The Future of Railway Energy in Europe and Italy

13 June 2018

RFI
RETE FERROVIARIA ITALIANA
GRUPPO FERROVIE DELLO STATO ITALIANE

What do we manage: RFI network

RFI is the Italian Infrastructure Manager and it is responsible for traffic management, maintenance and development of the italian railway infrastructure

~ 16.700 km of lines
~ 24.000 main track km

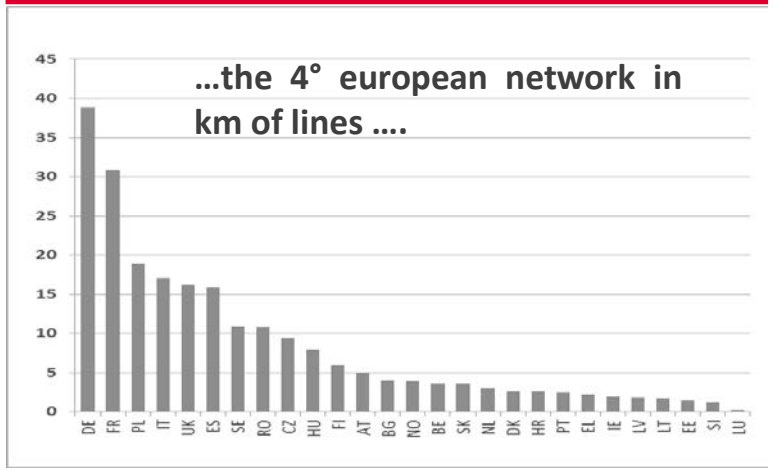
~1.000 km high speed lines

~ 9.000 trains per day

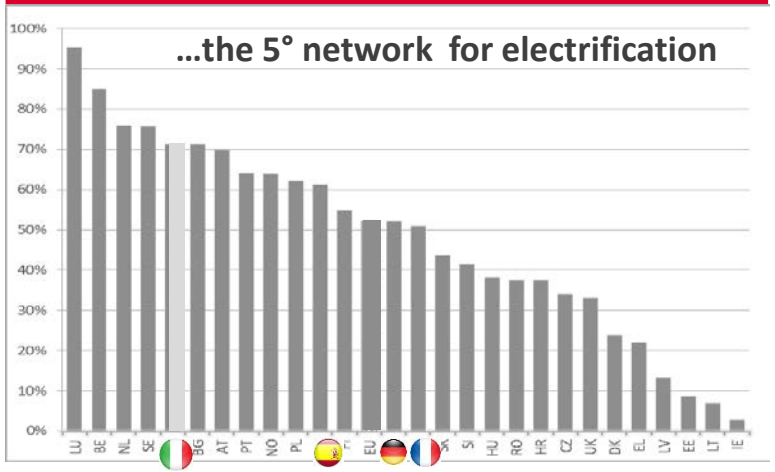
72 % electrified line

76 % remotely controlled lines

Network extension (line km) *Source: RMMS – 2014*



% Km electrified line *Source: RMMS – 2014*

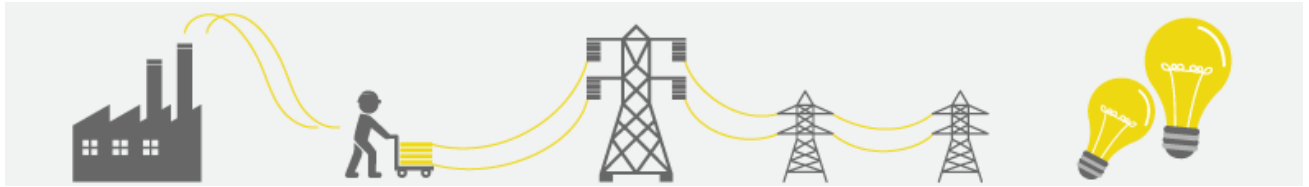


RFI RETE FERROVIARIA ITALIANA *Source data 31/12/2017*

The Electricity System: RFI role

- RFI acts in the market **as a distributor and trader** and sells energy to the RUs. The process is directly managed by RFI and not with a separate company as it is the case for other IMs
- RFI purchases energy for traction on the power exchange or through bilateral contracts for internal use
- Energy **charge is regulated by ART** and it is calculated at cost plus mark up to cover costs related to the management of the energy process
- In Italy, railway sector benefits of a **special regime** with lower charges as a consequence of the transfer to ENEL (national energy producer) of the power plants owned by FS (implemented in 1962)
- Due to a recent reform **special charge is applied only on conventional lines** (3 KV) while on HS lines (25 KV) full charge is applied

