GUIDE

Supporting the Strategic Deployment Agendas for The EU Corridors

# **CEF Digital projects** Questionnaire analysis

October 2023

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# GUIDE Questionnaire objectives

This questionnaire has been addressed to all CEF Digital Call 1 projects. The objective is to better understand the purpose and objectives of the study and works project, and the solutions put in place, the 5G corridor deployment process(es) and the ability to replicate it in other locations.

The questionnaire is addressing 4 domains:

- 1/ Technical (9 questions)
- 2/ Replicability (8 questions)
- 3/ Deployment (7 questions)
- 4/ Regulation (2 questions)
- 5/ Operation (3 questions)
- 6/ Best practices (4 questions)

A special focus is targeted the blueprint aspect following the recommendation of the GUIDE advisory board. The objective is to ensure the replicability of a solution in order to save time and money. This aspect is addressed in the replicability section.

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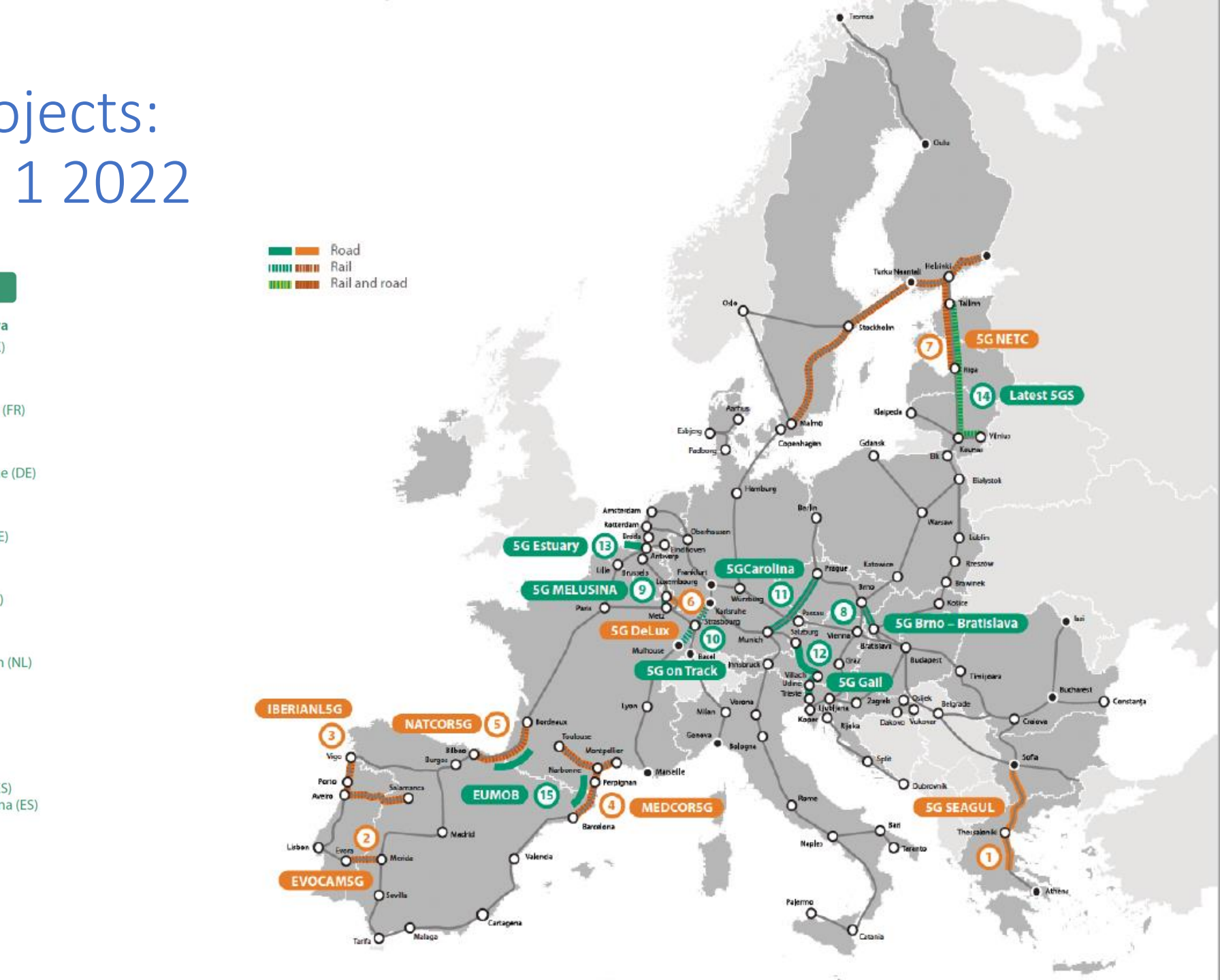
# 5G Corridor Projects: CEF Digital Call 1 2022

