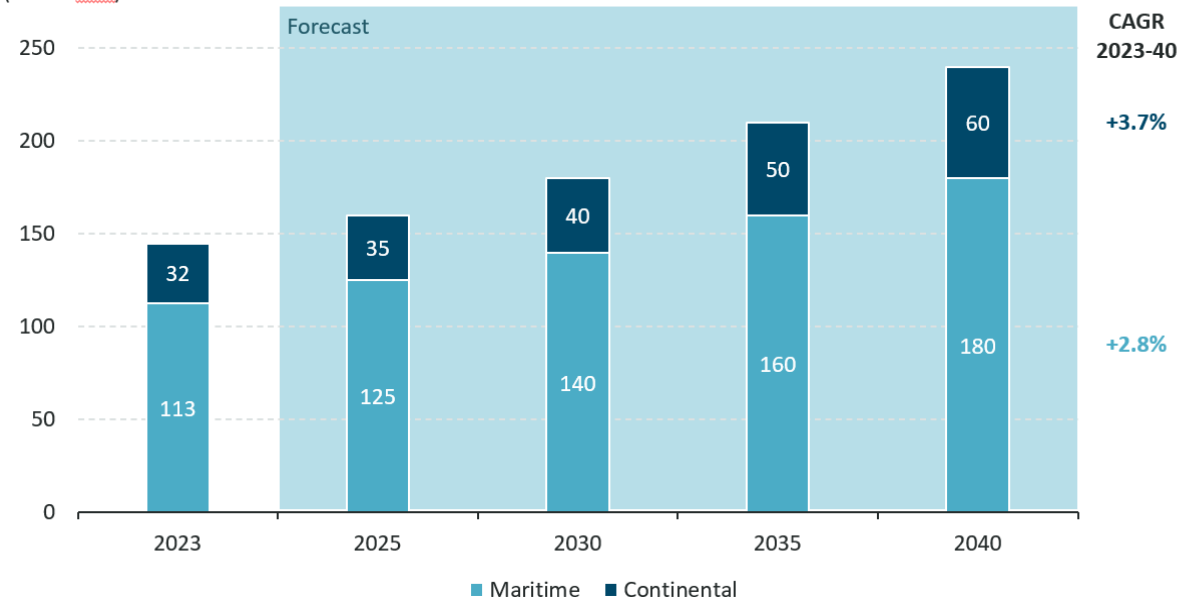
Transhipment terminals: over 1000 terminals throughout Europe facilitate the transhipment of cargo to/from intermodal wagons

Cargo carriage capability: there is an intermodal solution for every type of cargo carried for and by the military + there is an intermodal terminal near every depot, base, training ground and border crossing where military transport need to go.

[COM Implementing Regulation 2021/1328 on dual-use infrastructure.]

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

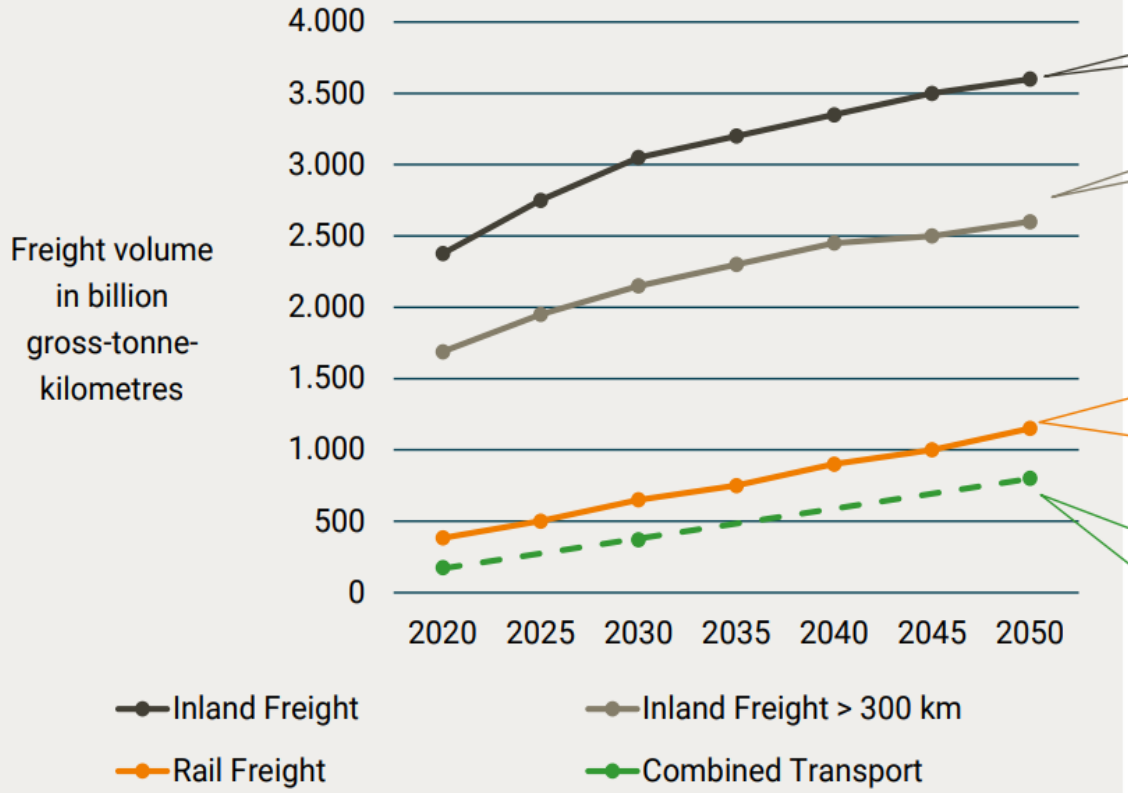
Development of unaccompanied CT rail transport performance by transportation type
(billion tkm)



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.

Development of freight volumes: overall demand evolution, rail freight and combined transport



+ 51% total inland freight transport demand[01]

+ 54% long-distance inland freight transport demand[01]

× 3 rail freight (in tkm)

× 2 trains per day

44 % rail share in long-distance transport (> 300 km)

× 4 combined transport (in tkm)

5 % Annual growth rate of CT

70% share of CT in rail transport

The demand for freight transport, especially by rail, will increase continuously in the coming years.

SUMMARY

1. **Transport is a policy-driven market**: publicly owned and operated infratructure, heavy regulation due to externalities + need for safety → **policymakers play a key role**

2. **The EU's new political direction**: whether greening or competitiveness and resilience, the Clean Industrial Deal → **plays into the hand of Combined Transport**

3. **The efficiencies of Combined Transport**: robust performance that can play a significant role if Combined Transport can become the backbone of long distance land transport → **must have a vision**

4. **An annual growth rate of 5% can get us there**: Combined Transport average 6-7% annual growth from 1992-2008 → **proven doable**

5. **What is needed to make it happen?** → **collaboration, confidence, unity**

CTA EU
COMBINED TRANSPORT FOR EUROPE 2024-2026

UIRR
INTERNATIONAL UNION
FOR ROAD-RAIL
COMBINED TRANSPORT

THANK YOU

For your attention

UIRR
INTERNATIONAL UNION
FOR ROAD-RAIL
COMBINED TRANSPORT

Ákos ÉRSEK
Chief Policy Advisor

E-Mail : aersek@uirr.com | Mobile: +32 (0)473 973 491
Tel.: +32 (0)2 548 78 91 | Fax: +32 (0)2 512 63 93

UIRR s.c.r.l. | 31, rue Montoyer - bte 11 | 1000 Brussels | Belgium