



Smart Transportation Alliance

**An expert community's view on
Smart Transportation Infrastructures
of the Future: Review of results of
perceptions' survey**

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The surveys

- Between March and October 2018 four on-line surveys were carried out to investigate the experts' perceptions on the topics of the STA Technical Committees
- TC1 on Smart Mobility, chaired by Dr Elena de la Peña
- TC2 on 'Smart Safety and Security', chaired by Mr Wolf P. Zeplin
- TC3 on 'Smart Sustainability' chaired by Mr César Bartolomé
- TC4 on 'Smart Financing' chaired by Prof. José Manuel Vassallo
- The results collected will be summarised in a report

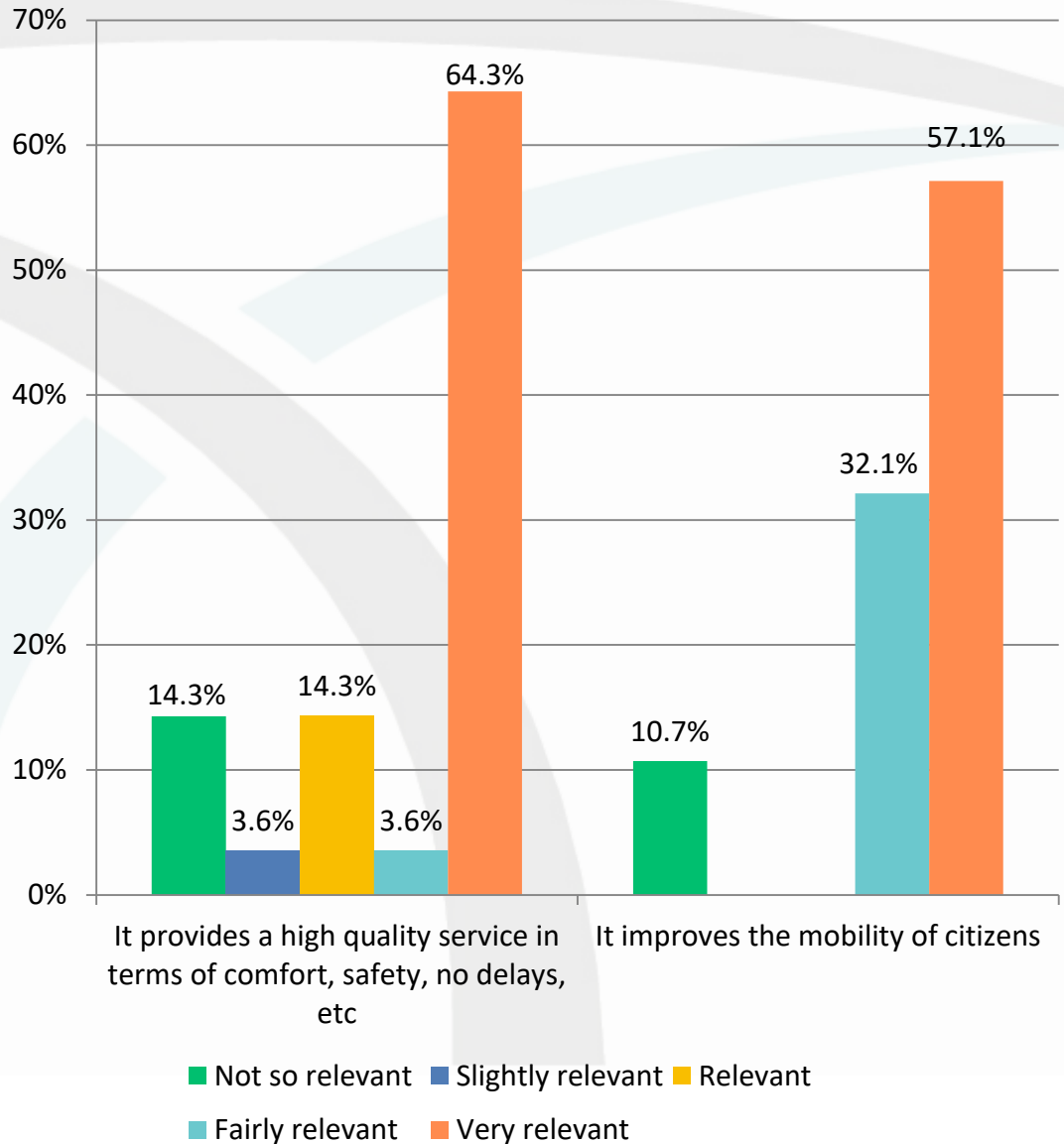
TC1 – Smart Mobility

- Respondents: 107
- Topics:
 - Infrastructure characteristics;
 - The transition from ‘bricks’ infrastructures to Smart infrastructures;
 - Infrastructure adaptation to connected/automated cars;
 - Legal, financial and budgetary systems suitability

Infrastructure characteristics

High-quality service and **improvement of mobility** are key features for considering an infrastructure 'smart'

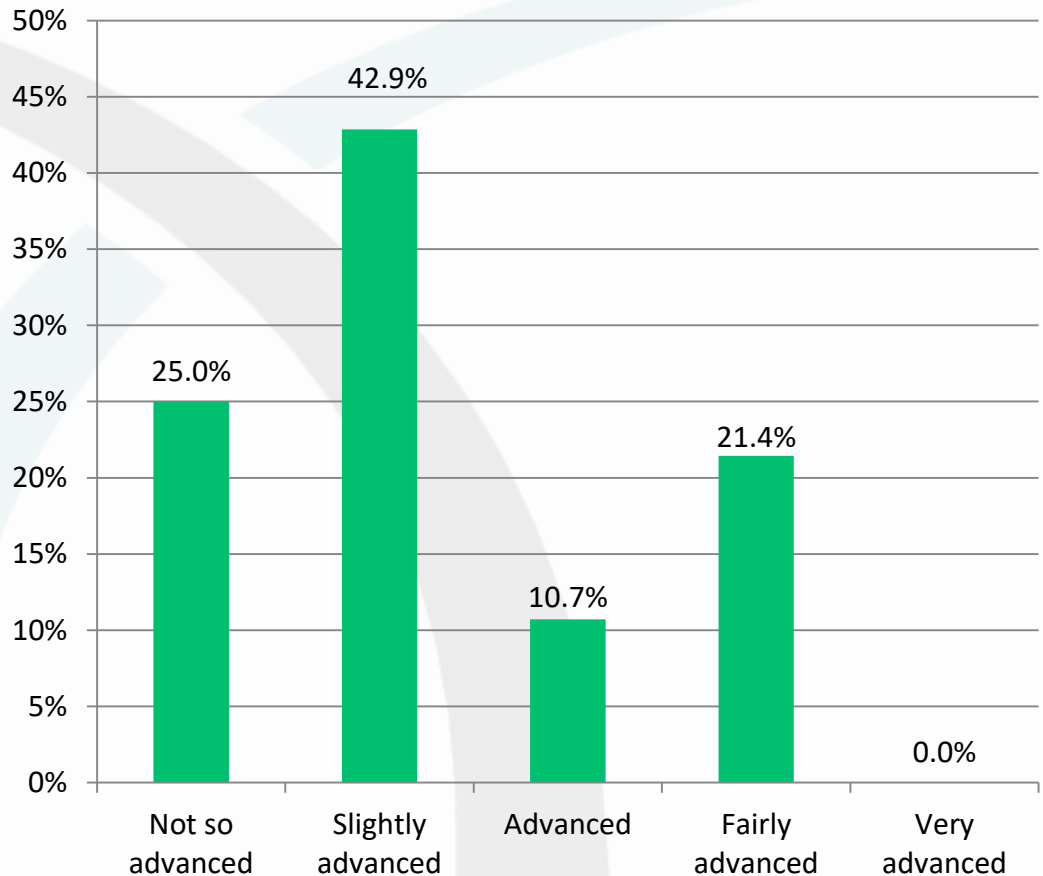
How relevant are the following characteristics for an infrastructure to be Smart?



Infrastructure transition

68 % of the participants consider that there had been **no or minor advances** in the creation of Smart Infrastructures

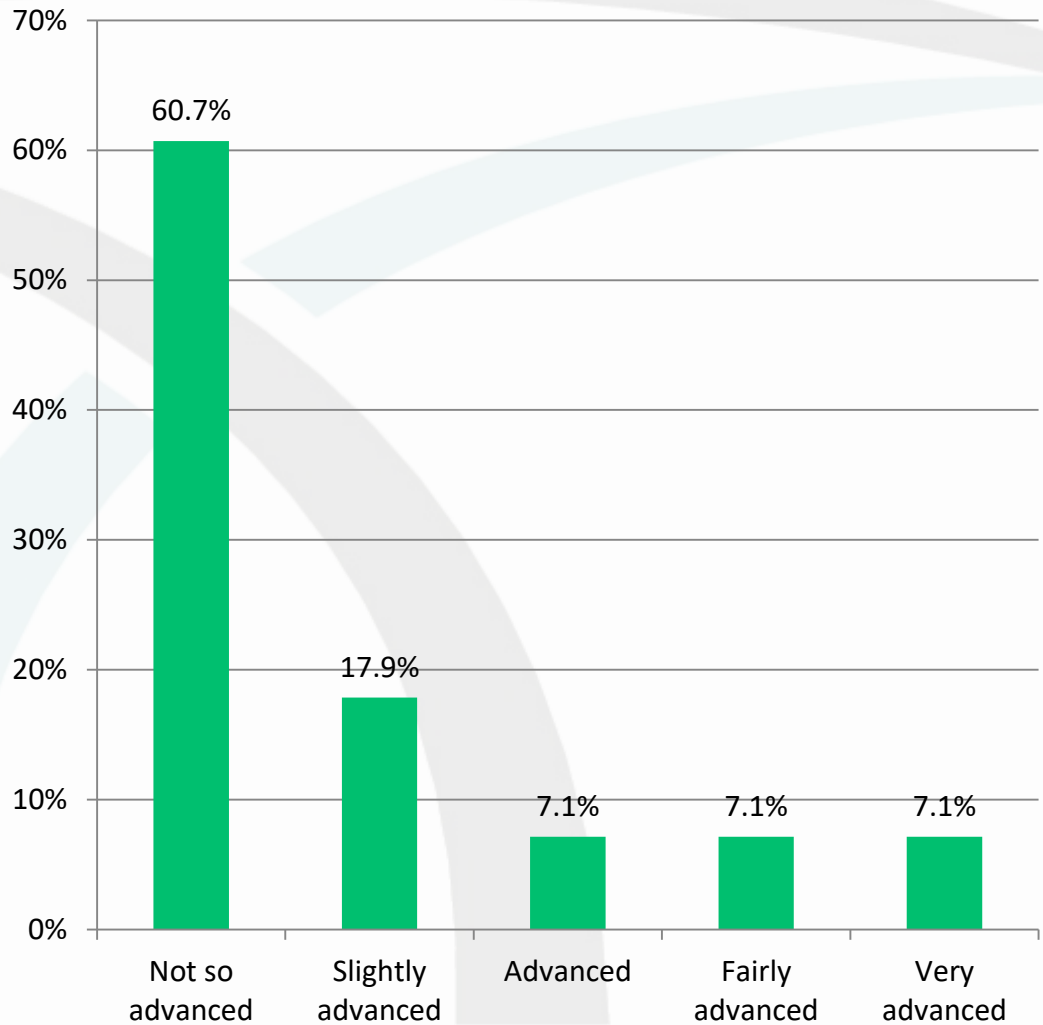
The transition from 'bricks' infrastructures to Smart infrastructures, that should include key aspects such as remote sensing, advanced analytics, automated operations, crowdsourcing and integrated scheduling and control is:



