

Private financing of rolling stock

Market analysis



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A. Objective, scope, and proceeding



The study was conducted in order to assess the magnitude of private financing in funding rolling stock projects in Western Europe

Objectives and Procedure

Objectives

- > Determine **absolute** and **relative** importance of private financing in funding rolling stock projects, focusing on
 - Different product categories (High-speed Trains, Multiple Units, Locomotives, Wagons, Multiple Units and Urban Systems)
 - Aggregated Western European Market and major submarkets including Germany, France, United Kingdom, and Italy



Procedure

- > Analysis of **246 rolling stock projects** in the years 2011 – 2013 in **13 countries**
- > Classification of purchasing parties in categories public, and private
 - Joint Ventures are considered private to the extent of the private party's share in the Joint Venture
 - Projects of public customers (federal, regional governments and cities) were always treated as 100 % publicly financed since project based financing information were not available

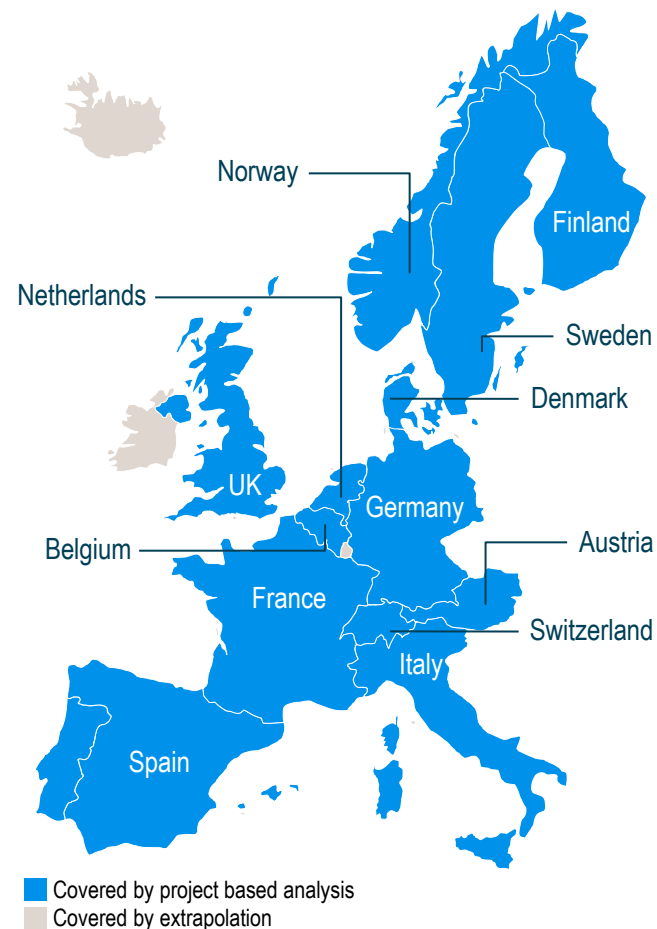
UNIFE Product categories were assigned to five subsets according to their main purpose of application

Scope – Product Categories

High Speed	<ul style="list-style-type: none"> > Very High Speed Trains (> 250 kph) > High Speed Trains (220 – 250 kph)
Multiple Units	<ul style="list-style-type: none"> > DMUs (\leq 160 kph) > EMUs (\leq 160 kph) > DMUs (161 – 219 kph) > EMUs (161 – 219 kph)
Urban Systems	<ul style="list-style-type: none"> > Light Rail Vehicles (LRV) > Metro Vehicles > Automated Systems
Locomotives	<ul style="list-style-type: none"> > Electric Locomotives > Diesel Locomotives
Coaches / Wagons	<ul style="list-style-type: none"> > Coaches – Single Deck > Coaches – Double Deck > Wagons (Freight)

