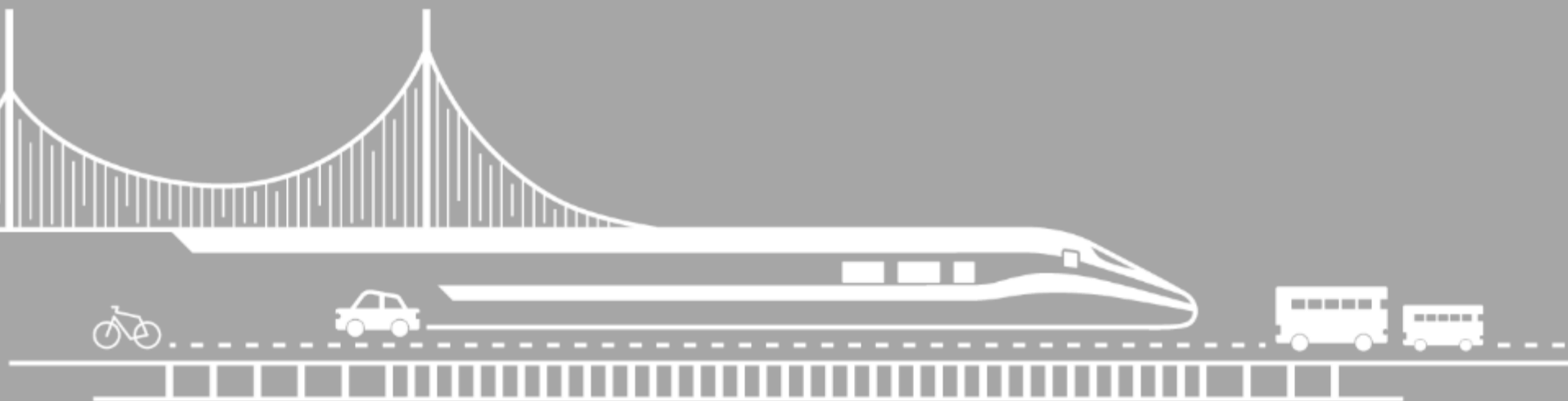


# Global Rail and Energy Workshop

## Session 1 – The current role of rail transport

**Alberto Mazzola**

24 September 2018





**HS passenger rail transport**



**Local passenger rail transport**



**Fast freight rail transport**



**Freight rail transport**



**Bus transportation**



**Stations**



**Urban Systems**



**General Contractor**



**Innovative Technologies**



**Rail infrastructure**



**Highway&Road infrastructure**



**Engineering**