Infrastructure adaptation to connected cars

61% of the respondents consider that that such adaptation is **not so advanced**.

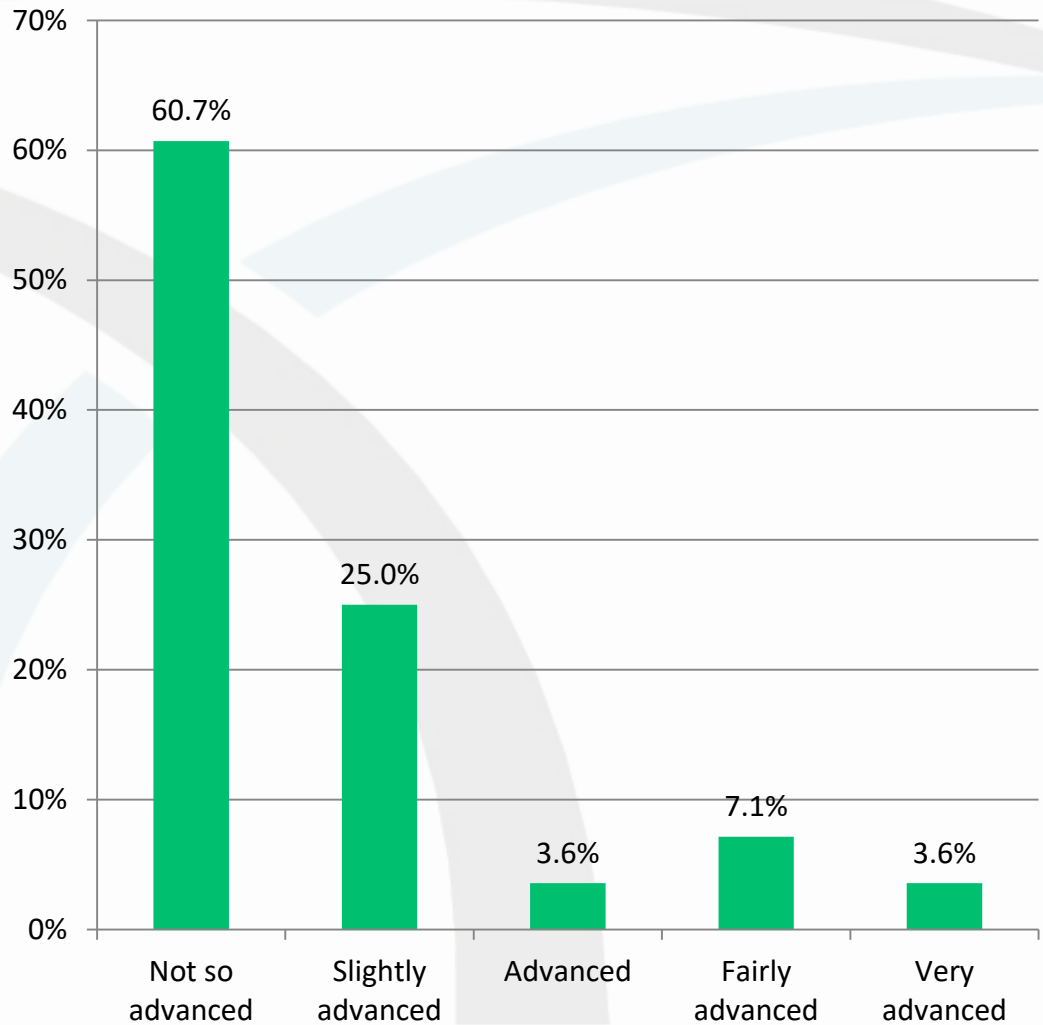
In order to cope with connected cars, today the degree of adaptation of road infrastructures is:



Infrastructure adaptation to automated cars

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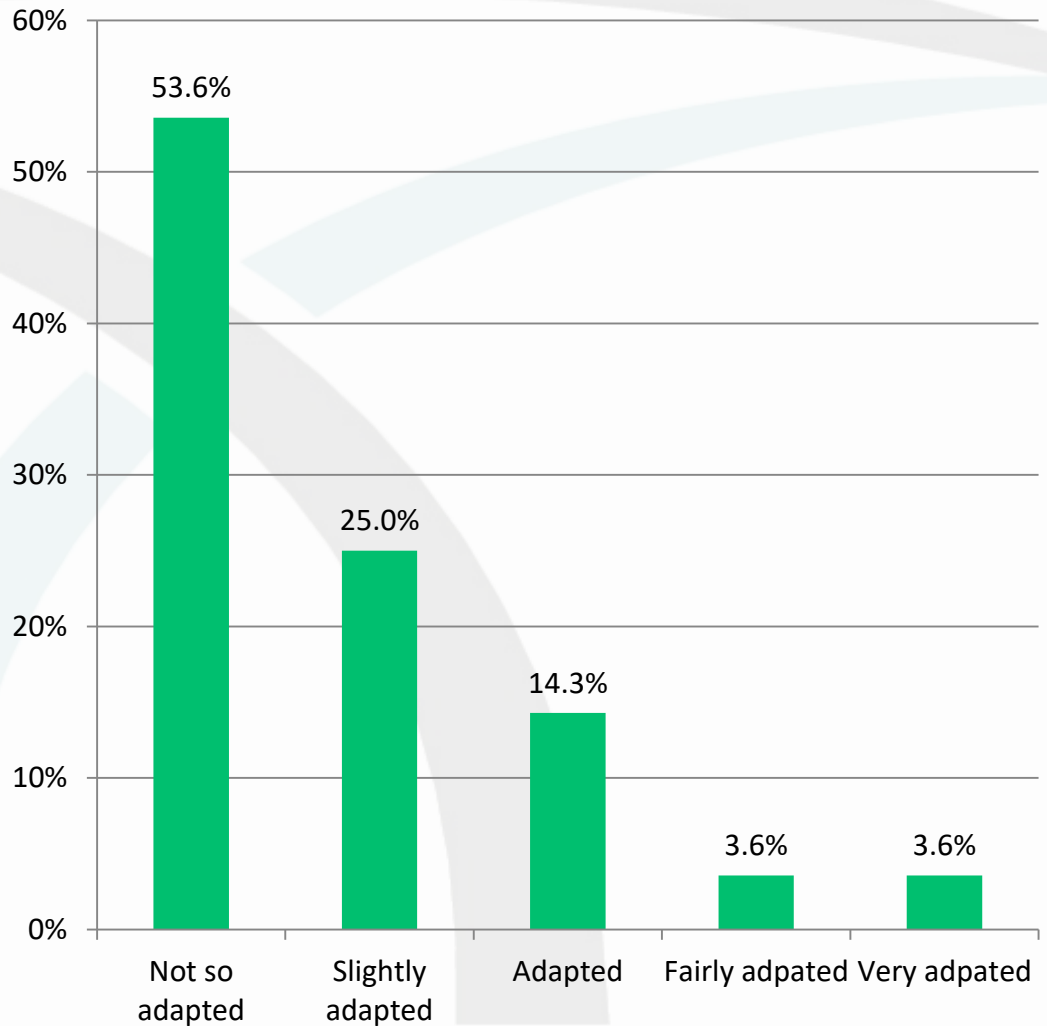
In order to cope with automated cars, today the degree of adaptation of road infrastructures is:



How adapted is the legal system to accommodate the deployment of Smart Infrastructures?