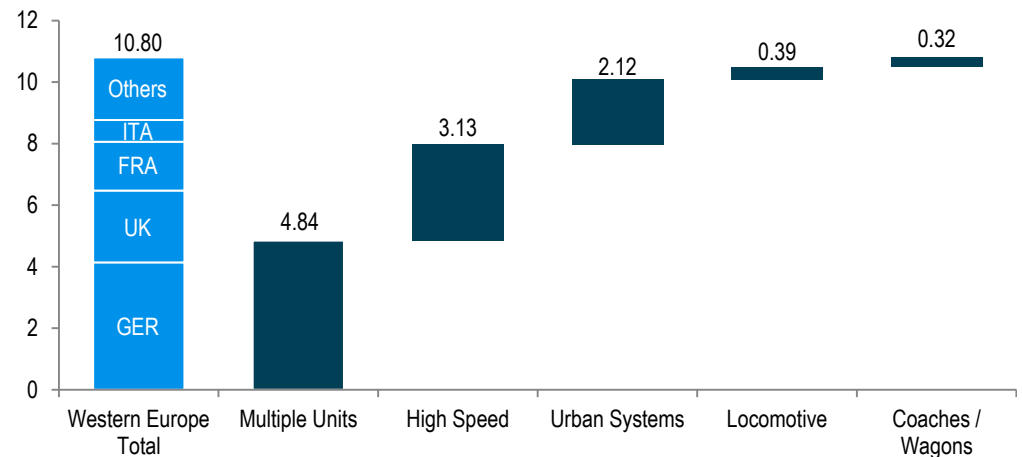
Our project database provides roughly full coverage of total Western European market volume

Geographic scope and market volume by product category



- > Of the WMRS 2014 average annual market volume of EUR 10.80 bn, an aggregated volume of EUR 9.88 bn (91 %) has been classified according to the customers financial structure
- > Of the 246 rolling stock projects analyzed, 84 (34 %) belong to Germany, 39 (16 %) to France, 37 (15 %) to Italy, 22 (9 %) to the United Kingdom and 64 (26 %) to customers from other countries
- > Average market volume per project was approx. EUR 121 million

Average annual market volume by product category, 2011 – 2013 [EUR bn]



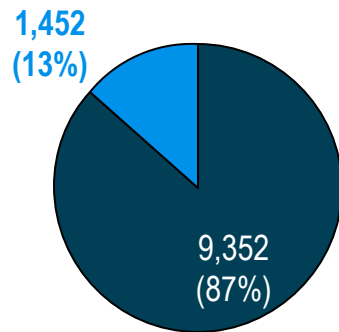
B. Key findings



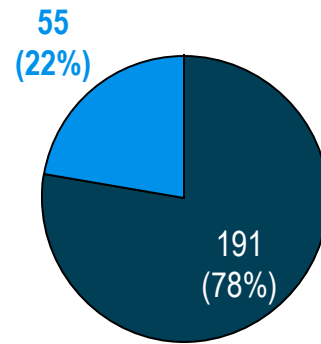
Private financing accounts for about EUR 1.45 billion in Western European rolling stock volume

Overall Results of private financing shares

by Volume [EUR m]

