

Industry 4.0 and the Green Revolution in the railway sector

Megatrends, changes in mobility & the role of the railways

one world. one rail



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What drives the transformation



How the megatrends are affecting the mobility needs & behaviors

**HOW THE
MEGATRENDS
ARE AFFECTING
THE TRANSPORT
SECTOR?**

**WHAT ARE THE
AREAS WHERE
SECTOR'S
DISRUPTION IS
IMPACTING?**



The mobility trends – passenger transport

TENDENCY OF MOBILITY INTENSITY TO STABILISE OR INCREASE LESS RAPIDLY

e.g. 13.500 km / year in EU

... BUT WITH HIGHER VARIABILITY OF TRAVEL PATTERNS...

Trips repeated 5 days per week <40% of total

... WITH LARGER USE OF INTERMODAL SOLUTIONS ...

NEED FOR GREENER SOLUTIONS

Up to 20% of trips in urban areas are intermodal

... AND WITH (CAR) SHARING STARTING TO REPLACE OWNERSHIP

<2,5% of urban mobility but ... up to 65% of sharers also use Public Transport

ALL FACTORS DRIVING THE DEVELOPMENT OF SMART MOBILITY SOLUTIONS ...

>50% HSR tickets are purchased online

... THAT NEEDS APPROPRIATE REGULATORY CONDITIONS AND BUSINESS CASES

The mobility trends – freight

FREIGHT TRANSPORT FACES ITS OWN SPECIFIC EVOLUTION

...BUT SOME TRENDS (SUCH AS INCREASED TRANSPORT CHAIN COMPLEXITY & DIGITALISATION) ARE COMMON

Increasing complexity of the logistic chain

-  Growth of long distance trade w/complex logistic chains
-  Threats on transport security (cyber- and physical attacks)
-  Market increasingly controlled by forwarders and 3PLs

CONTINUOUS AND COMPLETE FREIGHT TRACKING & TRACING



Larger transport vehicles to achieve economy of scale

-  50.000 km of «Core Network» for 740 m trains by 2030 
-  Average container ships capacity doubled between 2008 and 2015)
-  60t Mega-trucks authorised even in some EU countries 

LARGER, FAST & EFFICIENT TRANSHIPMENT HUBS



E-commerce & flow consolidation needs

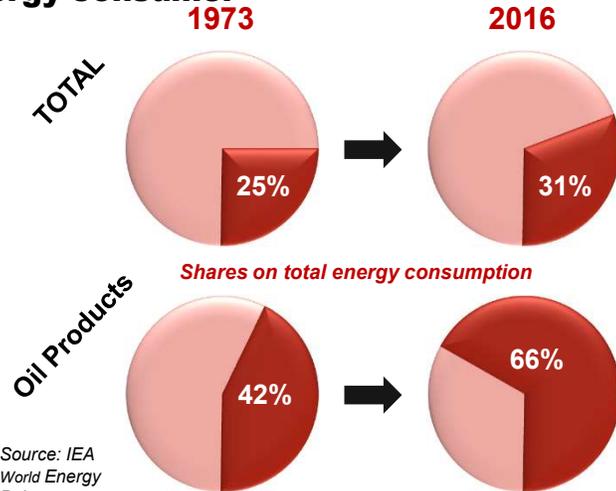
-  B2C parcel flows growing yearly by 15-20% / anno
-  Thicker and more complex networks for freight collection and distribution (due to E-commerce growth, but also to the need of long distance flows consolidation)

FIRST / LAST MILE FLOWS OPTIMISATION



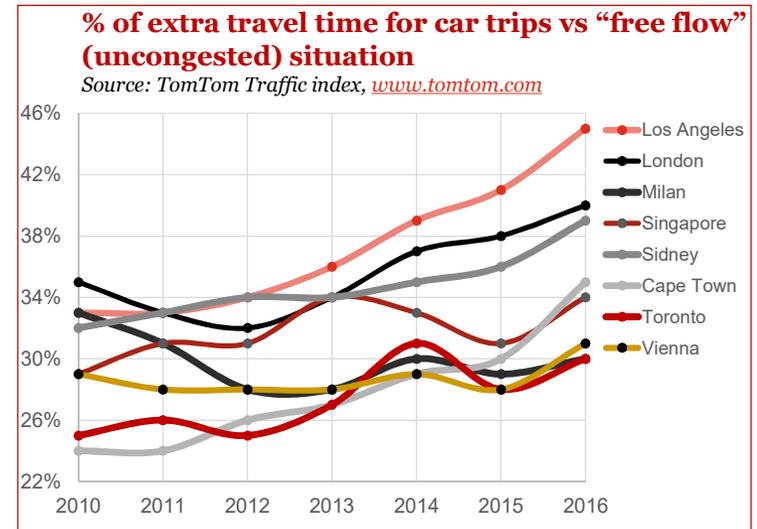
While facing the challenging new trends, transport system needs also to become more sustainable and less congested

SUSTAINABILITY: Despite better efficiency, transport is increasingly a top energy consumer



Source: IEA
World Energy
Balances

CONGESTION: prolonging travel time by 30%+ in large cities

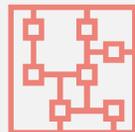


The evolving role of railway operators

The key challenges



Variability of travel patterns / needs



Intermodality



Digitalisation



Business case for smart mobility

The railway operators' agenda

1. Design the service for different personas / demand segments
2. Increase the level of flexibility in service design & operations

3. Develop both physical & digital interconnection
4. Ensure last mile connectivity & efficiency

5. Co-design & partnership to boost smart mobility / smart logistics solutions
6. Understand better the transport demand and act accordingly
7. Improve customer experience

8. Understand and monetize the benefits (incl. environmental ones)
9. Do not loose railway capability to achieve economies of scale
10. Not observer, nor monopolist

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