Legal systems

79% of the respondents consider the current legal system **not at all or slightly adapted** to accommodate the deployment of Smart Infrastructures



TC2 – Smart Safety and Security

- Respondents: 69
- Topics:
 - Perception of infrastructures' safety and security for the different transport modes;
 - Actions to increase safety and security;
 - Actions to reduce road mortality and injury rates;
 - R&D activities

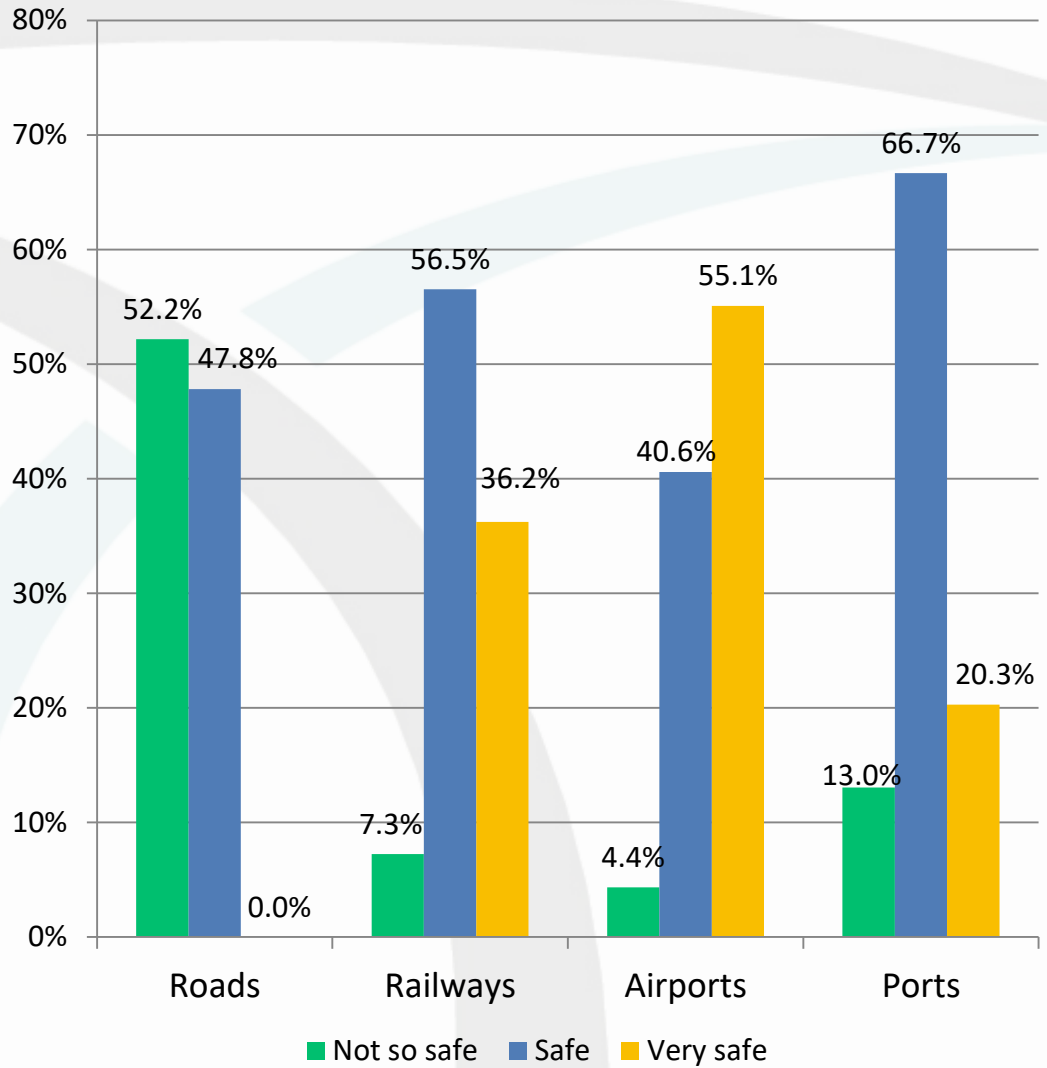
Infrastructures' perceived safety

Airports are perceived **as safe or very safe** by 95% of the respondents.

Railways and ports follow with respectively 92% and 86% of respondents.

However, 55% of them declare **road infrastructures as not very safe**

How safe are transport infrastructures today?

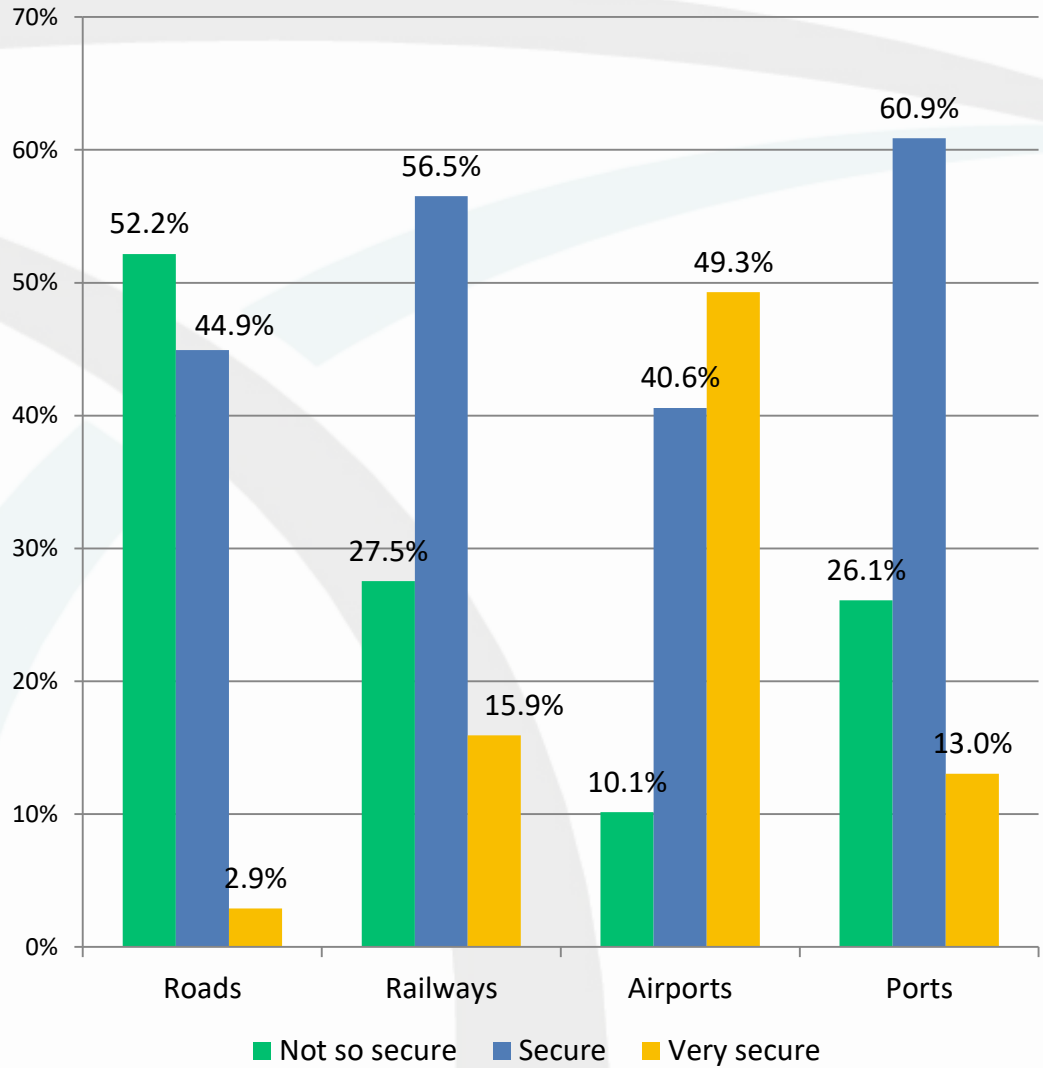


Infrastructures' perceived security

Airports are perceived **secure or very secure** by 89% of the respondents.

Railways and ports follow with respectively 71% and 73% of respondents. 52% of them declare **roads as not very secure**

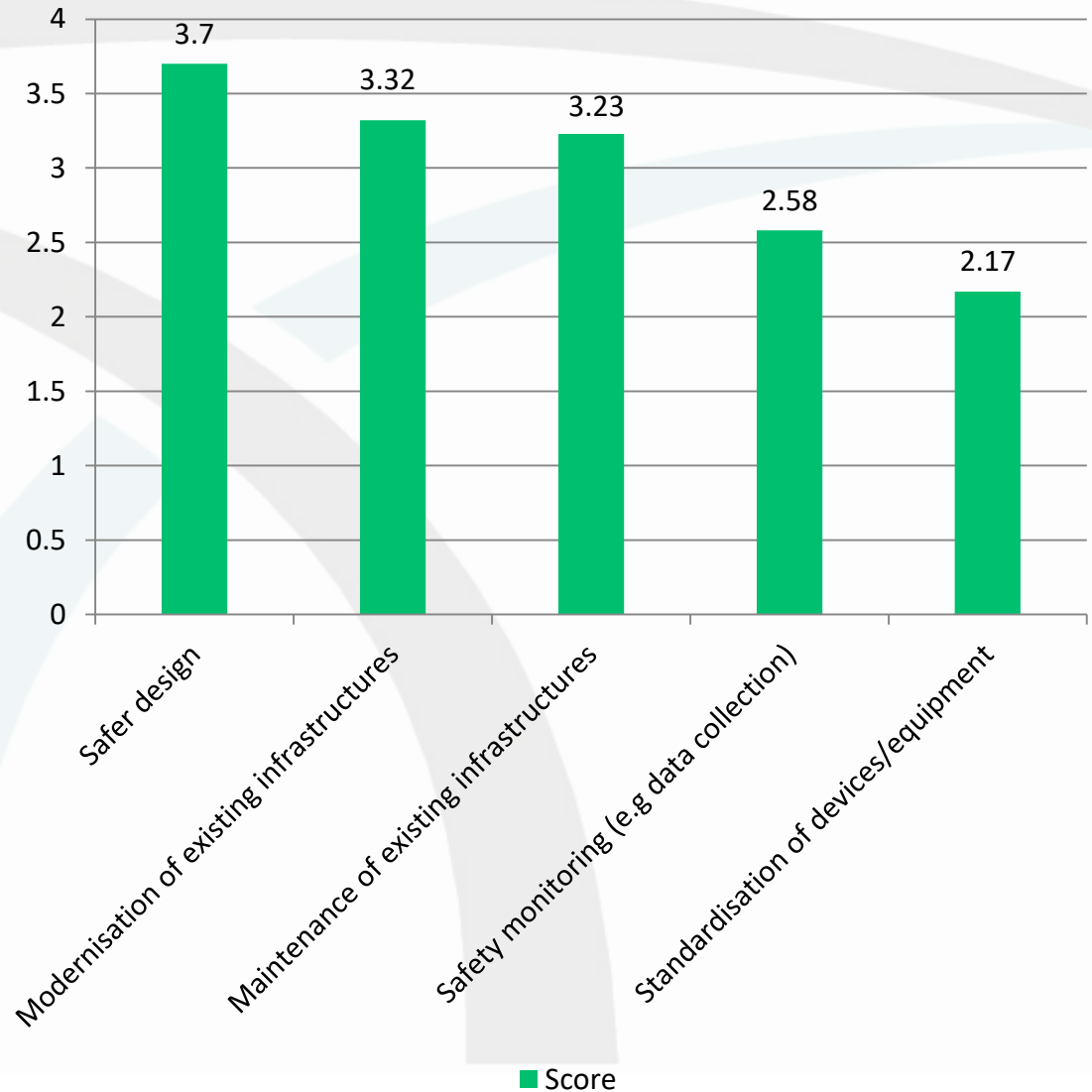
How secure are transport infrastructures today?