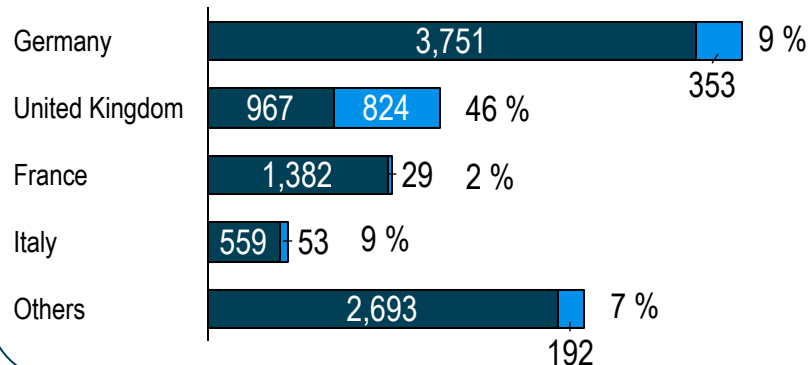


by # projects

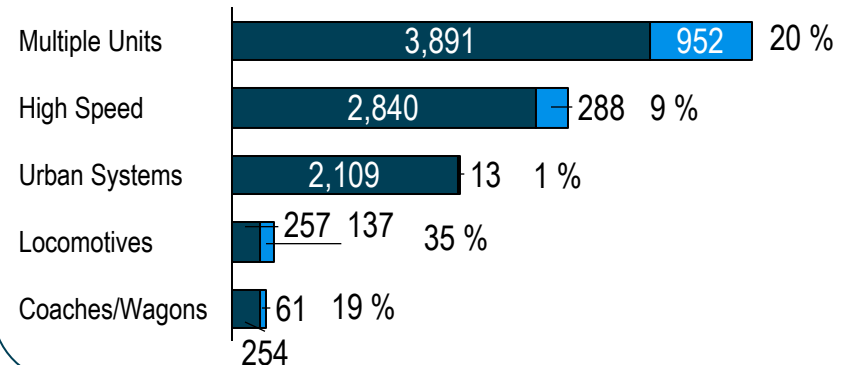


- > Whereas private financing accounts for about 13 % (EUR 1.45 bn) of total market volume, **22 % of all projects are related to private financing** either to full extent or partly in Joint Ventures
- > **Germany** and the **United Kingdom** are the major markets for private financing in rolling stock, representing 81 % of the aggregated private financing volume in Western Europe
- > Private financing has considerable importance in the acquisition of **Locomotives** (35 % share), **EMUs and DMUs** (20 %) as well as **Coaches and Wagons** (19 %)

by country [EUR m]



by product category [EUR m]



Private finance
Public finance

Private financing does have considerable impact for multiple units and locomotives

Key Findings of detailed analysis

- | | |
|---------------------------|--|
| 1 High Speed | <ul style="list-style-type: none"> > VHS and High Speed Systems is largely dominated by publicly financed players such as state owned rail companies and public authorities > One partially privately financed project has been observed in recent years |
| 2 Multiple Units | <ul style="list-style-type: none"> > Representing 66 % of the total private financing market volume, Multiple Units is by far the most important single product category for private financing > A total of 24 projects with a share in private financing have been conducted |
| 3 Urban Systems | <ul style="list-style-type: none"> > As most urban transport systems in Western Europe are exclusively operated by public enterprises, the share of private financing is very low (<1 % by volume) > A total of 3 projects with a share in private financing have been conducted |
| 4 Locomotives | <ul style="list-style-type: none"> > With a share of 35 % by volume and 57 % by number of projects, private financing of rolling stock is best established in the Locomotive sector > A total of 20 projects with a share in private financing have been conducted |
| 5 Coaches / Wagons | <ul style="list-style-type: none"> > Whereas Coaches are mainly publicly financed, private financing is quite common in the Wagon sector > A total of 7 projects with a share in private financing have been conducted |

A clear correlation between liberalization of market segments and extent of private financing can be observed

Market liberalization and private financing

- » The two market segments** with the highest degree of liberalization display the highest share of private financing
 - > Multiple units are mainly ordered for regional transport which in several European countries is gradually liberalized (e.g. Germany, Netherlands, Sweden, U.K.)
 - > Locomotives are predominantly ordered for freight traffic – a market segment that has been liberalized across Europe
 - > Freight cars also show high share of private financing

- » Regulated market segments** show low share of private financing
 - > High-speed traffic dominated by state-owned railways with access to cheap capital because of excellent ratings
 - > In urban transport, the public transport companies owned by the cities, generally order vehicles without private funding

As public funding is limited and rail traffic will be further liberalized, we expect significant growth of private financing

Expected development

Deregulation of rail transport

- > Further liberalization of regional rail transport in Europe expected (additional countries, greater market shares of private railways)
- > Private players will also slowly emerge in long-distance passenger transport
- > Rail cargo will continue to be characterized by many private players

Scarcity of public funds

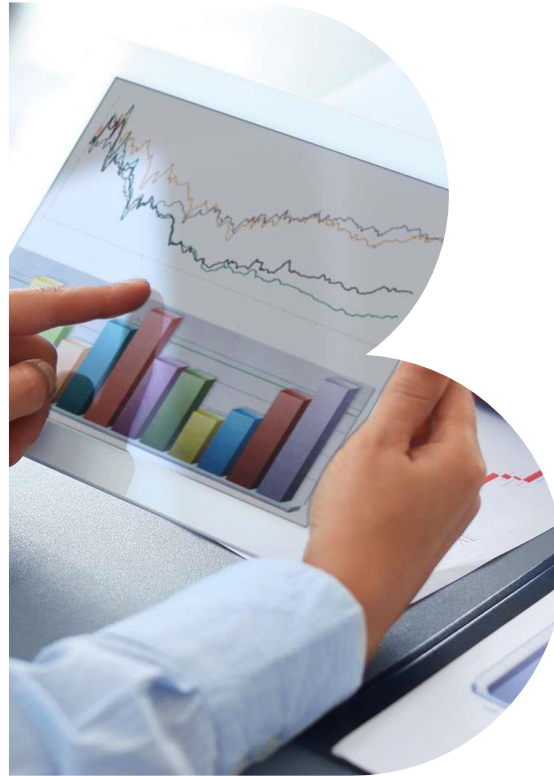
- > Continuing budget problems of public sector in most European countries – on all levels (federal, state, regional/municipal)
- > End of period with extraordinarily low interest rates will exacerbate the problem