The Electricity System



ENERGY GENERATION → WHOLESALE → TRASMISSION AND DISPATCH → DISTRIBUTION AND MEASURES → TRADER

GME → GSE

Italian Energy Market Management

Italian Energy Service Management

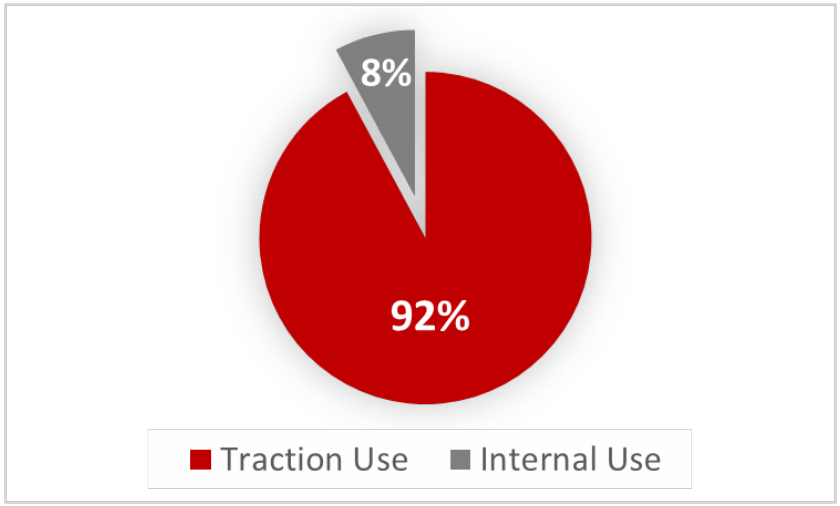
RFI RETE FERROVIARIA ITALIANA

Passing on of the energy cost to…

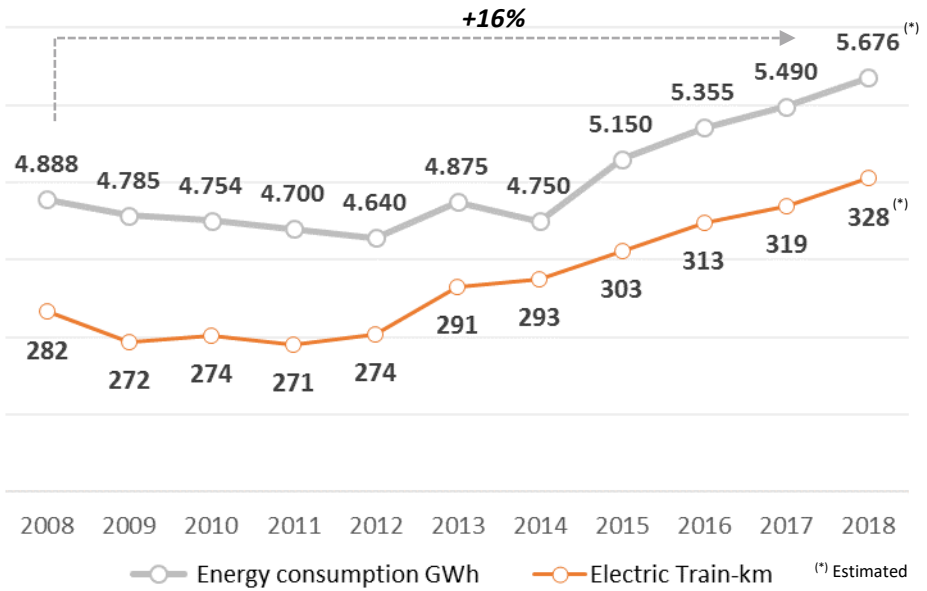
Railway Companies

Energy trend in the sector

- Energy **consumption trend** in the national railway sector has grown over time mainly due to the increase of the high speed traffic (**+16%** in ten years)
- Energy **consumption** has reached a level of about **5,6 GWh** per year: more than 90% is for traction use