Actions to improve safety

Safer design of infrastructure is considered to be the action that has the most potential. This is followed by the **modernisation of existing infrastructures**, and their **maintenance**

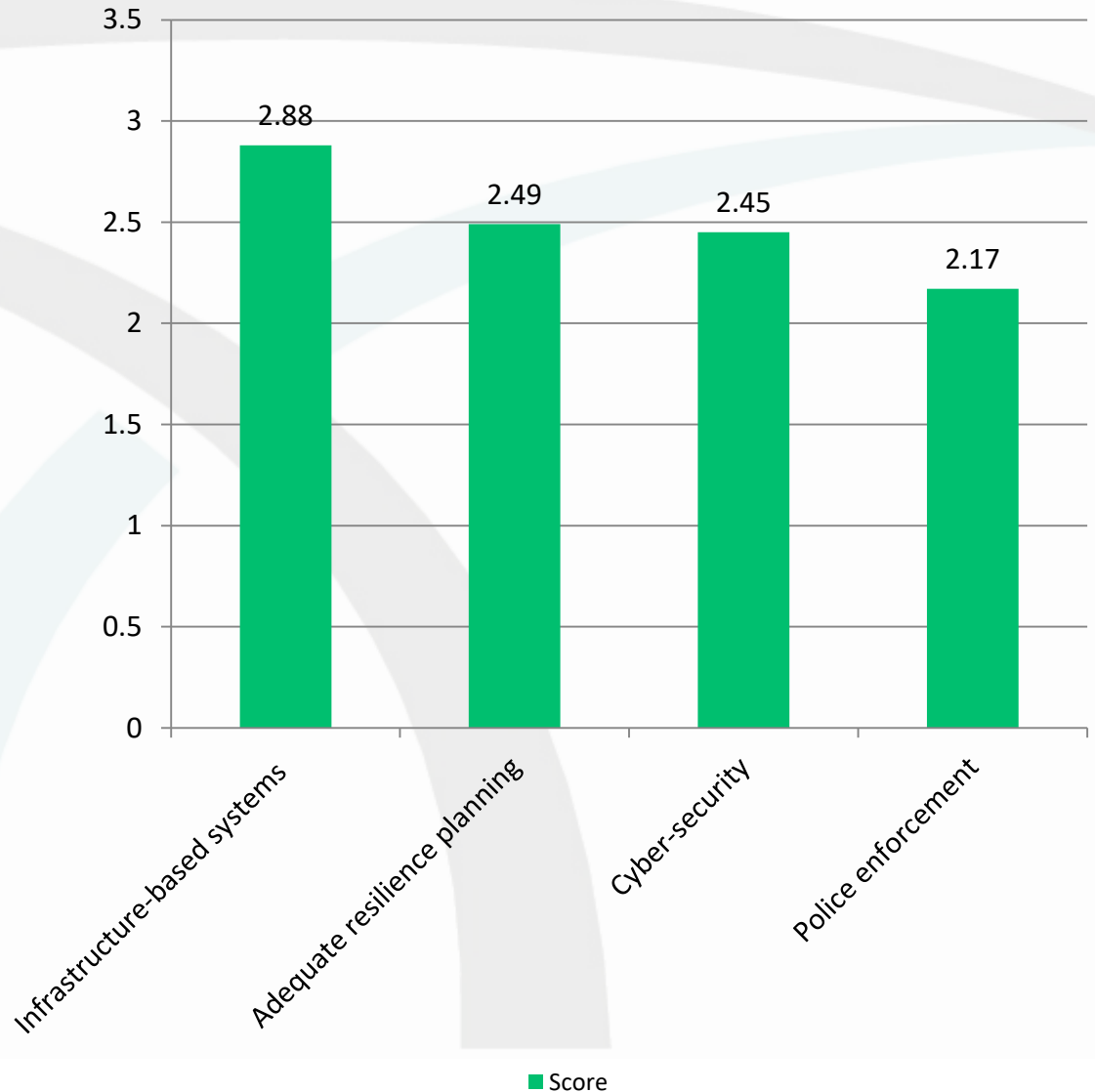
Which actions have more potential to reduce transportation mortality and injury rates?



Actions to improve security

Respondents have indicated **infrastructure-based systems** (e.g sensors) as the most effective. This is followed by **adequate resilience planning, cyber-security** and, lastly, police enforcement measures.

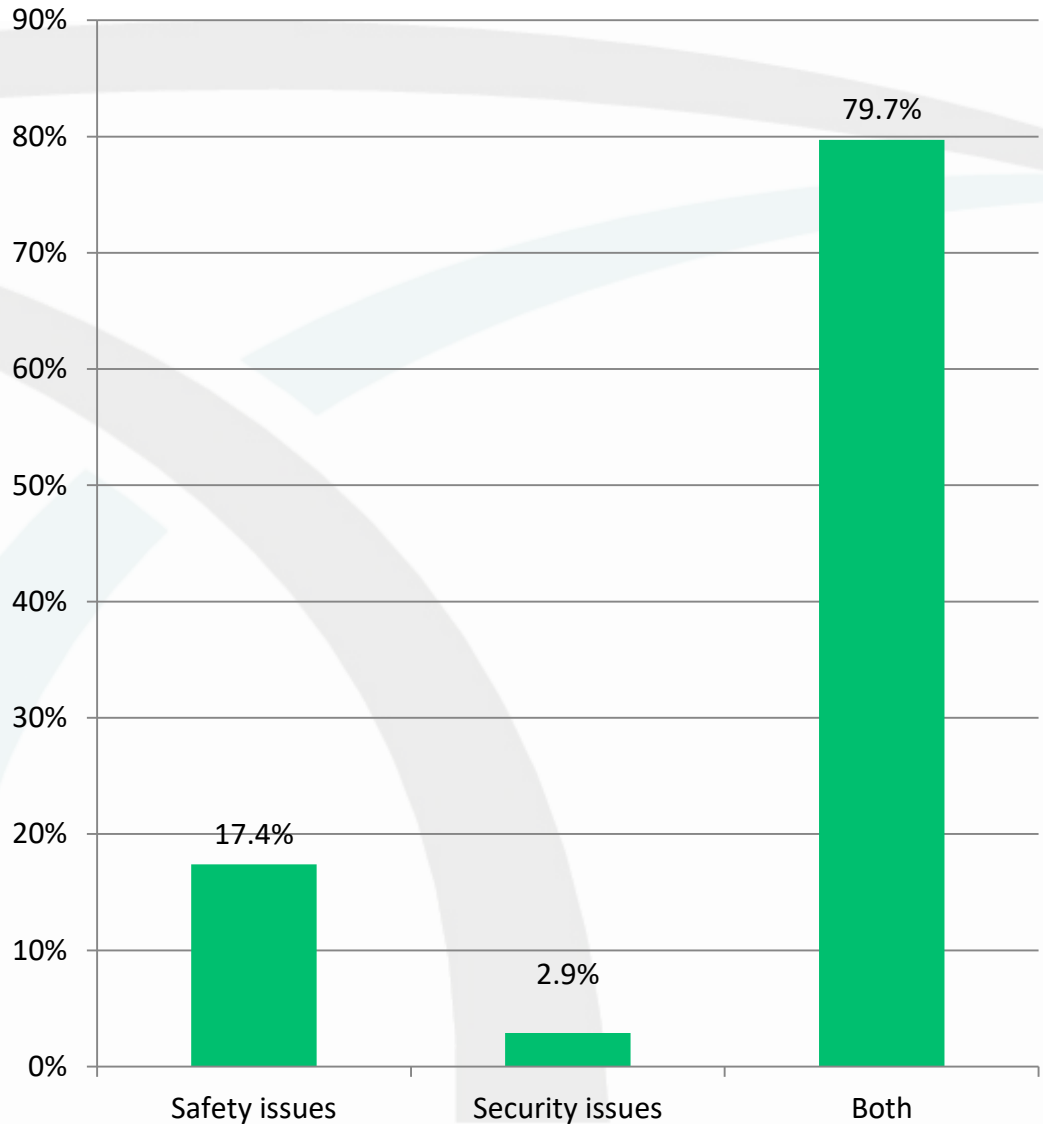
Which actions have more potential to increase security?



R&D activities

While 80% of the participants believe that infrastructure R&D should address **both safety and security** issues, the former is still perceived relatively more important (18%) compared to the latter (3%).