**Certification**



**Diagnostic**



**Logistic centre, Freight village**



**Metro**

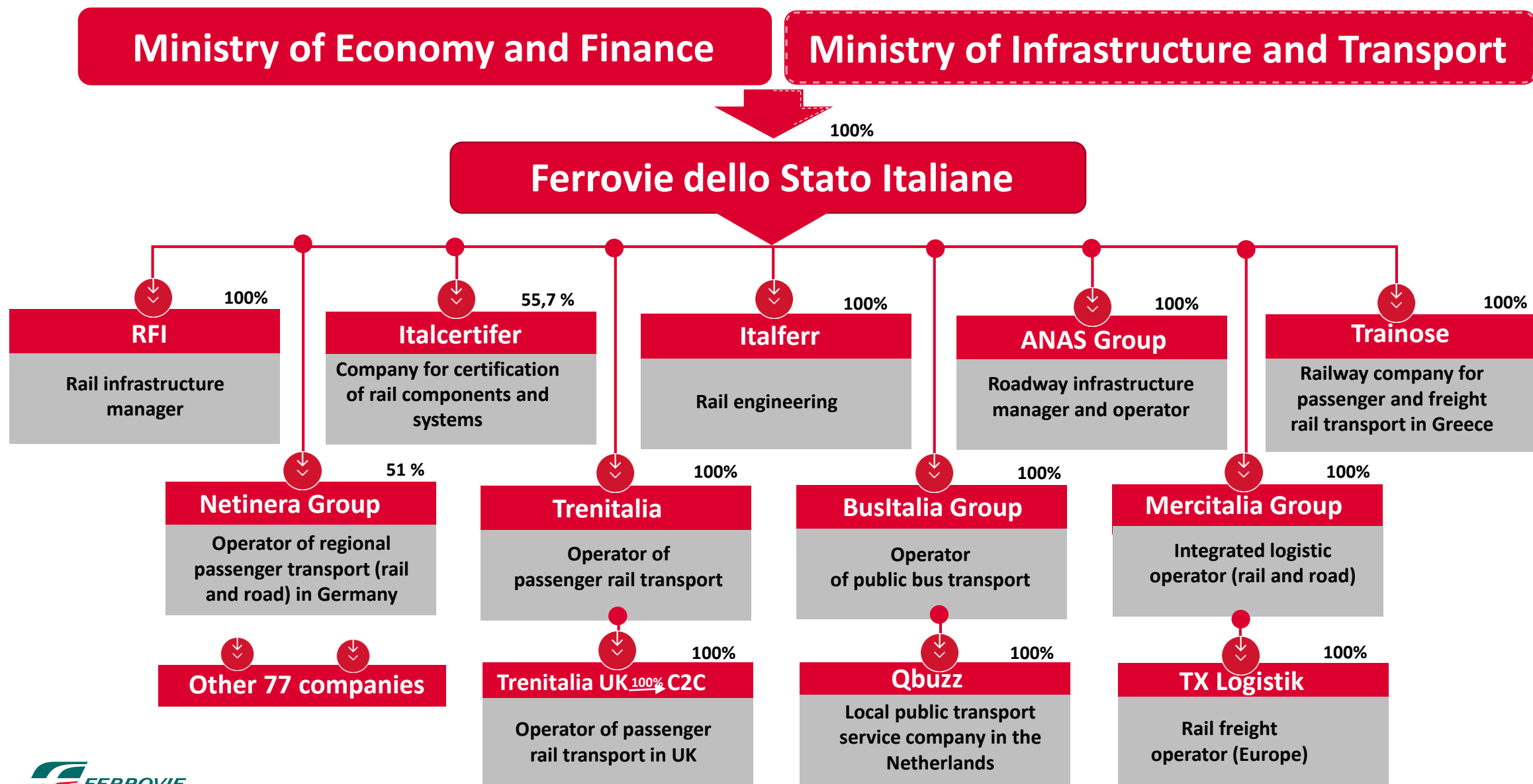


**ICT**



**O&M Rail & Road**

# Ferrovie dello Stato Italiane Group





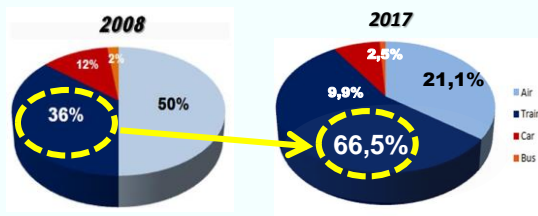
# Drivers for FS Italiane expansion

## 1. HS/HC network

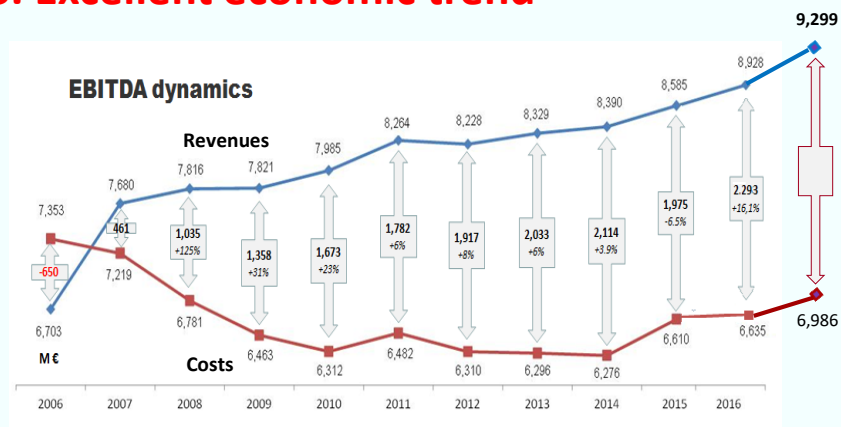
Lines	TO-MI 125 km	MI-BO 182 km	BO-FI 79 km	RM-NA 205 km	RM-MI 515 km
No HS	1: 41'	2: 03'	1: 02'	1: 45'	6: 38'
With HS	48'	1: 02'	34'	1: 07'	2: 55'