**WORKS**

1. **5G SEAGUL**
   Sofia (BG) to Velestino (EL)
   *~ 475 km*
2. **EVOCAM5G**
   Evora (PT) to Merida (ES)
   *~ 155 km*
3. **IBERIANL5G**
   Vigo (ES) to Aveiro (PT)
   to Salamanca (ES)
   *~ 600 km*
4. **MEDCOR5G**
   Barcelona (ES) to Montpellier (FR)
   *~ 550 km*
5. **NATCOR5G**
   Bilbao (ES) to Bordeaux (FR)
   *~ 515 km*
6. **5G DeLux**
   Frisange (LU) to Güdingen (DE)
   *~ 100 km*
7. **5G NETC**
   Malmö (SE) to Helsinki (FI)
   to Riga (LV)
   *~ 4400 km*

**STUDIES**

8. **5G Brno – Bratislava**
   Brno (CZ) to Bratislava (SK)
   *~ 140 km*
9. **5G MELUSINA**
   Luxembourg (LU) to Metz (FR)
   *~ 70 km*
10. **5G on Track**
    Mulhouse (FR) to Karlsruhe (DE)
    *~ 200 km*
11. **5GCarolina**
    Prague (CZ) to Munich (DE)
    *~ 70 km*
12. **5G Gail**
    Udine (IT) to Salzburg (AT)
    *~ 200 km*
13. **5G Estuary**
    Antwerp (BE) to Vlissingen (NL)
    *~ 260 km*
14. **Latest 5GS**
    Tallin (EE) to Vilnius (LT)
    *~ 670 km*
15. **EUMOB**
    Bordeaux (FR) to Bilbao (ES)
    Perpignan (FR) to Barcelona (ES)
    *~ 9500 km*

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# Technical section

T1: Which of the following Service will your project address ?

T2: What are the use cases covered?

T3: What are the commercial services offered?

T4: Will your project address additional services?

T5: Which 5G frequency are you using?

T6: What are the Targeted network performance level/connectivity requirements?

T7: What is the 5G network infrastructure?

T8: Which type of Inter-PLMN solution at the border is being used?

T9: Does your project address energy efficiency, if so, how?