Should infrastructure R&D mainly address:



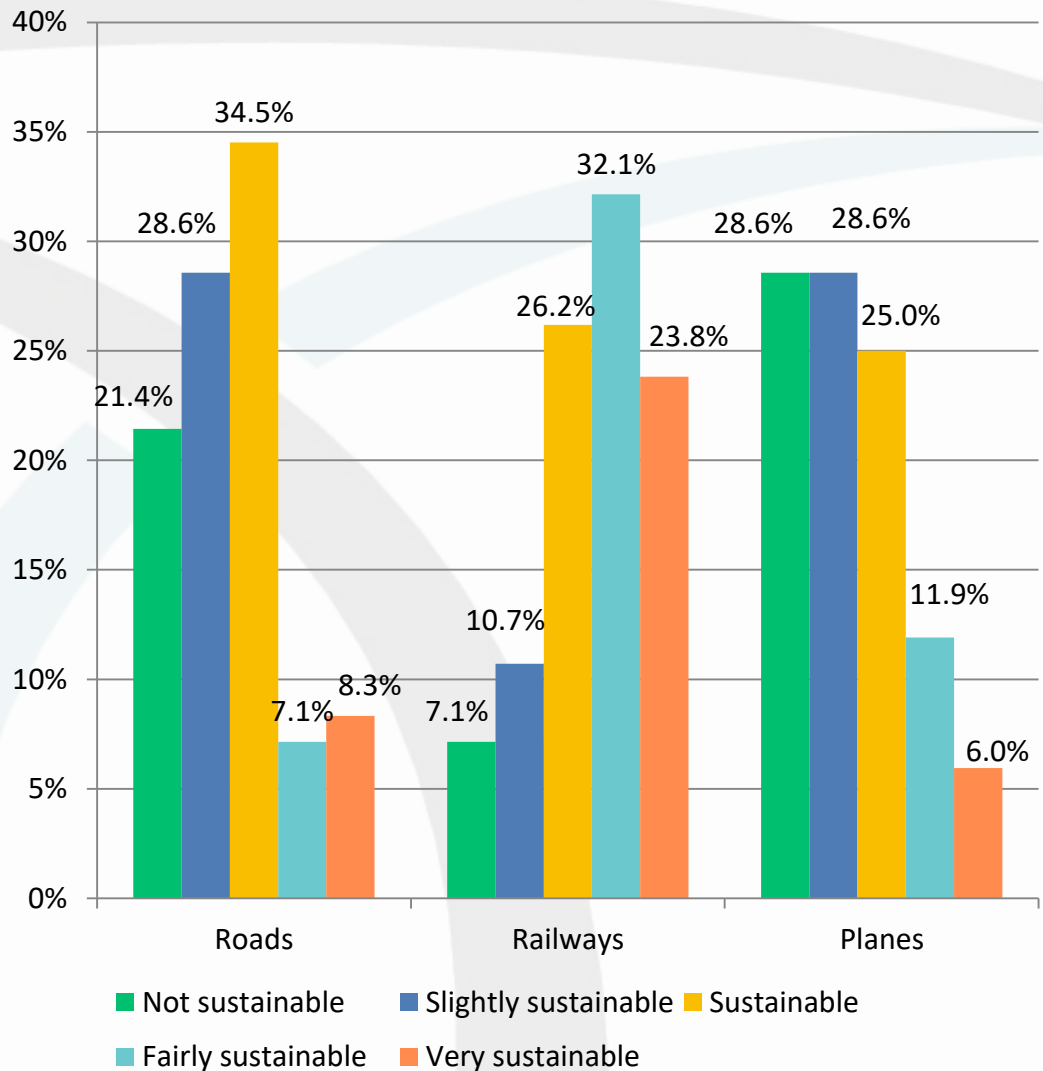
TC3 – Smart Sustainability

- Respondents: 84
- Topics:
 - Sustainability of the different transport modes
 - Most relevant transport and infrastructures' variables affecting sustainability
 - Most relevant infrastructures' elements in relation to sustainability
 - Sustainability in urban mobility

Sustainability of the different transport modes

Roads and planes are perceived as the **less sustainable**, with a 50% of respondents considering roads not or only slightly sustainable, and even a higher 57% for planes. **Railways** are perceived as **the most sustainable** mode with a 56% voting as fairly or very sustainable.

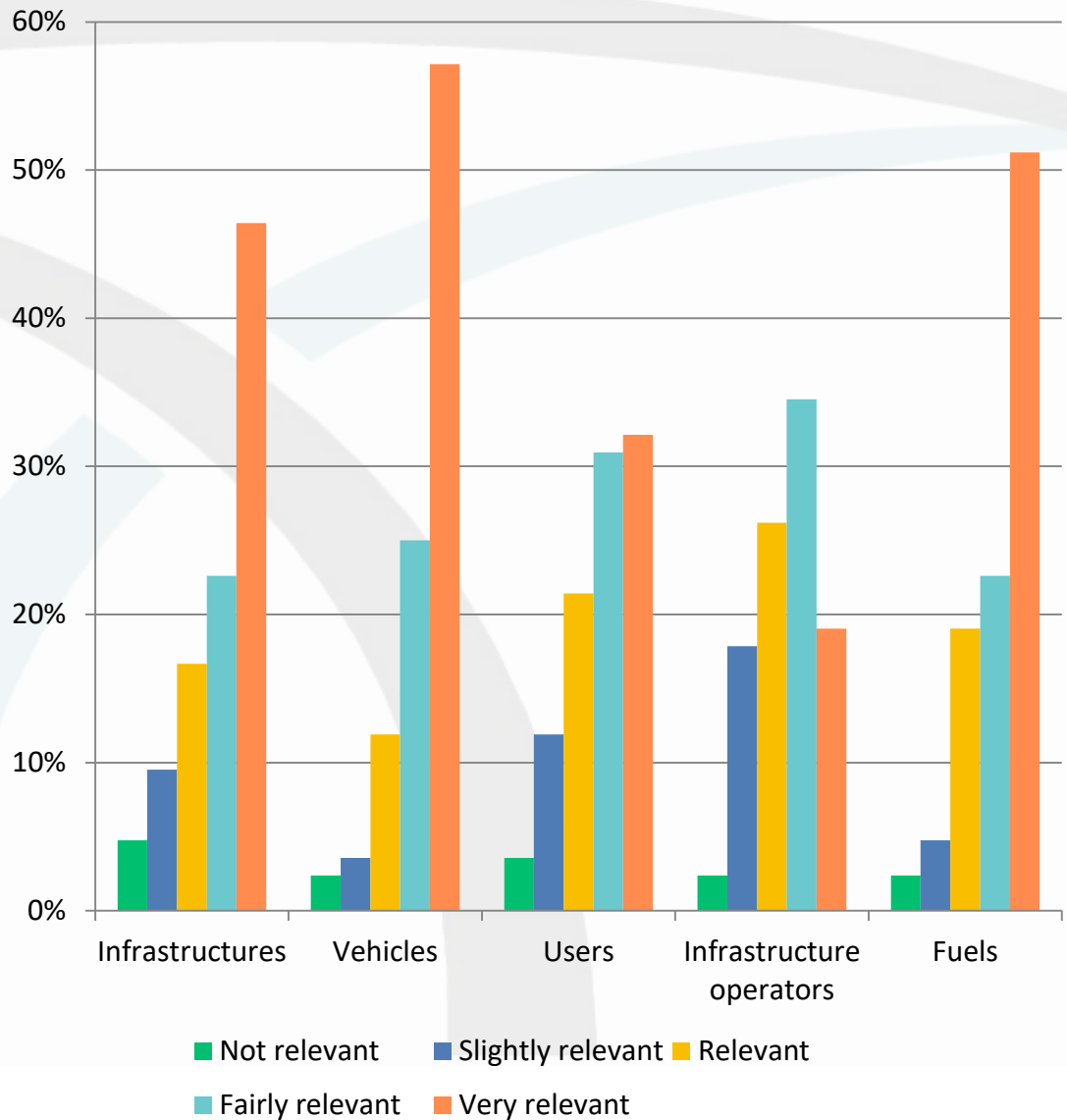
In your opinion, how sustainable are the different modes of transport?



Transport sustainability variables

The most relevant variables are **vehicles** (57%) and **fuels** (51%).

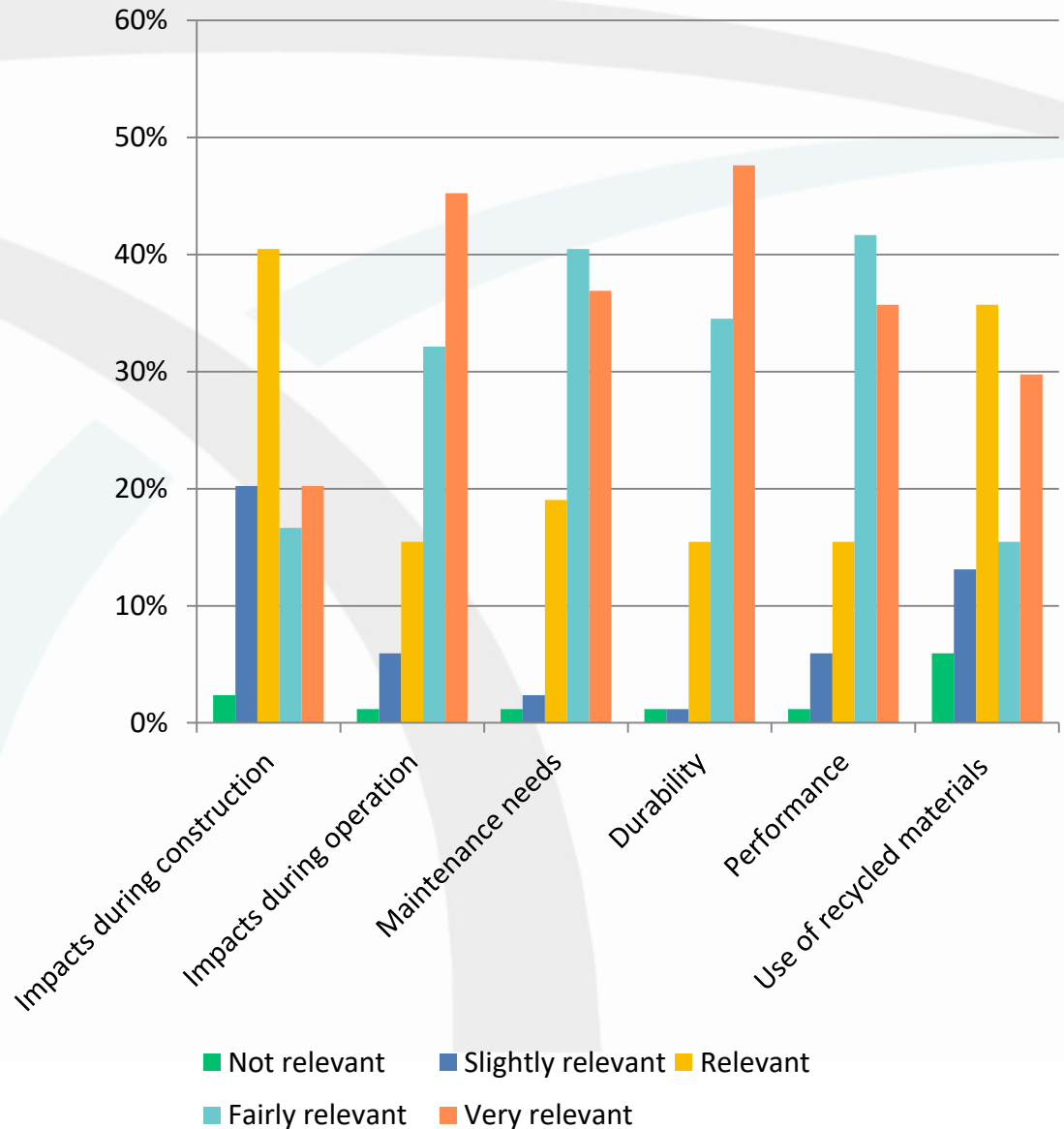
When talking about transport sustainability, how relevant are the following variables?



