



ERESS-SUSDEF survey: trends and perspectives for railway energy in Europe

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Goal of the survey

Investigate the **level of knowledge and consensus**
within railway energy managers on strategic key topics :

- Development and future of energy meters
- Growth of data collection systems
- Growth of energy settlement systems
- Future scenario for energy prices
- Main challenges for next years



It is a «perception» survey, not a technical picture of the reality !!!
(The human side and managers perception is the target).

Important: Respondents have been kept anonymous



Surveys and polls are always right !

Statistics based on
respondent perspectives
should be handled with
care!

...as history teaches!

**(Poll from NYT in the morning
of the last US Election Day)**



Question to railway managers: which of the following would you carry with you on a desert island?



Energy Meter



Pizza



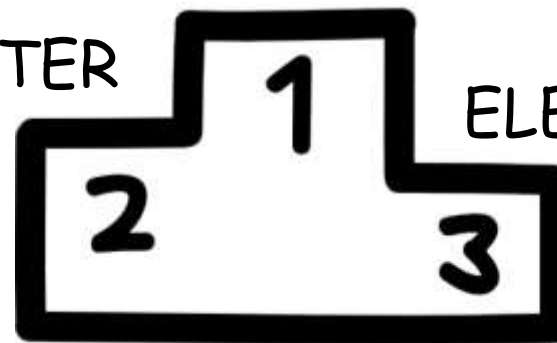
Question to railway managers: which is the most disruptive innovation of the last 100 years?