RFI traction energy consumption and traffic trend



What's next

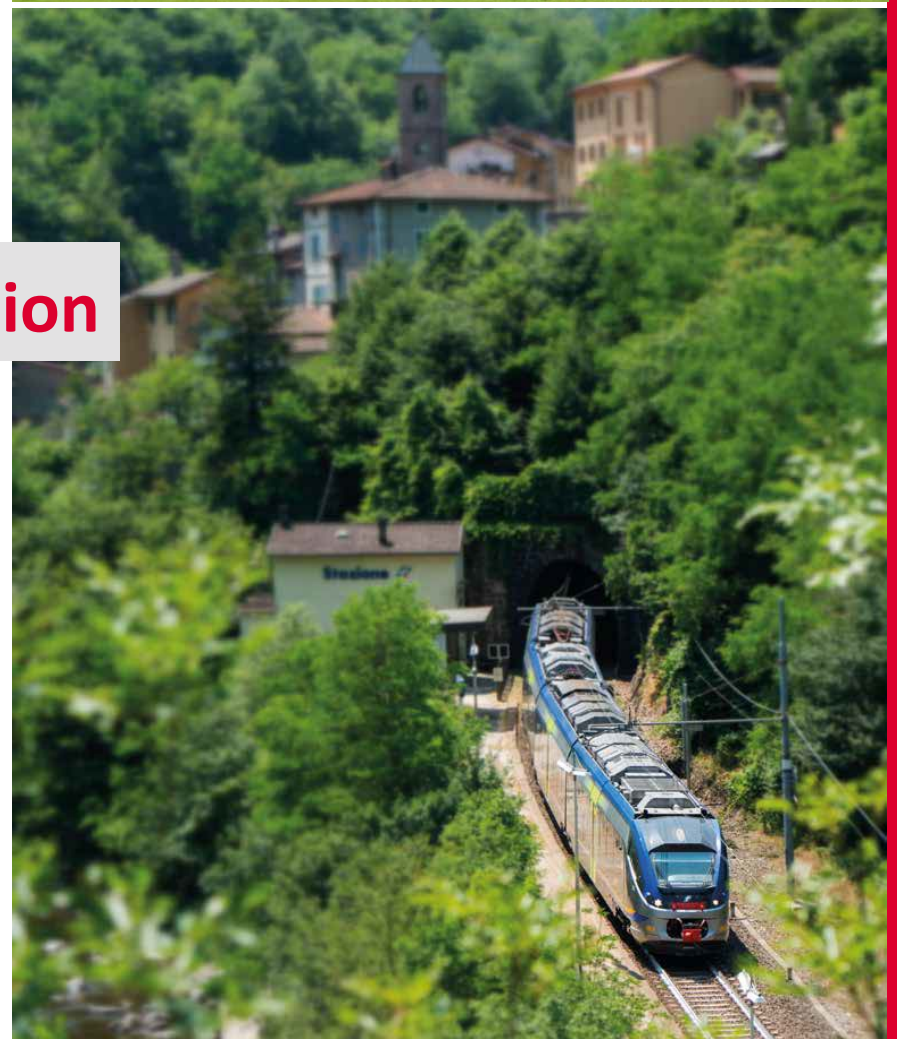
- RFI is working to develop the **Data Collection System** in order to be ready to bill energy consumption based on metering on board as required by european legislation (TSI and EN 50463-2017)
- At the same time RFI is working to develop and implement a **virtual metering** to improve correlation of charges to the actual consumption of the train; the tool can be progressively calibrated over time and in this perspective RUs collaboration is essential to have at disposal a significative sample of real data to calibrate the algorithm
- There will be necessarily a period with a double regime:
  - ✓ billing based on metering for trains already equipped (eg. new trains)
  - ✓ billing based on virtual metering for trains not yet equipped
- RFI is willing to play an active role in the introduction of the **metering system** in the sector by promoting the realisation and validation of the **loco prototype**. This position has been recently represented and discussed in a workshop with the RUs and ART (National Transport Authority)
- We are also studying solutions to increase the production of railway **energy by renewable sources**, in particular through the installation of photovoltaic panel alongside rail infrastructure

2018 | **2019** | **2020** | **…**

- **DCS,** Data Collection Services
- **Virtual Metering**

Metering system development

…… **renewable energy production**



Thank you for your attention