Advantages of private financing

- > Enlarges the pool of available funding for rail transport
- > Creation of additional incentive for higher customer/market orientation and efficiency of operators

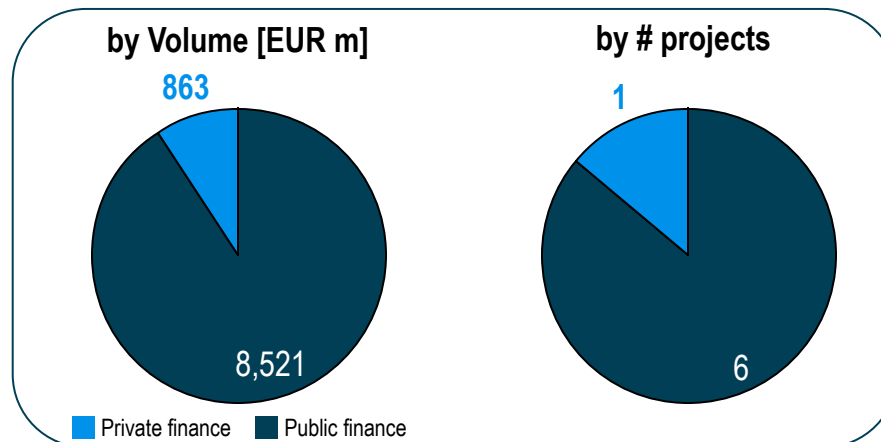
Significant growth of private financing

C. Results by segment



The area of High Speed rolling stock projects is largely dominated by public customers

Detailed results High Speed Trains¹⁾



- > High Speed rolling stock comprises the product categories "VHS" (EUR 2,024 m) and "High Speed Trains" (EUR 7,360 m)
- > Major customers of High Speed rolling stock are typically **state-owned rail companies** such as Deutsche Bahn AG, SNCF or SBB
- > The Department for Transport's **East Coast Line** project is a public-private partnership with a **private financing portion** – the only project in this segment with a private financing share
- > The segment is characterized by **few orders of very large scale** with an average contract size of EUR 1,226 m

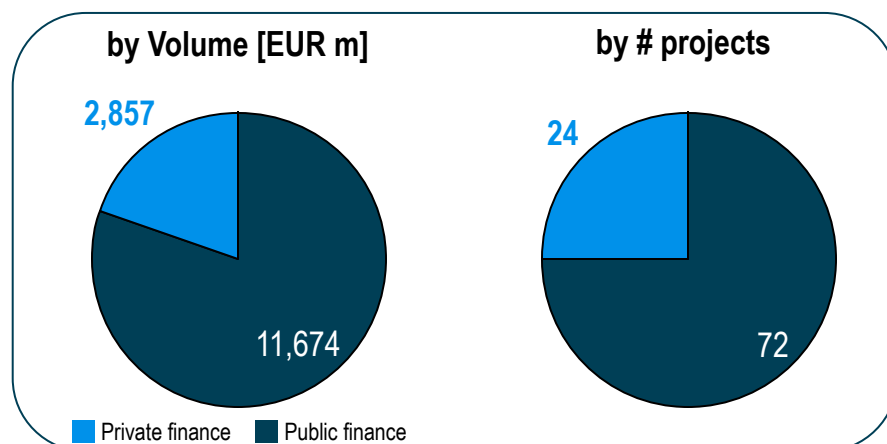
Key projects (overall market)

	Country	Project name	EUR m	privately financed
Deutsche Bahn	GER	ICx	4,754	-
Department for Transport	UK	East Coast Line	1,580	partially
SNCF	FRA	HGV Trains	1,200	-
Eurostar	UK	Velaro trains	617	-
SBB	CH	Pendolino trains	203	-