SIGNALING DISK



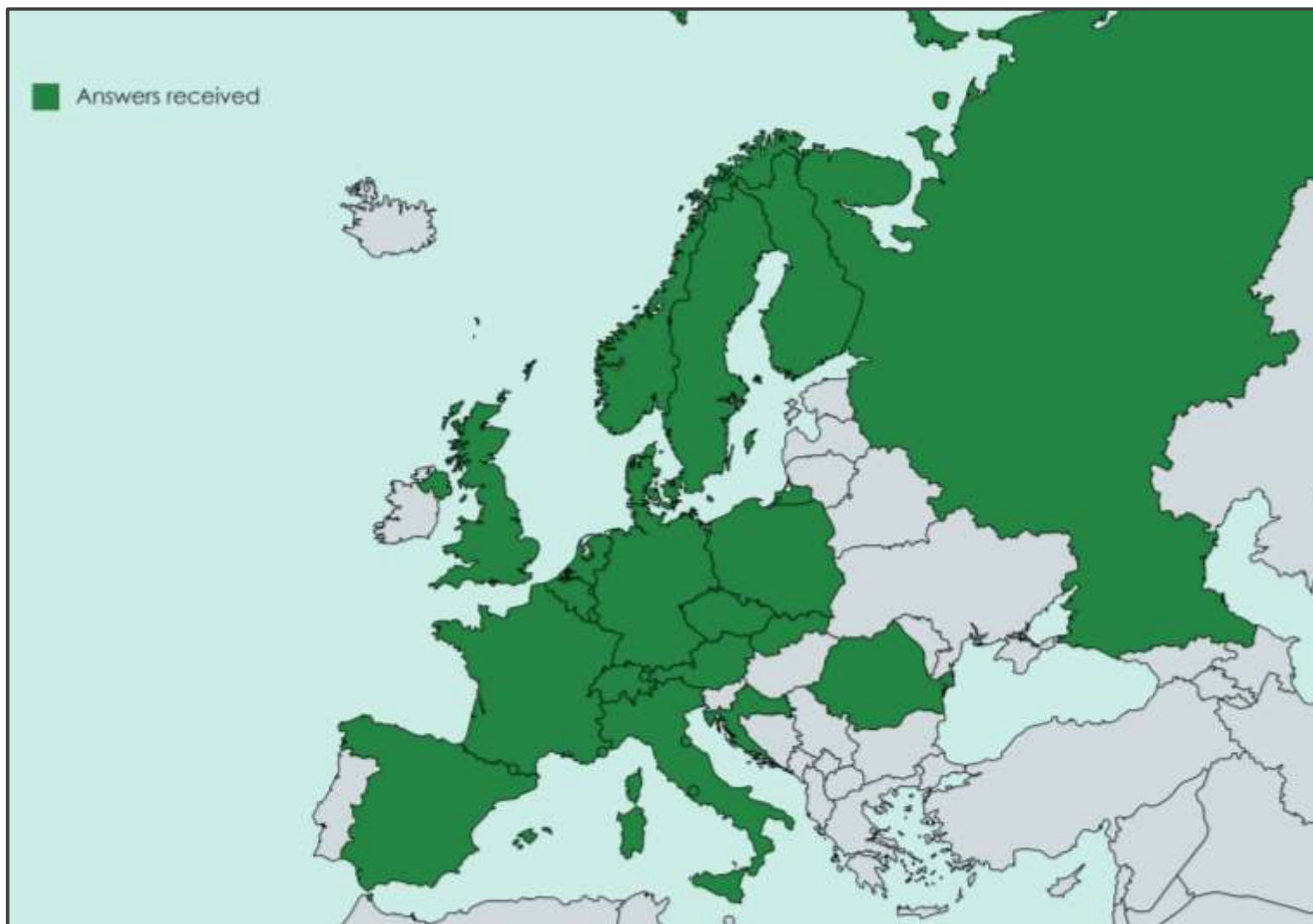
COMPUTER

ELECTRIC GUITAR



Picture of respondents

Answers received and covered countries

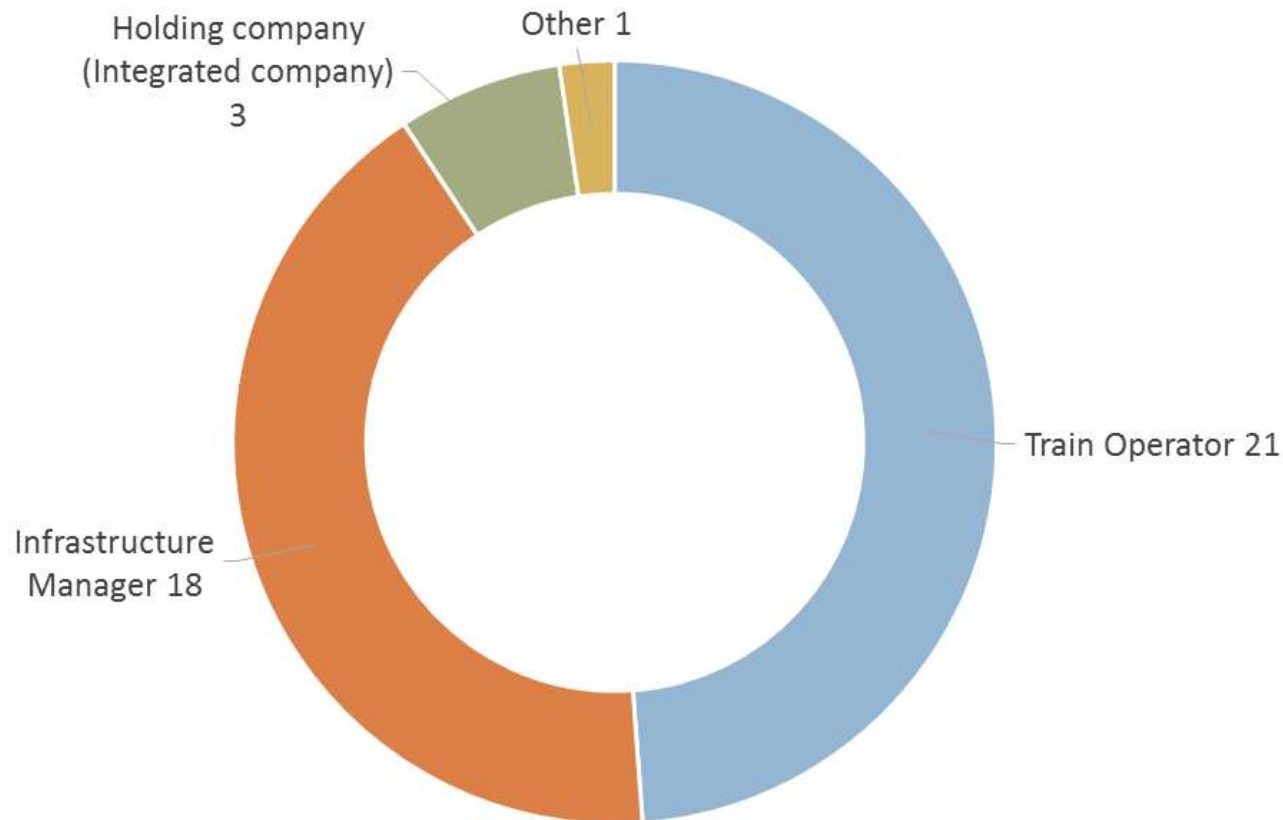


The survey consists of **21 questions** and it has been sent by email to different type of railway operators in **33 countries**.

The answers came by:

- 19 Countries
- 43 Respondants

Where do you work? I work for...



43 responses received from:

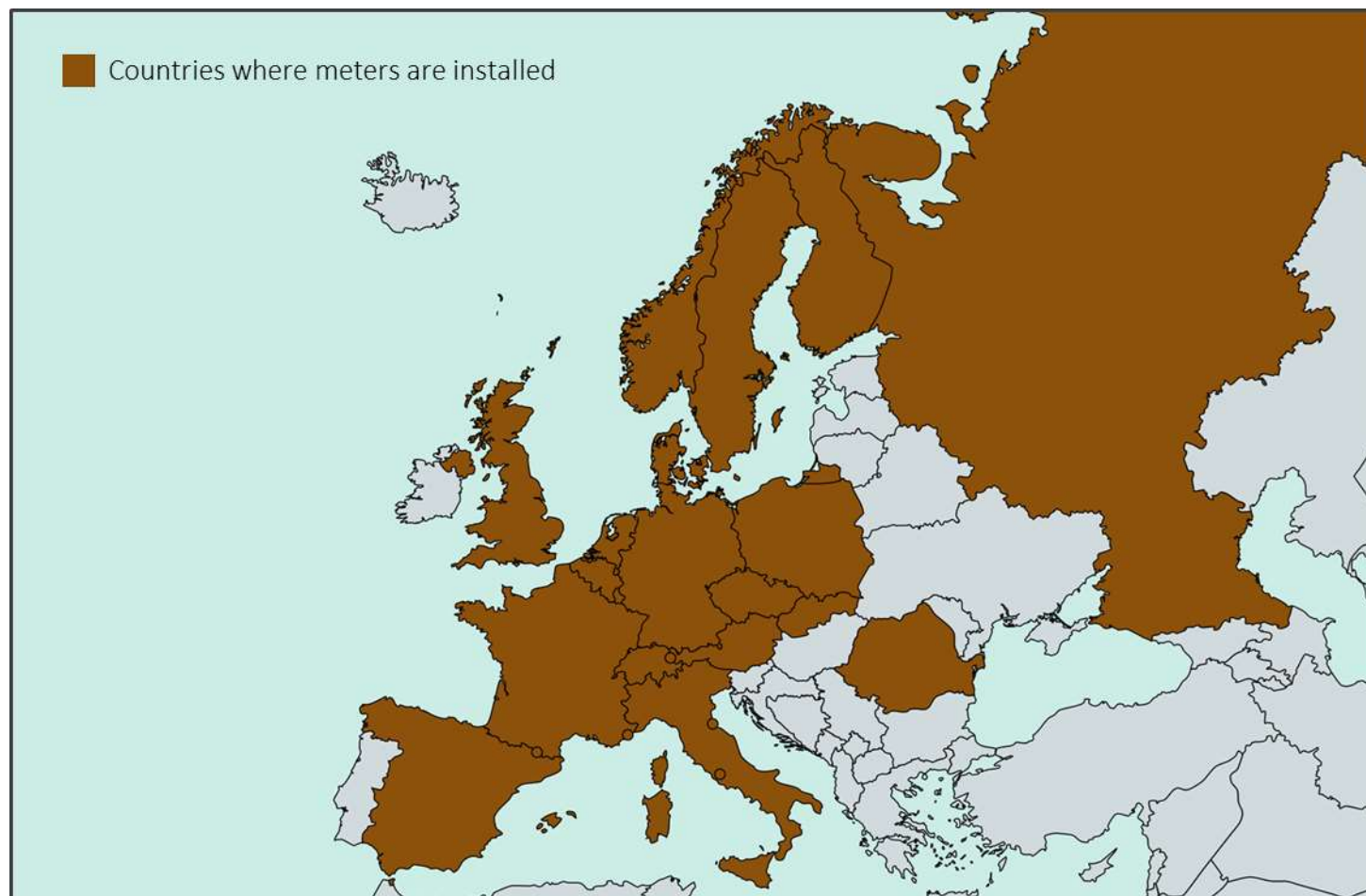
- 21 Train Operators
- 18 Infrastructure Managers
- 3 Holding companies
- 1 Other