Modal split on the Milan - Rome (%)



## 3. Excellent economic trend

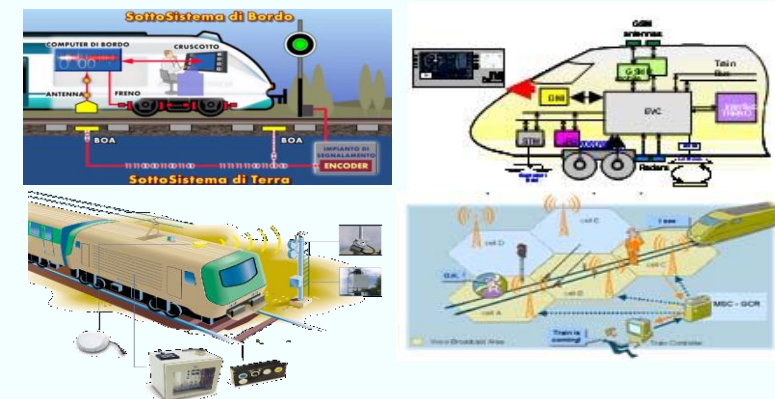


2017:  
**Revenues 9.299 M**  
 (+0,9% vs. 2016)  
**EBITDA 2.313 M**  
 (+3,4% vs. 2016)

## 2. Innovative Technologies for Safety

In 2005 FS Italiane was the first railway in the world to implement the ERTMS/ETCS level 2 system at 300 km/h.

SCMT 11.856 km  
 SSC 4.242 km  
 ERTMS 654 km  
 GSM-R 9.000 km



## 4. Performing Rolling stock

**FRECCIAROSSA 1000**  
 Ansaldo Breda/Bombardier

- **Technologically innovative**  
 commercial speed: 360 km/h running on high speed network  
 acceleration at start  $\geq 0,7 \text{ m/s}^2$
- **Interoperable**  
 completely interoperable (multi-system trainset to operate in Austria, Belgium, France, Germany, the Netherlands, Spain and Switzerland)



## Our commitment

The Group signed the “**UIC declaration on Sustainable Mobility and Transport**”, formalising its commitment to responsible practices in terms of human rights, labour conditions, the environment and anti-corruption, in line with the ten principles of the **UN Global Compact** subscribed in 2017<sup>(\*)</sup>.

FS Group also supports the **17 Sustainable Development Goals** launched on September 2015 by the United Nations, so as to promote a common agenda on development until 2030.

**WE SUPPORT**



FS Group is focused in particular on these SDGs

# Green Bond Framework and Use of Proceeds

- FS Italiane believes that rail and public transport are critical for sustainable development and global efforts to combat climate change.
- We developed a **Green Bond Framework in accordance with the 2017 ICMA Green Bond Principles 2017, which aims at financing projects with a positive impact in terms of environmental and social sustainability.**
- An amount equal to the net proceeds of the Green Bond will be allocated for investments in one or more of the “Eligible Green Projects”, which include new and on-going projects which may have a disbursement within the past 2 years.

## Eligible Green Projects

### FS Italiane Green Bond Framework will focus on Investments in Public Transport Rolling Stock Renewal

#### 1 New Electric Multiple Unit trains for regional passenger transport

*To ensure energy efficiency improvements, carbons emission reduction and modal shift to rail in the local public transport, among other improvements related to air quality and comfort for passengers*

#### 2 New High speed Trains “ETR 1000”

*To ensure energy efficiency improvements, carbons emission reduction and modal shift to rail in the long distance transport market, among other improvements related to air quality and comfort for passengers*

FS Italiane may decide to include additional Project Categories for future issuances

# New Electric Multiple Unit trains for regional transport

## > Eligible Green Project 1

- **Up to 30% expected lower specific energy consumption** with respect to comparable trains operating in Italy.
- **Innovative technologies for energy efficiency** (engines with natural ventilation, use of light alloys, LED lighting, CO<sub>2</sub> sensors for optimal climatization, smart parking mode, etc).
- **Recyclability** rate over **92%**.
- More **bikes racks**, with charging points for electric bikes.
- **Access to "White Certificate"** mechanism (national incentives scheme for high energy efficiency investments) obtained on February 15th, 2017.
- **Awarded** in the top ten Italian initiatives for **sustainable mobility 2017**.