1) Market volumes shown here are overall volumes for the 2011-2013 period. They correspond to the average annual market volume as shown on p. 6 of this document

Multiple units are among the core markets for public financing activities in Western Europe

Detailed results Multiple Units¹⁾



- > Multiple Units comprises the product categories "DMUs" (EUR 2,647 m) and "EMUs" (EUR 11,884 m)
- > With a total share of EUR 2,857 m, Multiple Units are the **most important** single product category for private financing
- > The main focus of private financing activities in the Multiple Unit segment are **small to mid-size projects**
- > Private financed Multiple Units mostly operate on secondary rail services

Key projects (overall market)

	Country	Project name	EUR m	privately financed
Transport for London	UK	Thameslink Route	1,891	partially
RATP	FRA	70 Doubledeck EMUs	1,000	-
ÖBB	AUT	100 Desiro ML ECU	557	-
DB Regio	GER	90 BR 430 trains	500	-
Stockholm (SL)	SWE	46 Cordia Nordic	440	-

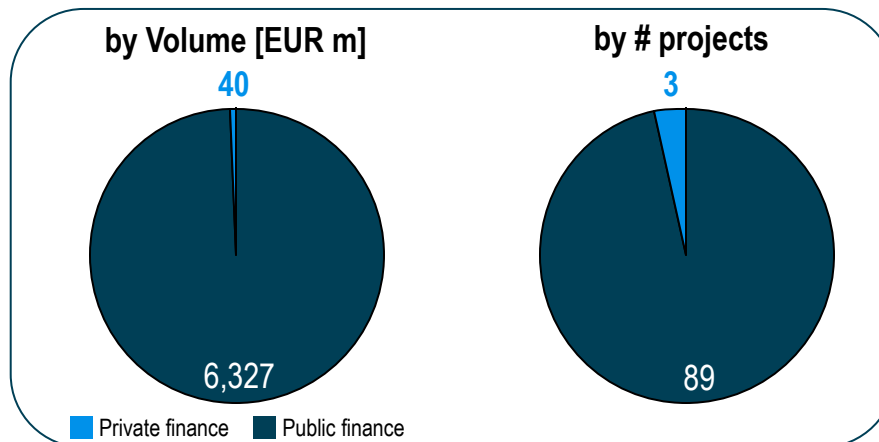
Key projects (overall market, continued)

	Country	Project name	EUR m	privately financed
Netinera	GER	63 DMUs	300	partially
GOVIA	UK	26 EMUs	292	partially
Alpha Trains	GER	Stadler Flirt (EMUs)	250	fully
Southern Railway	UK	24 EMUs	207	partially
Veolia	GER	35 EMUs	200	fully

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Urban systems are foremost operated by public enterprises

Detailed results Urban Systems¹⁾



- > Urban Systems comprises the product categories "Light rail vehicles" (EUR 3,359 m), "Metro vehicles" (EUR 2,914 m) and "Automated Systems" (EUR 94 m)
- > Since most local transport networks in Western Europe are exclusively operated by public bodies, the **share of private financing is rather low**
- > Privately financed purchases of Urban Systems have only been recognized in the **Cities of Nottingham (UK)** and **Montpellier (France)**

Key projects (overall market)

	Country	Project name	EUR m	privately financed
Stockholm (SL)	SWE	96 Metro Trains	603	-
RATP	FRA	66 Metro Trains	306	-
Baseler Verkehrsbetriebe	CH	58 Light Rail Vehicles	217	-
ATM Milano	ITA	30 Metro Trains	210	-
Stadt München	GER	Metro Trains	201	-

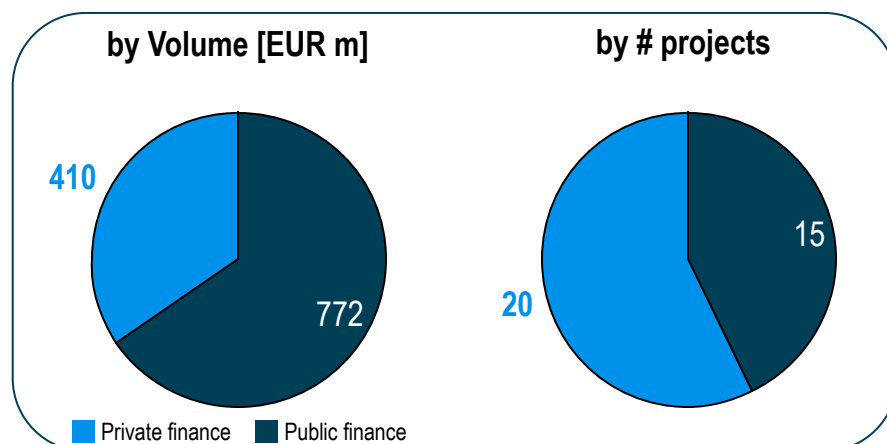
Key projects (overall market, continued)