Countries and type of respondents

COUNTRY	ANSWERS	Train Operator	Infrastructure Manager	Holding Company	Other
Austria	2		2		
Belgium	4	3	1		
Croatia	2	1	1		
Czech Republic	1		1		
Denmark	2	1	1		
Finland	3	2	1		
France	3	2		1	
Germany	2		1	1	
Italy	5	3	1	1	
Netherlands	3	2	1		
Norway	2	1	1		
Poland	1		1		
Romania	1	1			
Russia	1		1		
Slovakia	2	2			
Spain	3	2	1		
Sweden	2	1	1		
Switzerland	3		3		
UK	1				1
TOTAL	43	21	18	3	1

KEY ISSUE 1 : Meters

Do you have energy meters on trains in your country?

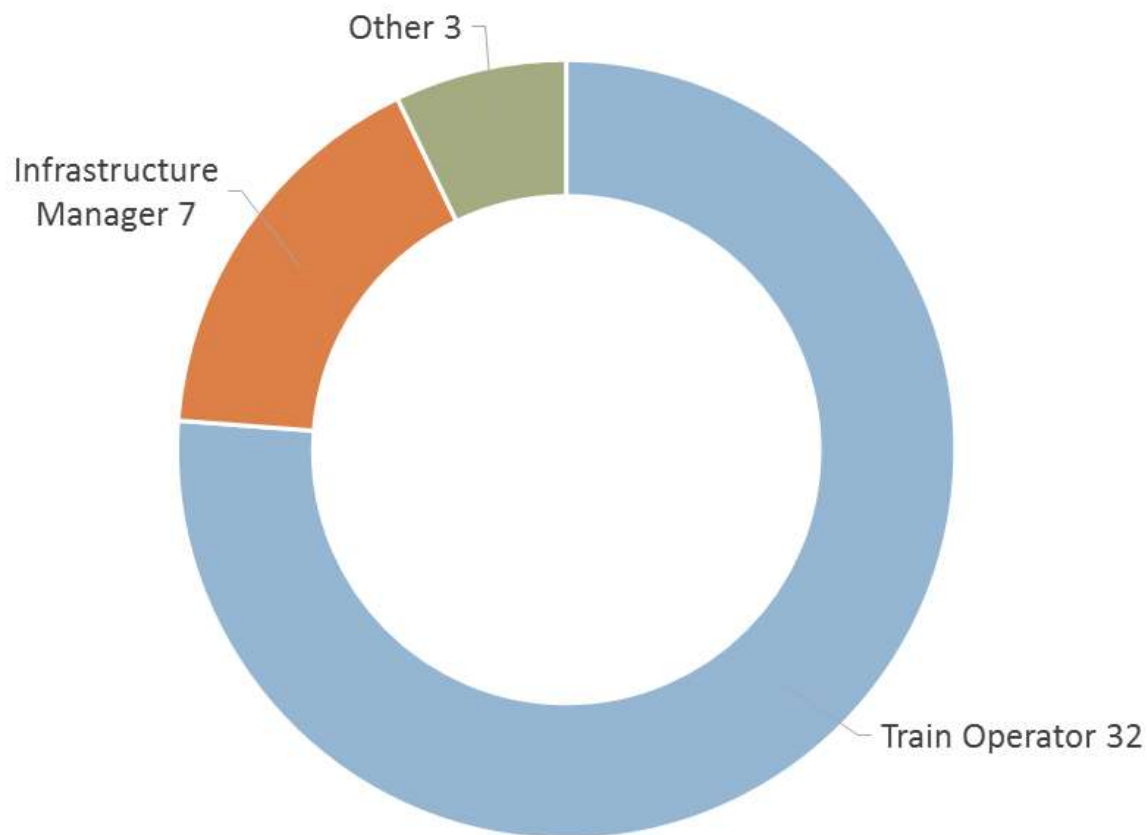


	YES	NO
Train Operator	16	5
Infrastructure Manager	15	2
Holding company (Integrated company)	2	1
Other	1	0
N: 42 (Croatia I.M. has no answered)		



According to the answers received 100% of countries have meters installed, but **only 80%** of railway managers have answered YES.

Who is the owner of energy meters in your country?