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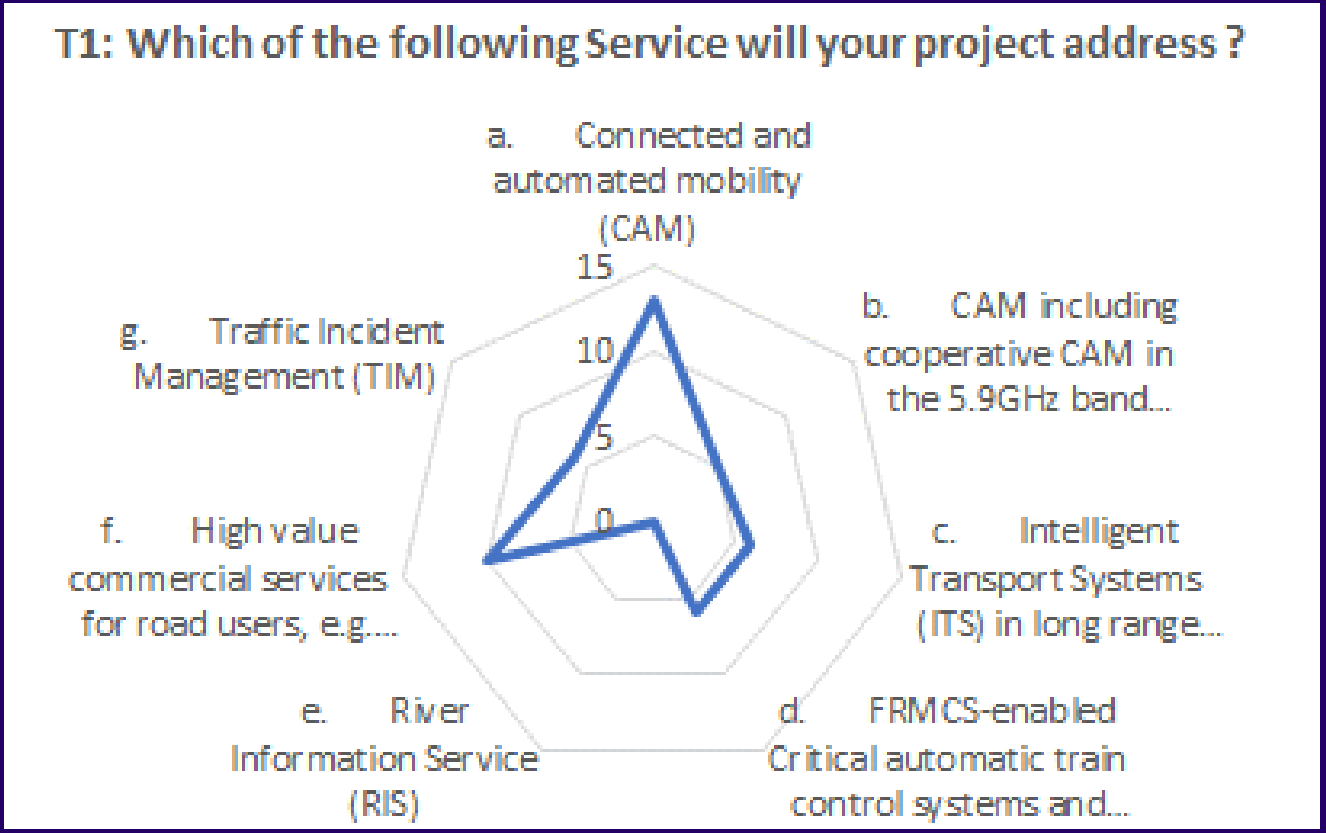
# Technical questions analysis T2




Most of the projects are planning to offer CAM and High value commercial services

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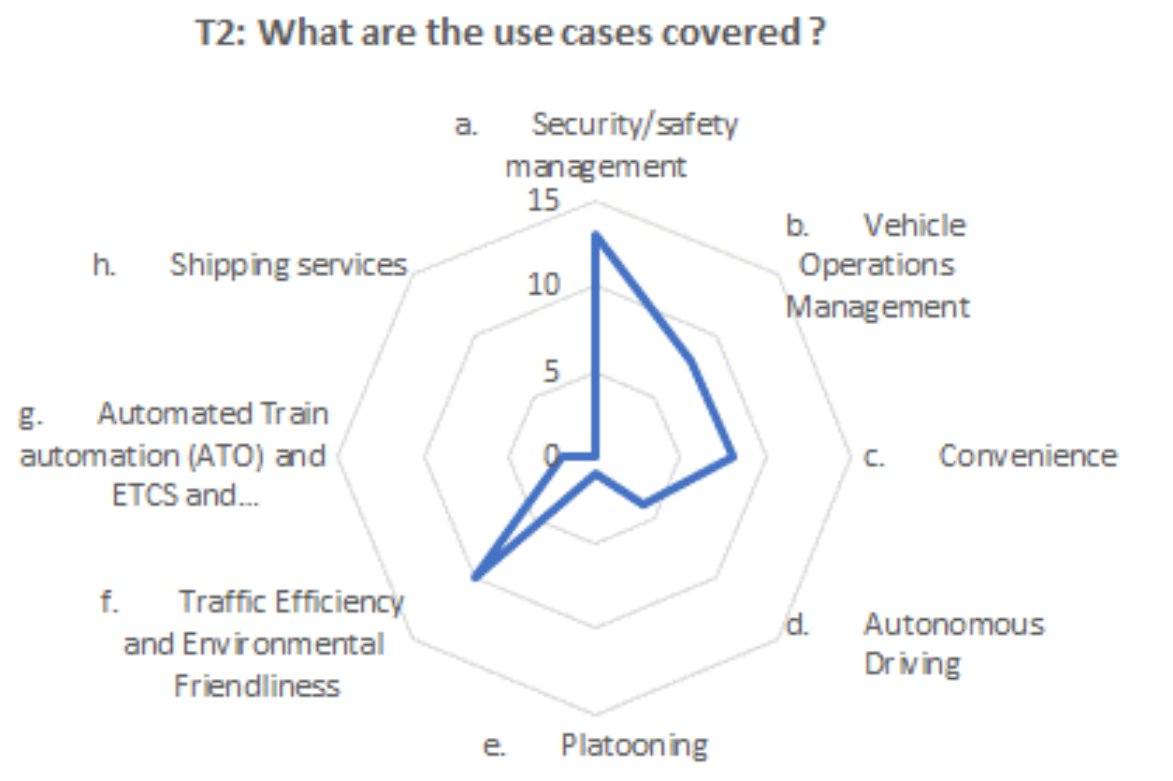
# Technical questions analysis T2