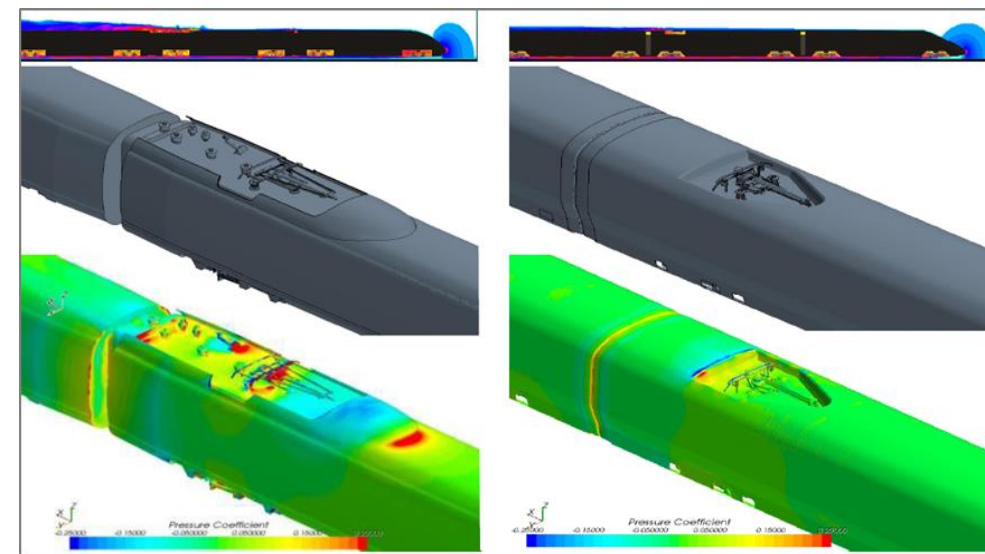




# High speed Train Frecciarossa ETR 1000

## > Eligible Green Project 2

- **18% lower specific energy consumption** with respect to comparable Frecciarossa ETR 500.
- Extremely **accurate aerodynamic design** to minimize motion resistance.
- **High efficiency of traction system.**
- **LED lighting.**
- **Recyclability rate over 94%.**
- First HS train provided with **Environmental Product Declaration (EPD).**
- Access to **"White Certificate"** mechanism (national incentives scheme for high energy efficiency investments) obtained on December 1st, 2015.





# ROCK – High Capacitu EMU

- Use of materials provided with environmental labels (Oeko – Tex standard and FSC).
- Minimum recyclability rate of 92%.
- Rack for 18 bikes + charging station for electric bikes.
- Maximization of usable space.
- Reduced mass per seat (280 vs 370 kg/seat).
- CO<sub>2</sub> sensors for optimal regulation of heating and cooling ventilation based on vehicle actual occupation.
- Materials for thermal insulation, with reduced dimensions and weights.



## POP – Medium Capacity EMU

- Use of ecological and recycled materials.
- Minimum recyclability rate of 96%.
- Rack for 8 bikes + charging station for electric bikes.
- Reduced mass per seat (370 vs 410 kg/seat).
- Use of natural ventilation for cooling (engines, braking resistance, etc).
- Improved torque characteristics both in traction and in electric braking.



## Sustainability award

Trenitalia won the “**Sustainable Development Award 2017**” for its new **Rock** and **Pop** regional trains designed and built with strong energy and environmental performances



- The Sustainable Development Award is an important recognition for those companies that have been able to combine environmental quality and industrial competitiveness. The award is promoted by the **Sustainable Development Foundation**<sup>(1)</sup> and **Ecomondo**<sup>(2)</sup>.
- Trenitalia is resulted among the top 10 Italian companies in the "Sustainable Mobility" category.



# Investment and fleet

> *The new generation of Trenitalia regional trains*

The new regional trains **Pop** and **Rock** will permit a saving of 30% of energy consumption vs the previous generation<sup>(\*)</sup>

450

new trains

4,5 bn €

investment



**FAST**

higher performance in terms of speed and acceleration



**COMFORTABLE**

ergonomic layout fully re-designed



**GREEN**

low energy consumption, bike space

# Ferrovie dello Stato Italiane Group

Thank you