Infrastructure sustainability variables

Durability is the most relevant variable with (47% of respondents) followed by **impacts during operation** (45%)

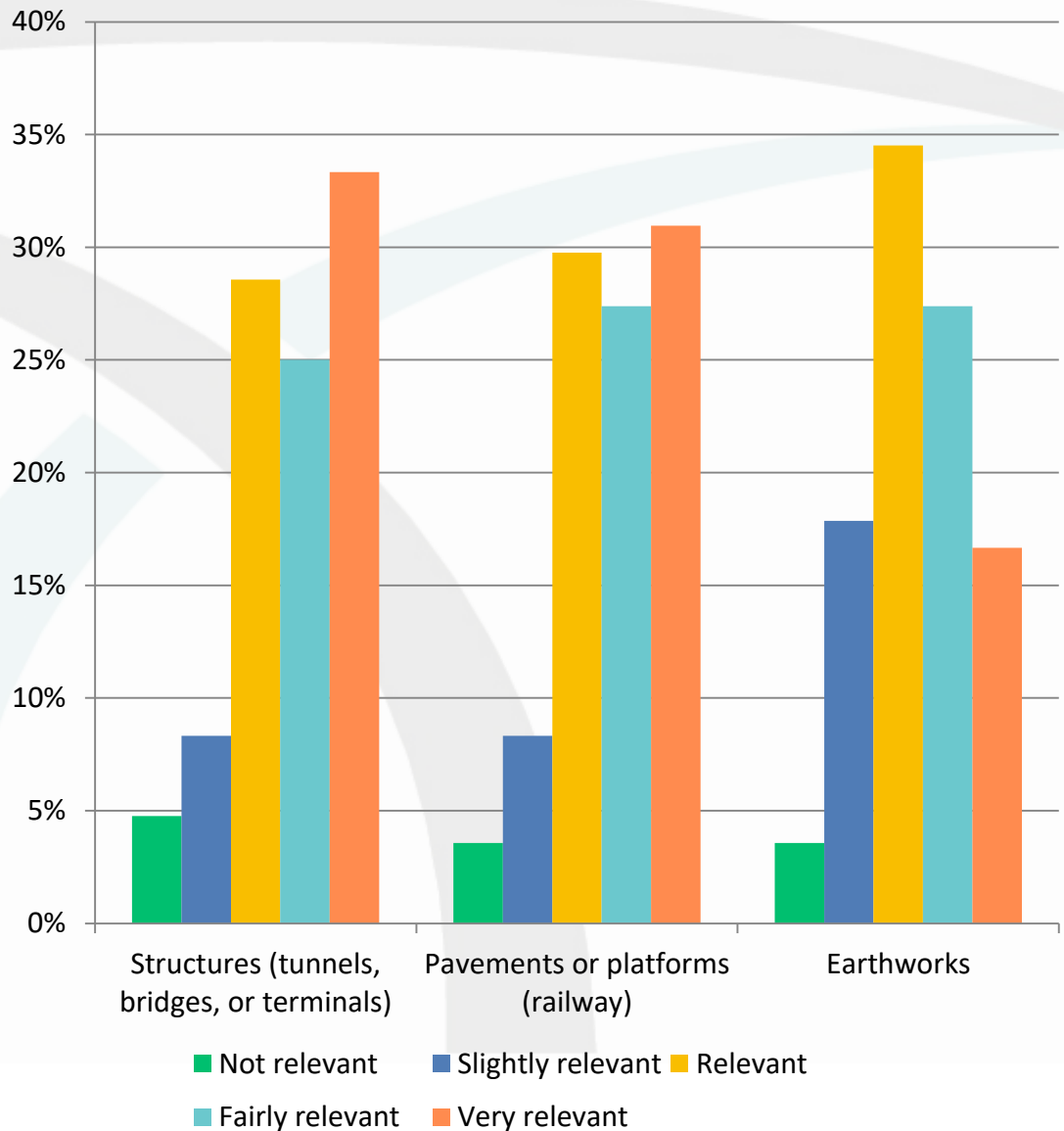
How relevant are the following variables for an infrastructure to be sustainable?



Infrastructure sustainability elements

One third of respondents consider that **structures** are the most relevant element, although pavements/platforms are strategical as well

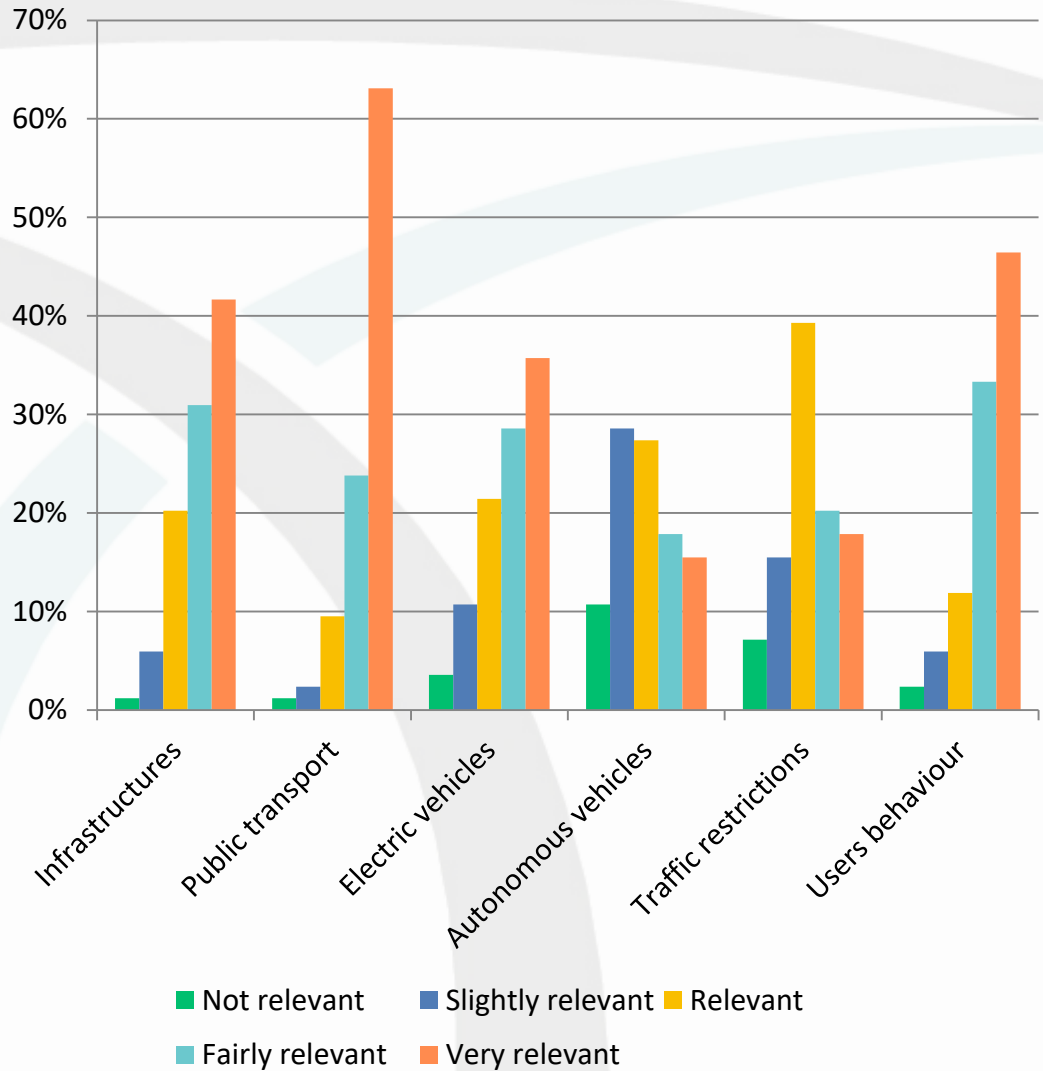
How relevant are the following elements for an infrastructure to be sustainable?



Urban mobility sustainability

Public Transport (63%) and **Users Behaviour** (46%) are regarded as the most relevant elements.