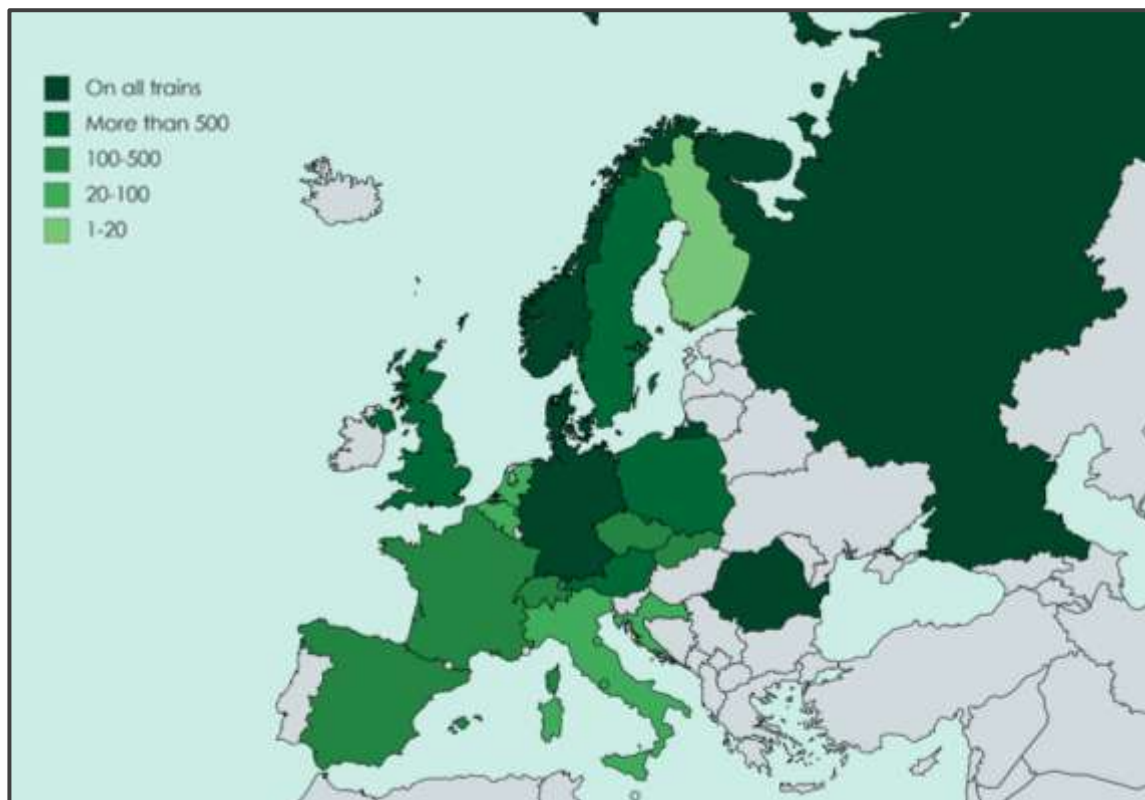


Train Operator	32
Infrastructure Manager	7
Other	3
N: 42 (Austria I.M. has no answered)	

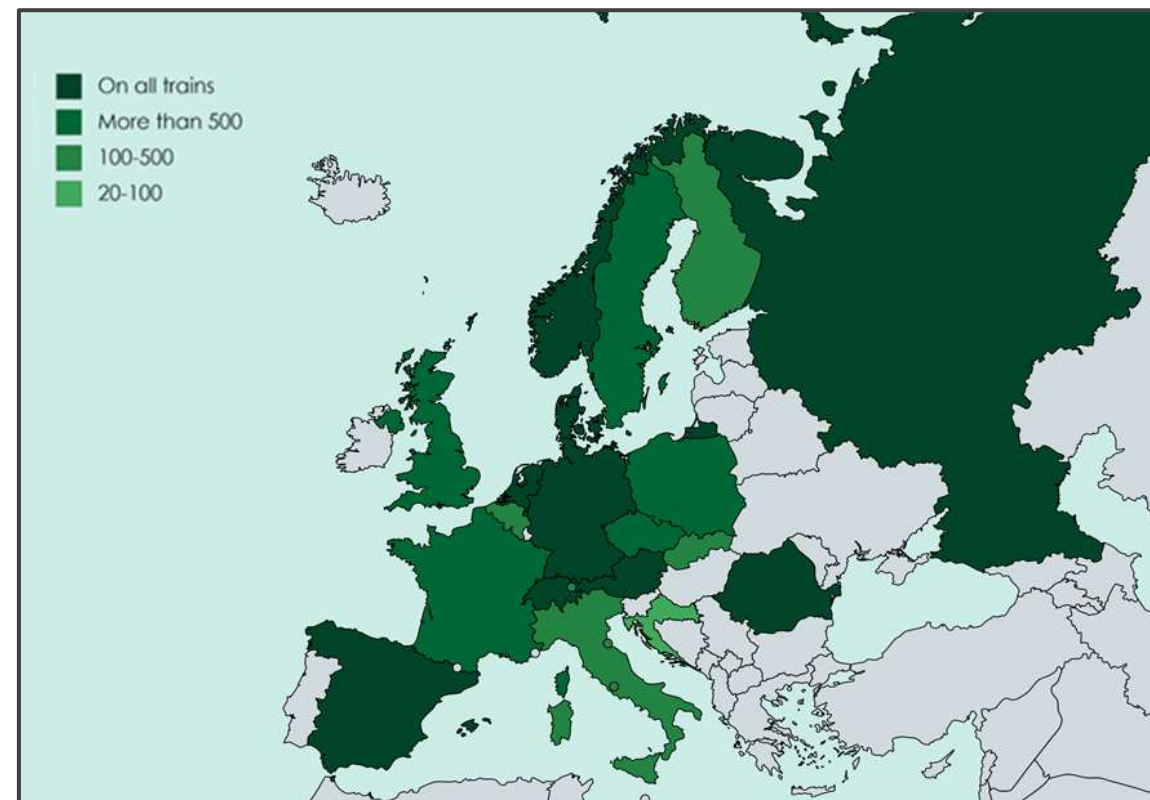
Other (3)	
Italy	Infrastructure Manager
Switzerland	Infrastructure Manager
UK	Other

Increase of Meters installed: 2017 vs 2020

Meters installed in 2017



Meters expected in 2020



Part 2 - Meters installed. Survey 2014 vs Survey 2017

COUNTRY	0-20	20-100	100-500	>500	All Trains
Austria			2014	→ 2017	
Belgium		2014 = 2017			
Denmark			2014	→ 2017	
Finland		2014 = 2017			
France	2014	→	2017		
Germany					2014 = 2017
Norway			2014	→ 2017	
Poland				2014 = 2017	
Romania			2014	→ 2017	
Switzerland	2014	→	2017		

N.B. Italy and Spain did not communicate any data about meters installed for the survey 2014

Key Messages

Energy meters are present in all countries.



The number of installed meters is rapidly increasing everywhere.

In 2020 some companies will have meters on all trains and many companies will have them on more than 500 trains