	Country	Project name	EUR m	privately financed
Nottingham Express Transit	UK	22 Light Rail Vehicles	57	partially
TAM Montpellier	FRA	2 Light Rail Vehicles	6	partially
British Airport Authority (BAA)	UK	Heathrow Airport	5	fully

1) Market volumes shown here are overall volumes for the 2011-2013 period. They correspond to the average annual market volume as shown on p. 6 of this document

Private financing is the most widespread in the locomotive sector

Detailed results Locomotives¹⁾



- > Locomotives comprises the product categories "Electric Locomotives" (EUR 851 m) and "Diesel Locomotives" (EUR 331 m)
- > With a share of 35 % regarding sales volume, **private financing has significant relevance** in the Locomotive sector, being the **second largest single market**
- > Most privately financed projects in Locomotives can be characterized as **mid-size** purchases

Key projects (overall market)

	Country	Project name	EUR m	privately financed
VR Group	FIN	Electric Locomotives	300	-
LKAB	SWE	Electric Locomotives	67	-
AKIEM	FRA	15 TRAXX E-LoCo.	66	-
Nederlandse Spoorwegen (NS)	NED	E-Loks for IC service	61	-
MRCE Dispolok	GER	Electric Locomotives	51	fully

Key projects (overall market, continued)

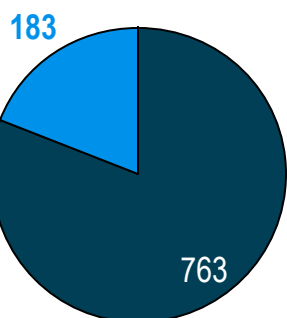
	Country	Project name	EUR m	privately financed
Mitsui Rail	GER	Electric Locomotives	47	fully
VPS GmbH	GER	Diesel Locomotives	40	partially
Europorte	FRA	Diesel Locomotives	36	fully
BASF SE	GER	Diesel Locomotives	34	fully

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Private financing has certain relevance in the wagons subsector

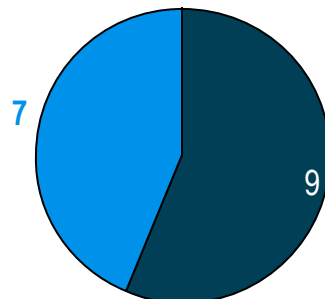
Detailed results Coaches and Wagons¹⁾

by Volume [EUR m]



Private finance Public finance

by # projects



- > Coaches and Wagons comprises product categories "Coaches-Single-deck" (EUR 116 m), "Coaches – Double-deck" (EUR 643 m) and "Wagons" (EUR 187 m)
- > With few exceptions private financing is concentrated on the purchase of **wagons for freight purposes**
- > Most privately financed projects in Coaches and Wagons can be characterized as **mid-size** purchases

Key projects (overall market)

	Country	Project name	EUR m	privately financed
Deutsche Bahn	GER	Coaches (Duplex)	254	-
DB Regio	GER	Coaches (Duplex)	110	-
VR Group	FIN	Coaches (Duplex)	90	-
Rhätische Bahn	CH	Coaches (Duplex)	88	-
VR Group	FIN	Coaches (Duplex)	55	-

Key projects (overall market, continued)

	Country	Project name	EUR m	privately financed
Ferrexpo	CH	Wagons	45	fully
BeNEX	GER	Coaches (Duplex)	45	partially
Ambrogio Trasporti	ITA	Wagons	44	fully
Touax Rail	FRA	Wagons	30	fully
Matterhorn Gotthard Bahn	CH	Coaches	17	partially

1) Market volumes shown here are overall volumes for the 2011-2013 period. They correspond to the average annual market volume as shown on p. 6 of this document

Roland
Berger