Indicate the role of these elements in the sustainability of urban mobility

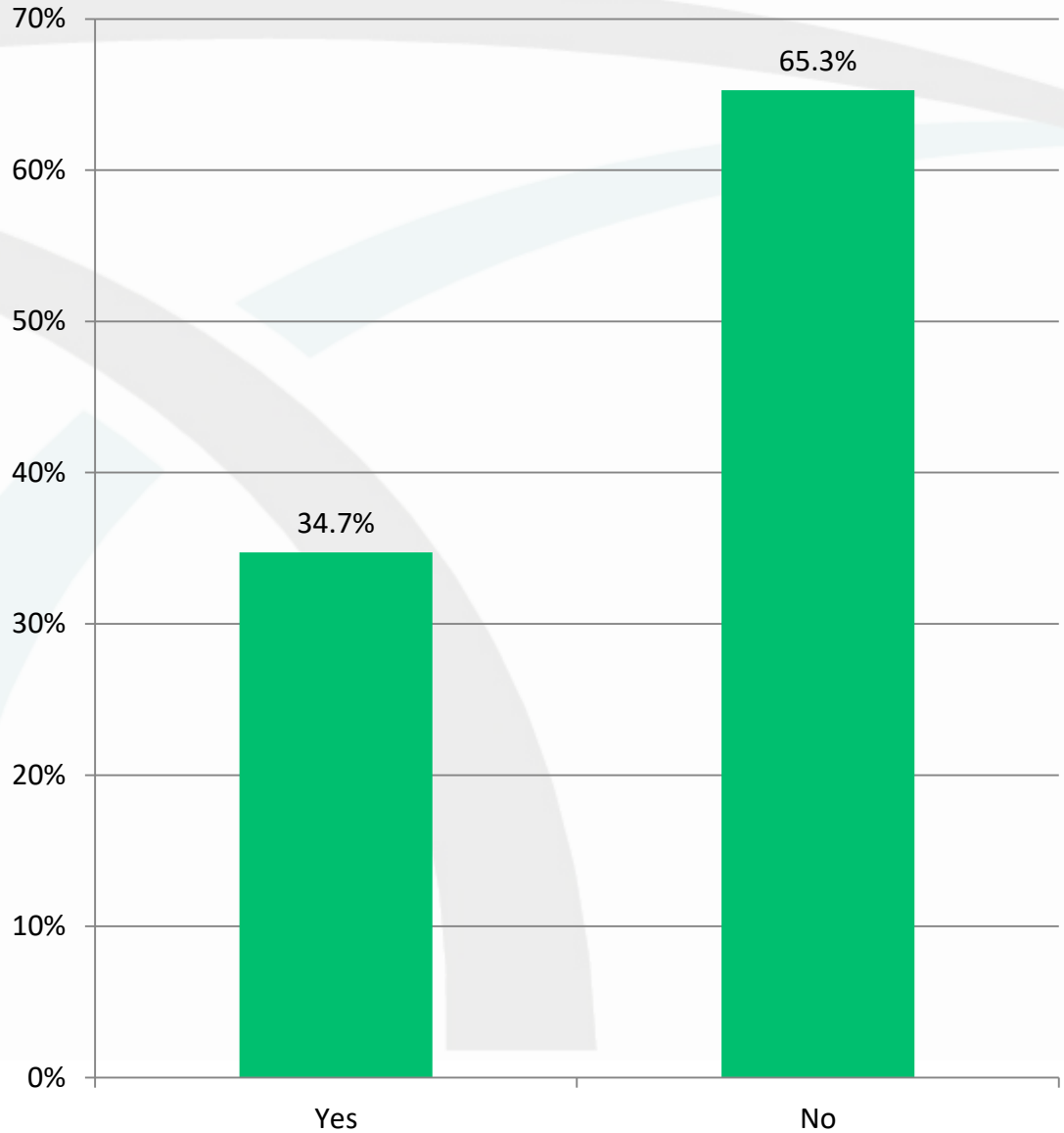


- Respondents: 111
- Topics:
 - Cost effectiveness and users' awareness about cost
 - Infrastructure financing in the different project phases
 - Private participation in financing
 - Public Private Partnerships (PPPs) critical aspects

Infrastructure cost-effectiveness

Over half of the respondents (65%) believe that the European infrastructures and transport services are **not cost-effective**

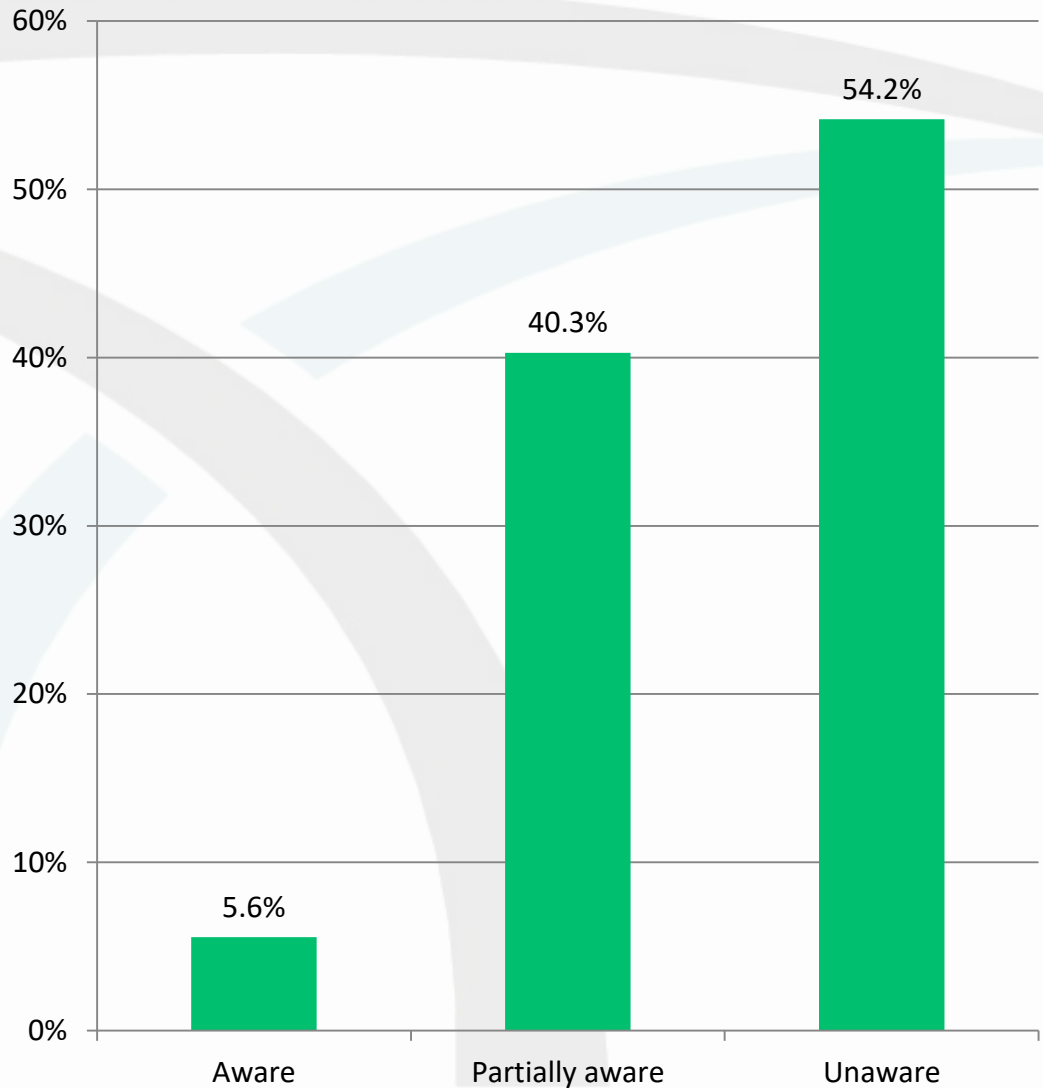
Are European infrastructures and transport services cost-effective nowadays?



How aware are users about the real cost of transport services and infrastructure facilities?

Users' awareness

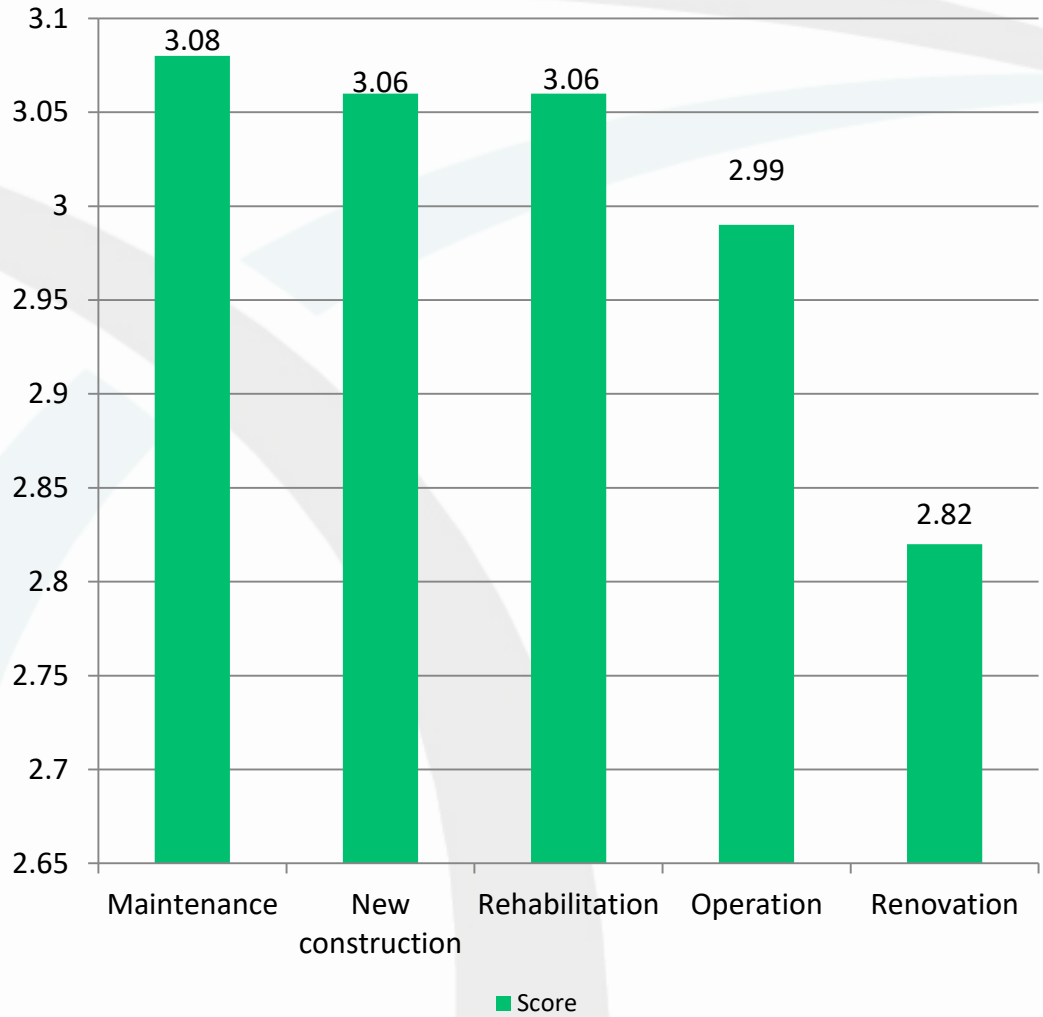
55% of the respondents declared the **users are unaware** of the real cost of transport services and infrastructures, while 45% said that the users are aware or partial aware