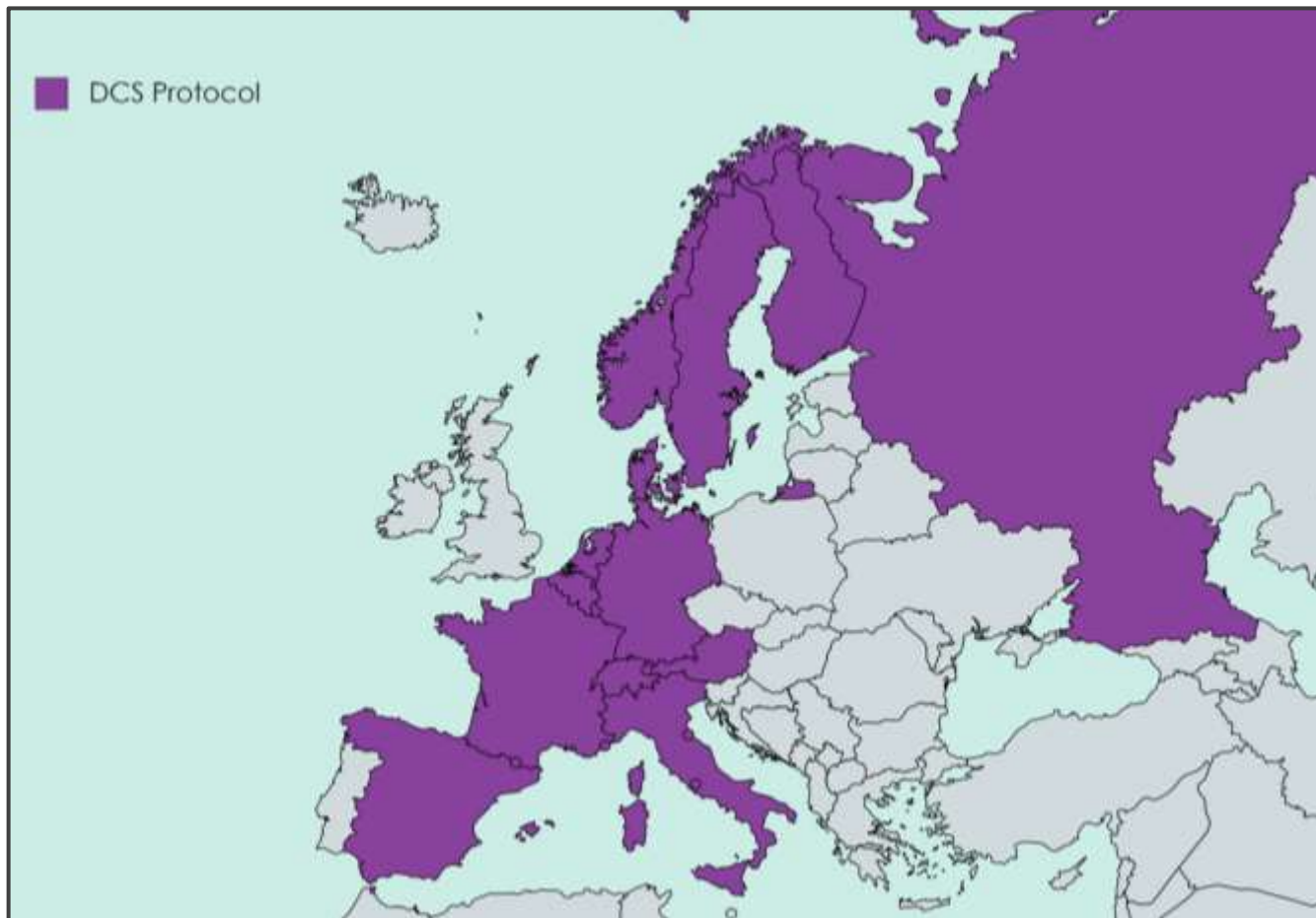


It is very important to work internally (within the companies) to disseminate the knowledge of «metering culture» in the railway managers (which meters are installed? Why metering is useful? Which will be the scenario in 2020? Etc.).

Internal communication is an essential step for external results.

KEY ISSUE 2 : DCS (Data Collection System)

Will your organization offer a DCS working in accordance with the new interoperable protocol?



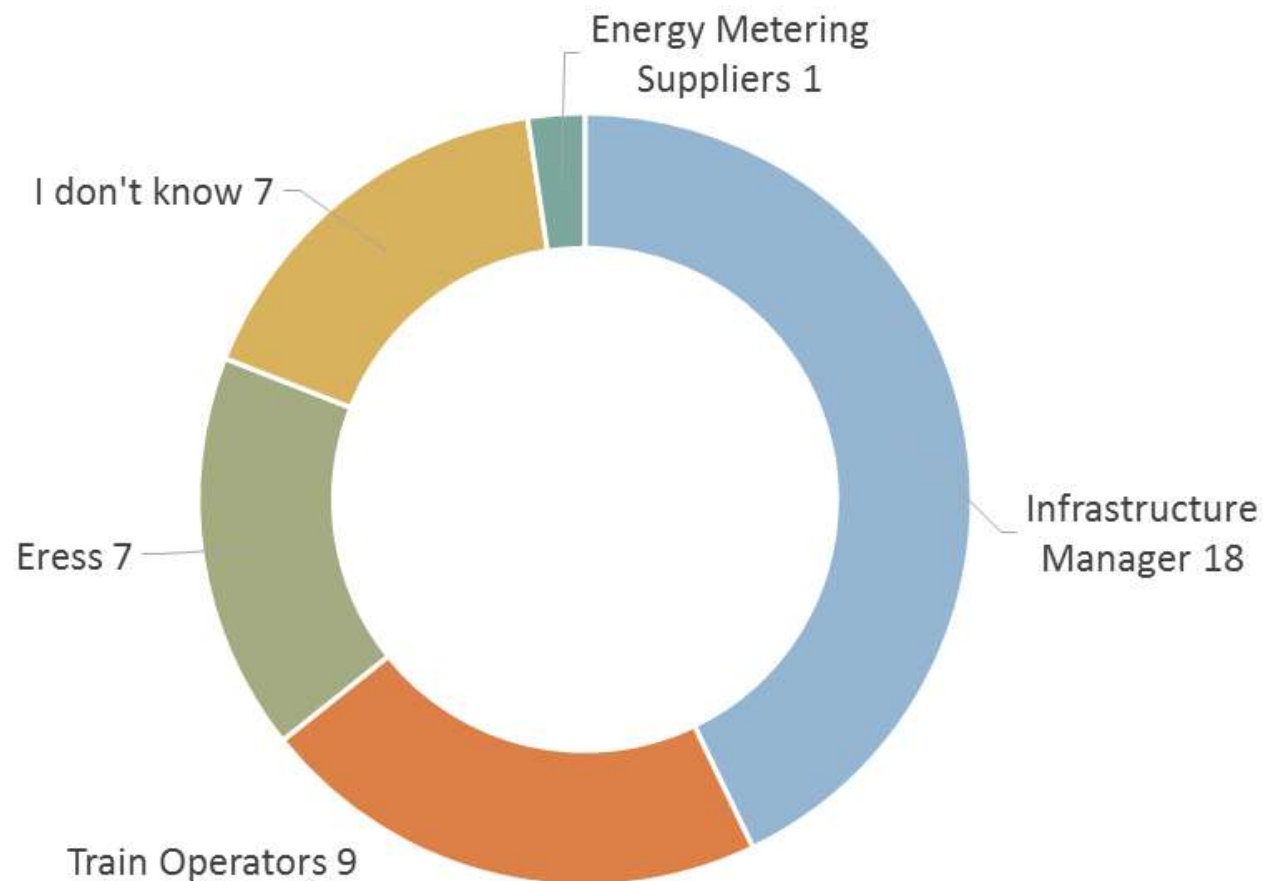
	YES	NO	I don't know
Train Operator	8	5	7
Infrastructure Manager	13	0	4
Holding company (Integrated company)	2	0	1
Other	0	0	1
N: 41 (Blank: I.M. Austria; T.O. France)			

NO (5)	
Netherlands	Train Operator
Norway	Train Operator
Italy	Train Operator
France	Train Operator
Romania	Train Operator



There are contradictory answers from Netherland, Italy, Norway and France about the DCS future offering.