Most of the projects are addressing Security/safety and Traffic efficiency use cases or are planning to

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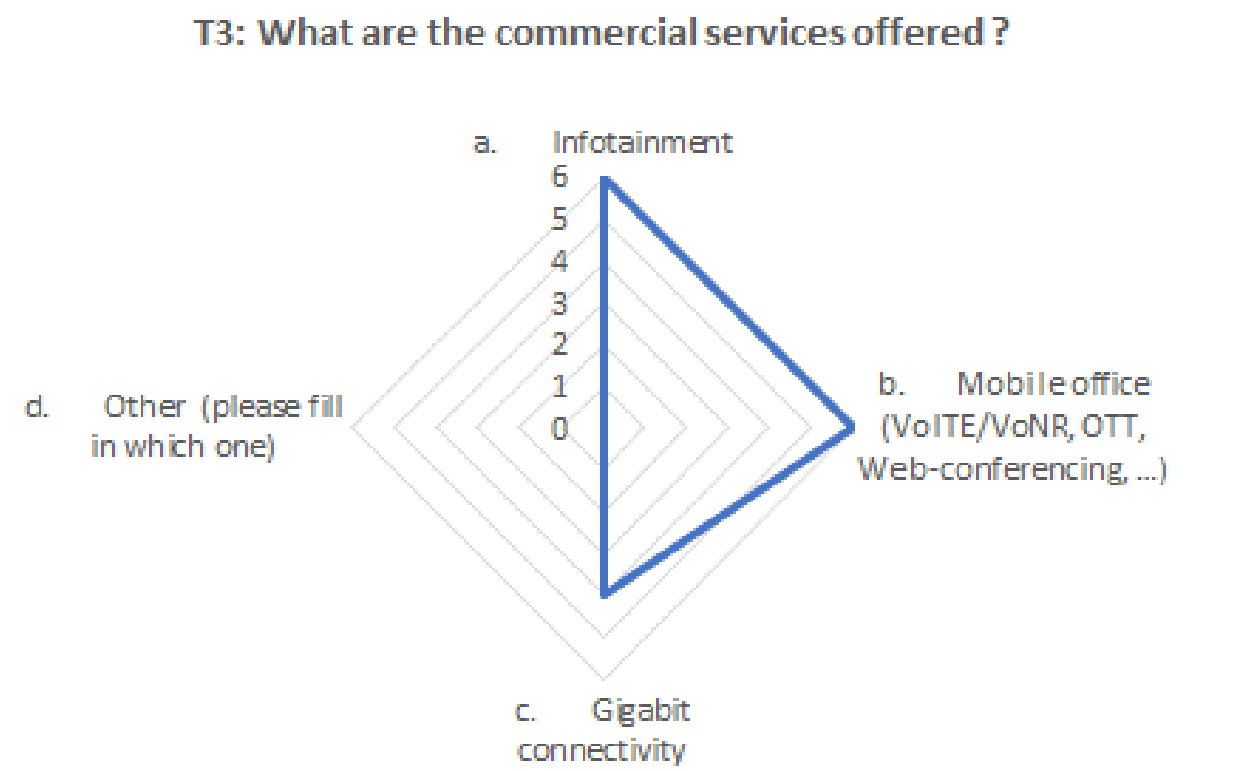
# Technical questions analysis T3




Most of the projects are willing to offer Infotainment and Mobile office commercial services

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# Technical questions analysis T4

T4: Will your project address additional services?