Infrastructure financing

Financing is particularly challenging in the **maintenance** phase, followed by **construction** and **rehabilitation** phases

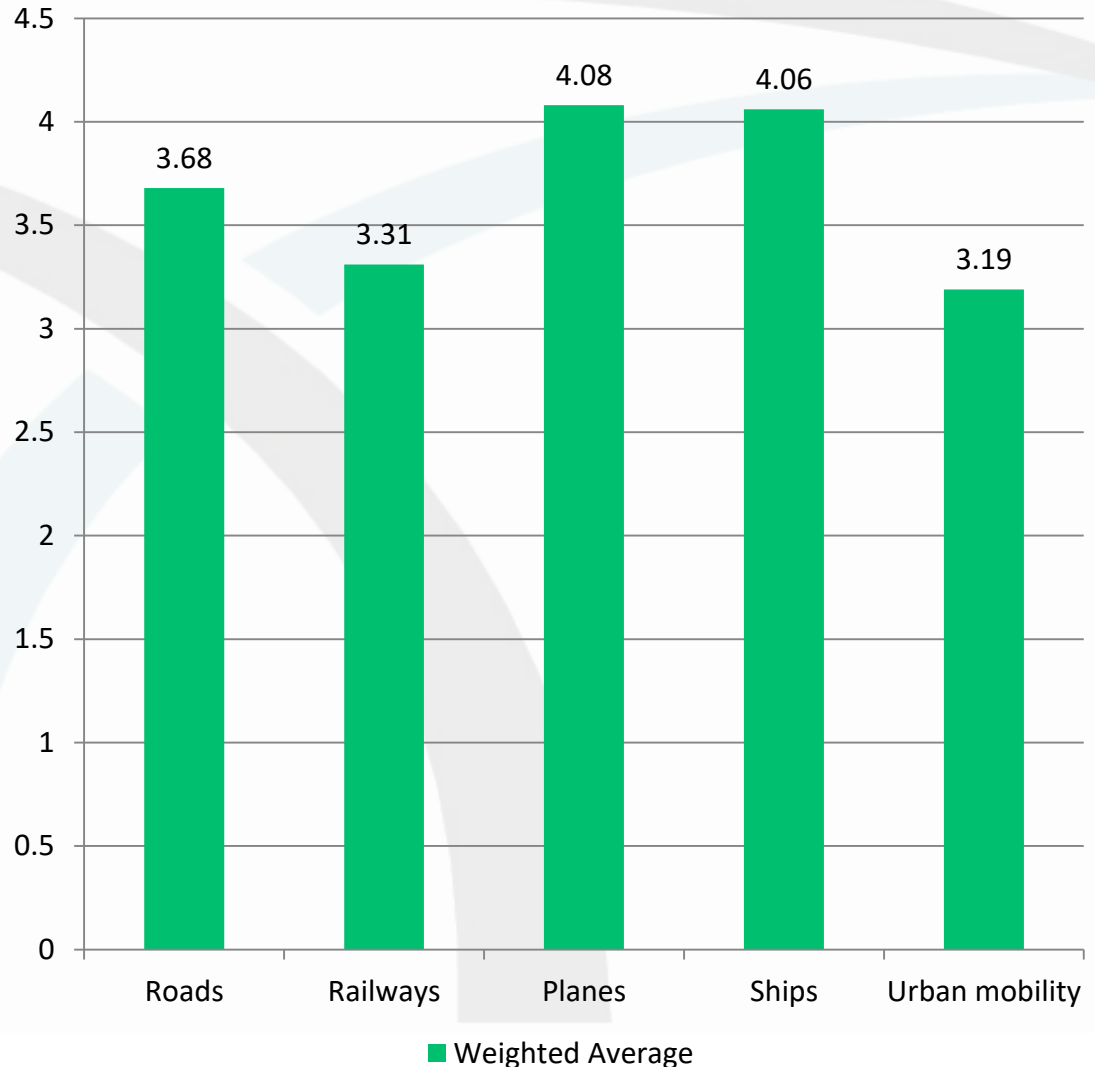
In which of the following phases is infrastructure financing more challenging?



Private participation in financing

Respondents tend to favour in all transport infrastructures the participation of the private sector financing, in particular for **air and maritime transport**, while a weaker interest is registered in relation to urban mobility infrastructures.

To what extent do you agree with the participation of the private sector in infrastructure financing?

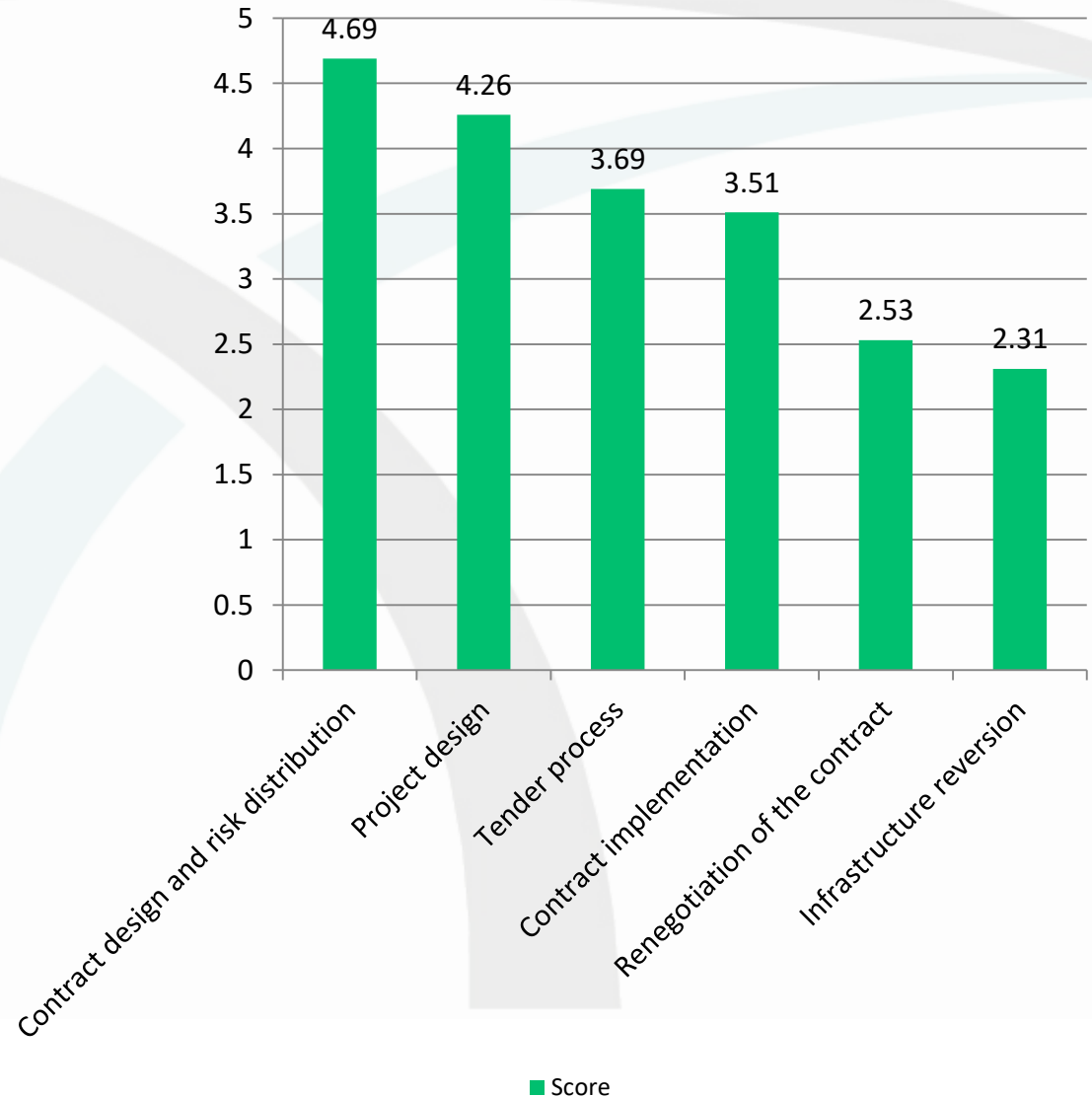


PPP's critical aspects

Contract design and risk distribution

was seen to be the most critical aspects for the success of PPP contract, whereas infrastructure reversion was seen as the least important

In order of importance, which aspects are more critical for the success of PPP contracts?





Smart Transportation Alliance

**THANK YOU
FOR YOUR
ATTENTION**

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