Who owns or will own the DCS in your country?



Infrastructure Manager	18
Train Operators	9
Eress	7
I don't know	7
Energy Metering Suppliers	1
N: 42 (Blank: I.M. Austria)	

ERESS (7)	
Belgium	Infrastructure Manager
Finland	Infrastructure Manager
Norway	Infrastructure Manager
Netherlands	Infrastructure Manager
Netherlands	Train Operator
Netherlands	Train Operator
Norway	Train Operator

If there are installed meters, which is the most important challenge?

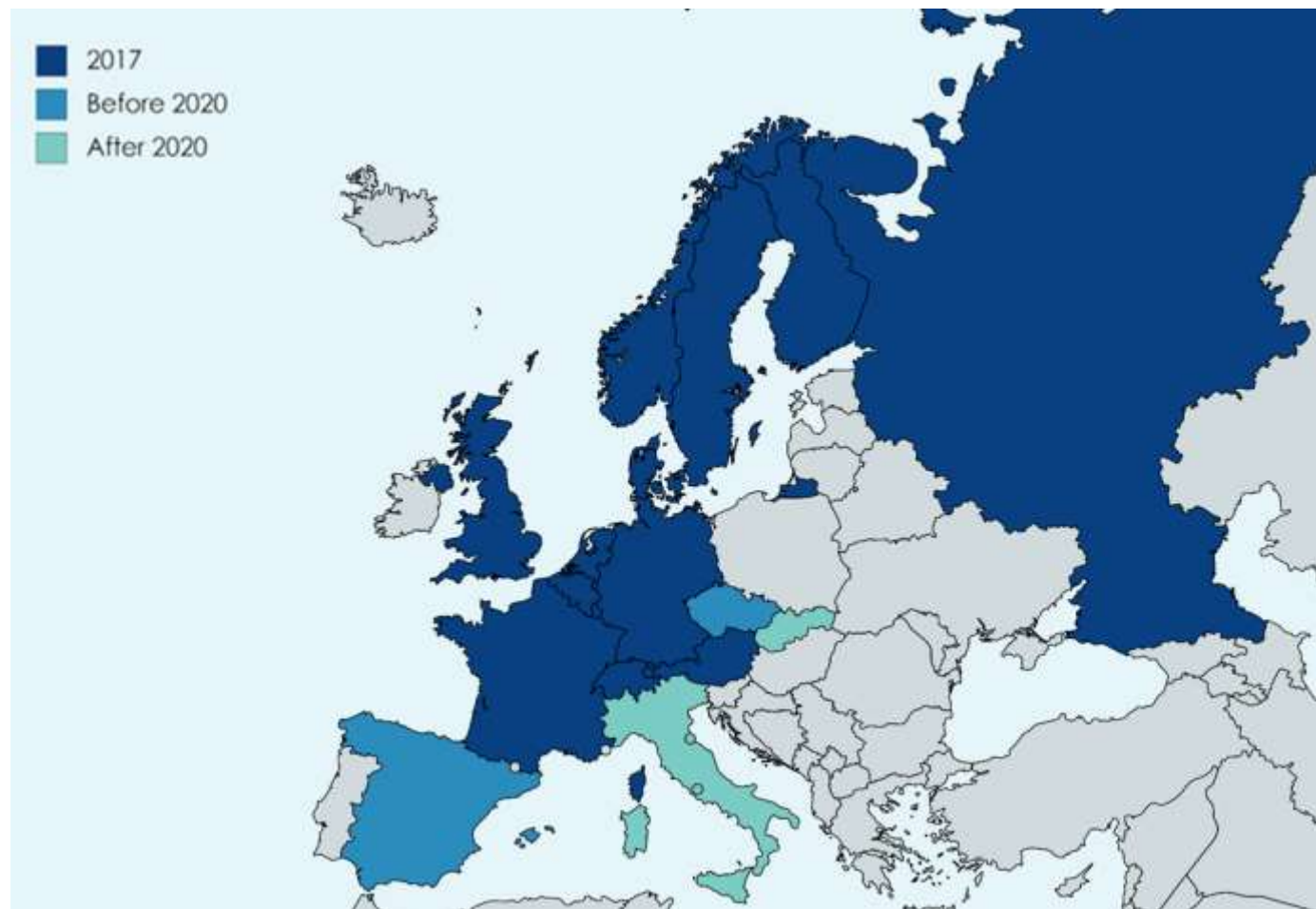
TRAIN OPERATOR	Ranking	INFRASTRUCTURE MANAGER
10.1: -validating that the data coming from energy meters is correct	1	10.1: -validating that the data coming from energy meters is correct
10.2: -allocating this data correctly	2	10.2: -allocating this data correctly
10.3: -exchanging data inside the country for billing purposes	3	10.4: -exchanging data internationally for billing purposes
10.4: -exchanging data internationally for billing purposes	4	10.3: -exchanging data inside the country for billing purposes



1. Almost all countries have decided to develop and run a DCS in the coming years.
2. Infrastructure manager will be in most cases the owner.
3. ERESS is «well positioned».
4. The validation of data coming from meters and correct allocation is perceived by both IM and RU as the main challenges.
5. In particular, 80% of railway companies managers gave priority to this issues.

Key issue 3: ESS (Energy Settlement System)

Do you have ESS to handle metering data from trains for billing purposes?



	YES	NO
Train Operator	9	12
Infrastructure Manager	12	6
Holding company (Integrated company)	2	1
Other	1	0
N: 43		



There are
contradictory
answers within
the following
countries:

NO (7)
Belgium
Finland
Italy
France
Netherlands
Spain
Croatia

ESS (Energy Settlement System) - Do you invoice energy to Train Operators in your country?

COUNTRY	Answers	YES	NO
● Austria	2	2	0
Belgium	4	2	2
Croatia	2	1	1
● Czech Republic	1	1	0
● Denmark	2	2	0
Finland	3	2	1
France	3	2	1
● Germany	2	2	0
Italy	5	3	2
Netherlands	3	1	2
● Norway	2	2	0
● Poland	1	1	0
● Romania	1	0	1
● Russia	1	1	0
● Slovakia	2	0	2
Spain	3	2	1
● Sweden	2	2	0
● Switzerland	3	3	0
● UK	1	1	0
TOTAL	43	30	13

Key Messages



1. Today 57% of respondents declares to have Energy Settlement Systems.
2. In 2020 this number it is expected to reach 78%.

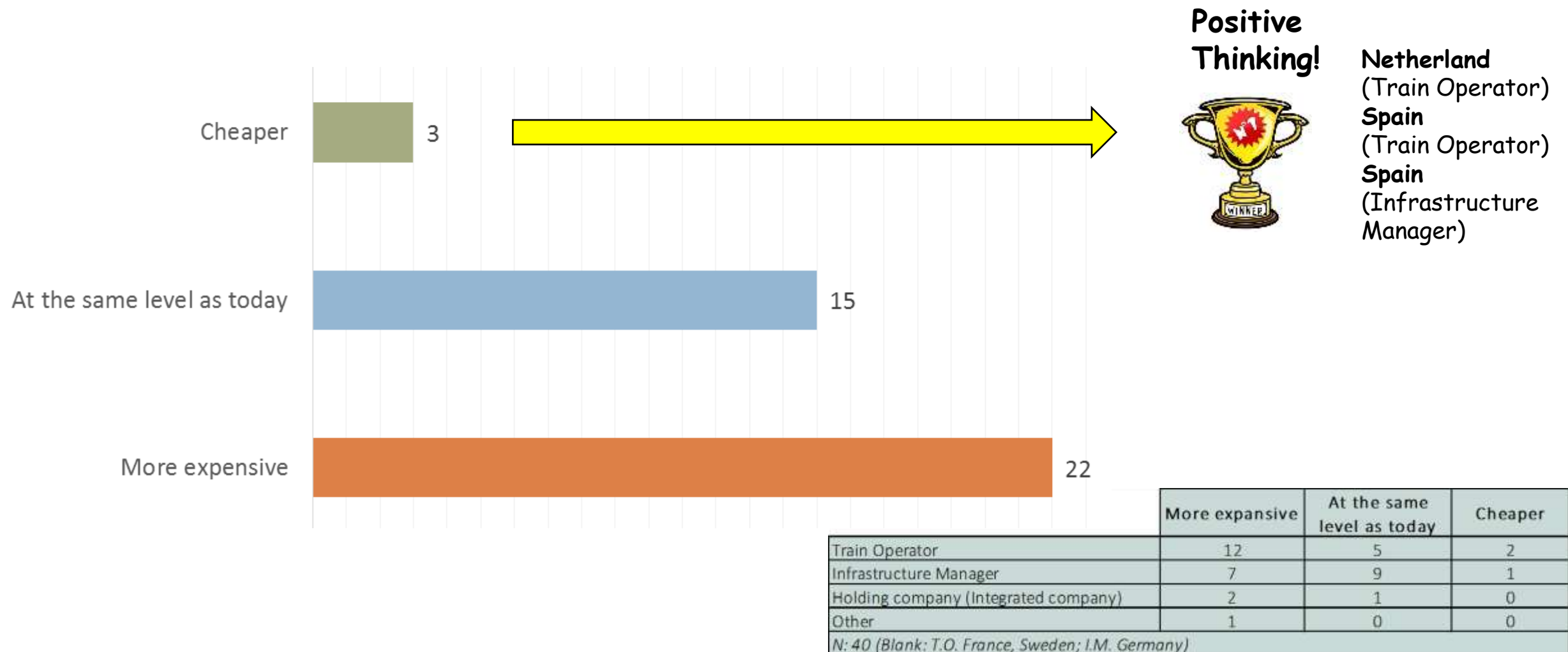


It is very important to work more (within the companies) to develop a better knowledge of ECS with managers (what is ECS? Why is it strategic ? Which opportunities can deliver in 2020? Etc.).

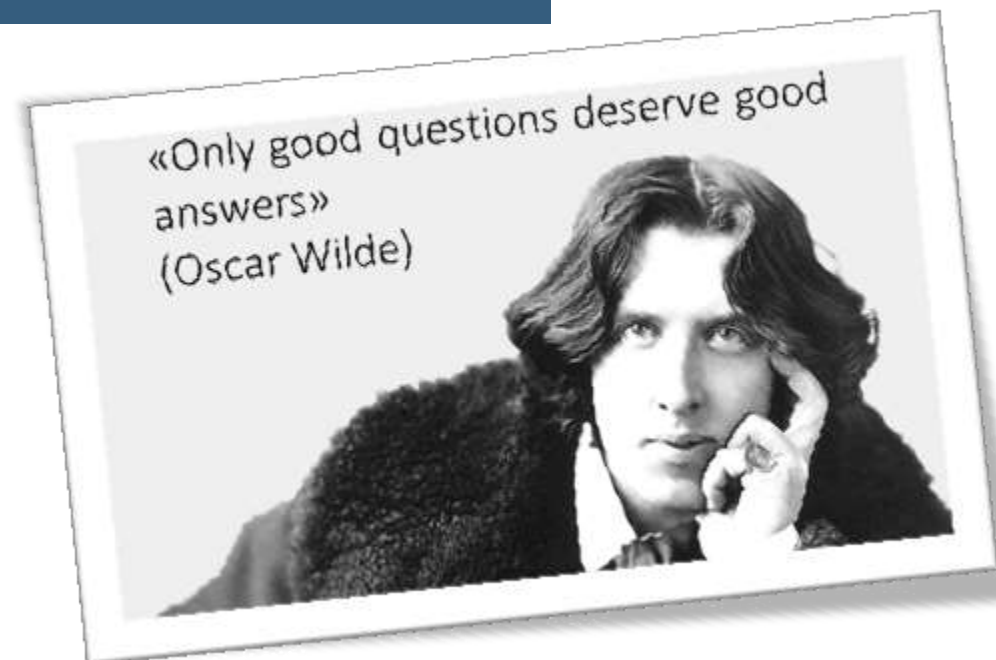
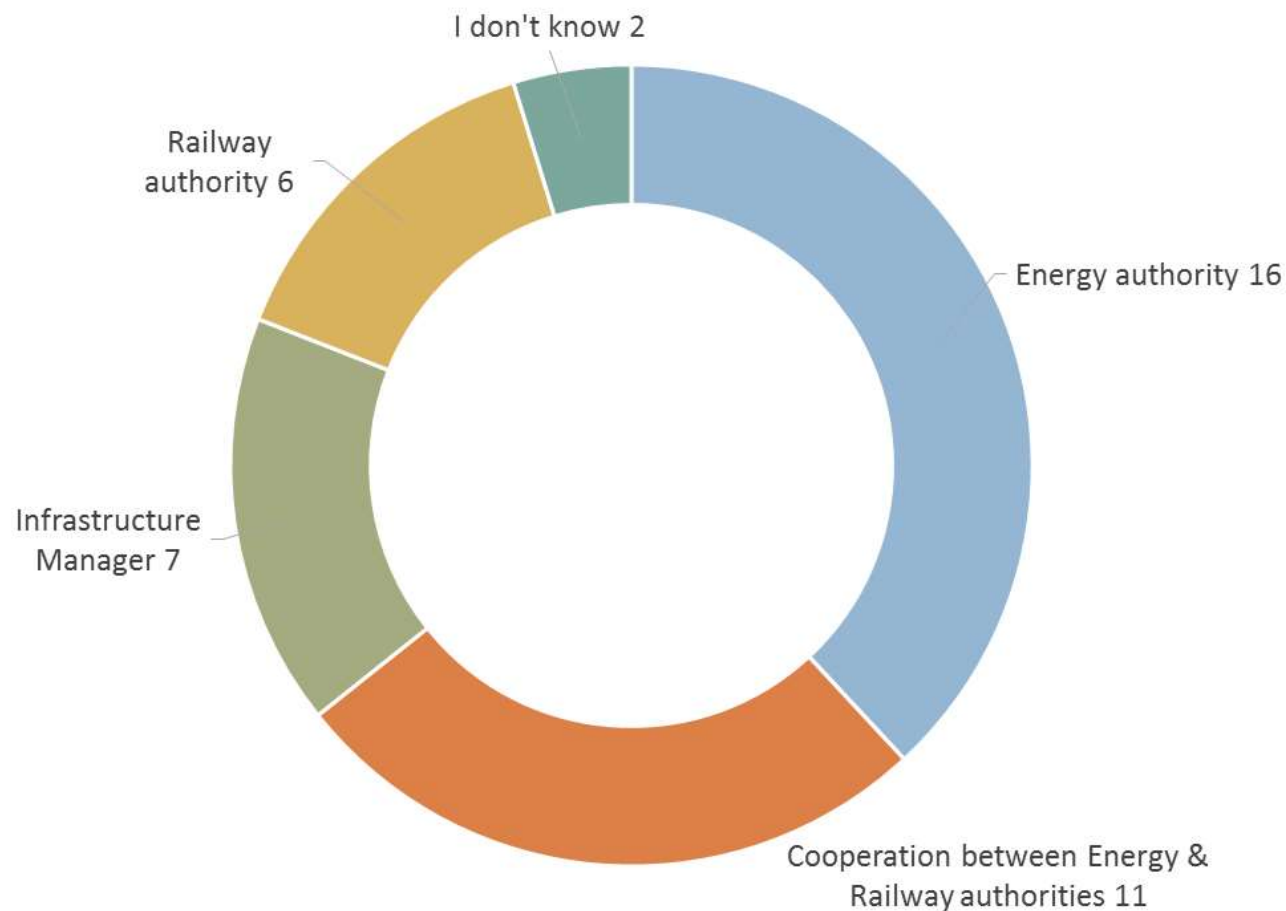
Internal communication is an essential step for external results.

Key issue 4: Perspectives for the railway energy system

Part 5 – In the next 5 years railway energy prices will be...



Who is the responsible authority for railway energy prices in your country?



Italy (5)	
Energy authority	1
Cooperation between Energy & Railway authorities	1
Infrastructure Manager	2
Railway authority	1
I don't know	0

How do you think railway energy in your country will look in 2020?

There will be:

TRAIN OPERATOR	Ranking	INFRASTRUCTURE MANAGER	
20.6: A Data Collection System(s) in place	1	20.4: Non-discriminatory railway energy distribution tariffs	←
20.7: An Energy Settlement System in place	2	20.6: A Data Collection System(s) in place	
20.8: Traction energy bills based on real energy consumption	3	20.7: An Energy Settlement System in place	
20.2: National rules will still regulate the railway market	4	20.8: Traction energy bills based on real energy consumption	
← 20.4: Non-discriminatory railway energy distribution tariffs	5	20.1: More Train Operators running in the country	←
20.5: Transparency of railway energy prices and open market for energy	6	20.2: National rules will still regulate the railway market	
→ 20.1: More Train Operators running in the country	7	20.5: Transparency of railway energy prices and open market for energy	
→ 20.3: Free choice of energy suppliers for Train Operators or direct access to the energy market	8	20.3: Free choice of energy suppliers for Train Operators or direct access to the energy market	←

Which issues will represent the biggest challenge for having competition in your country?

2020	Ranking	2025
21.4: -Data Collection System(s) in place	1	21.3: -having installed energy meters on all trains
21.1: -national regulation	2	21.1: -national regulation
21.3: -having installed energy meters on all trains	3	21.2: -transparency of railway energy prices
21.5: -Energy Settlement System in place handling metering data from trains	4	21.5: -Energy Settlement System in place handling metering data from trains
21.2: -transparency of railway energy prices	5	21.4: -Data Collection System(s) in place

Key Messages



1. 68% of respondents is expecting an higher cost of energy in the future.
2. IM are more optimistic, in general, while RU are ready to pay more.
3. The data collection system is perceived as the main challeng now, but the main opinion is that in 2025 it will be perfectly running.
4. The free choice of energy supply and free access to the market for railway opeartors is considered **very unlikely to be there in 2020** by both IM and RU managers.

Conclusion: team work is fundamental !!!

VIDEO:

<https://www.youtube.com/watch?v=IfcNKtmFrSs>

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