- Electricity charging
- Logistics: Transport safety, convenience, sustainable goods transfer
- Safety: Data Sharing for Real-time Situation Awareness and Traffic Information

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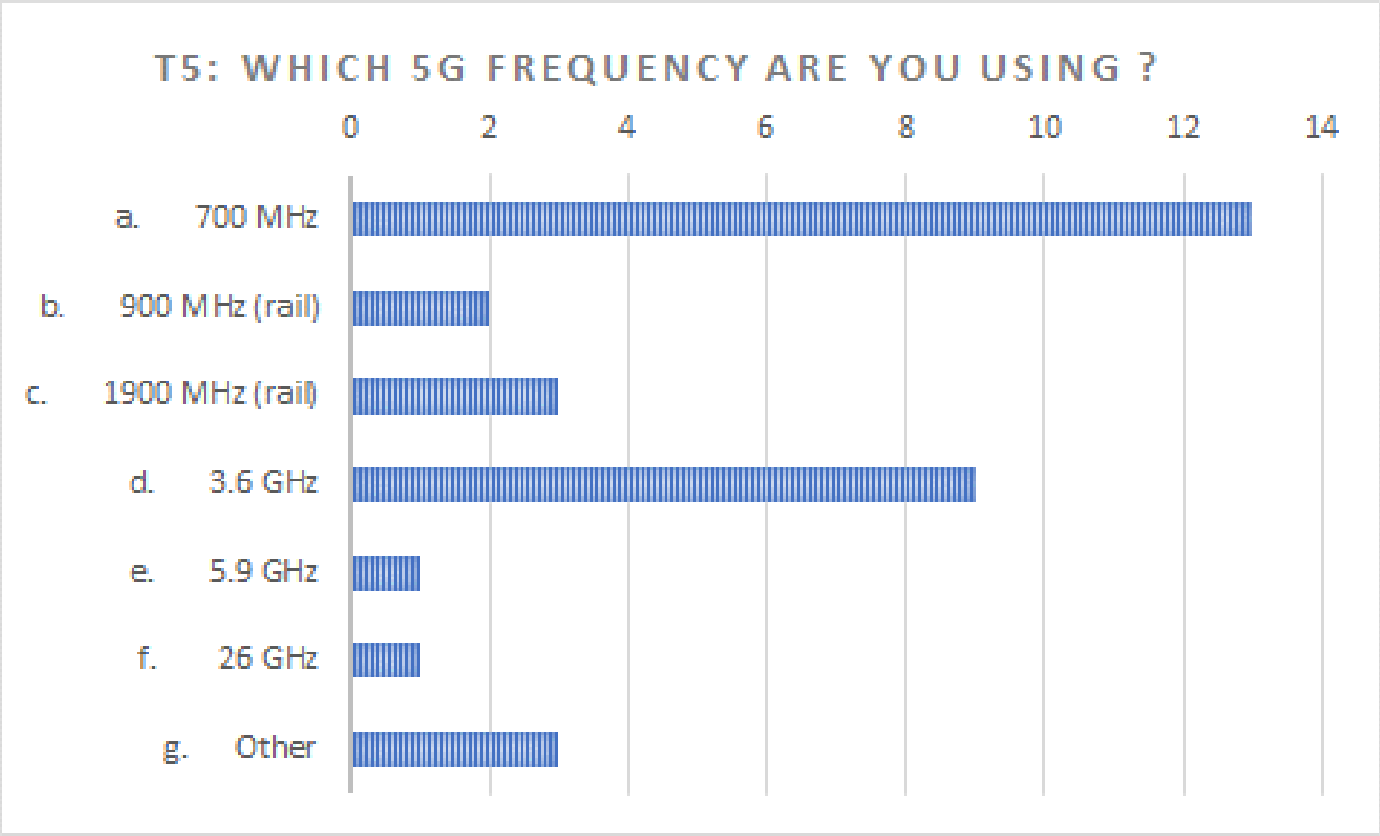
# Technical questions analysis T5




Most of the projects are planning to use the 700 MHz and 3,6 GHz bands

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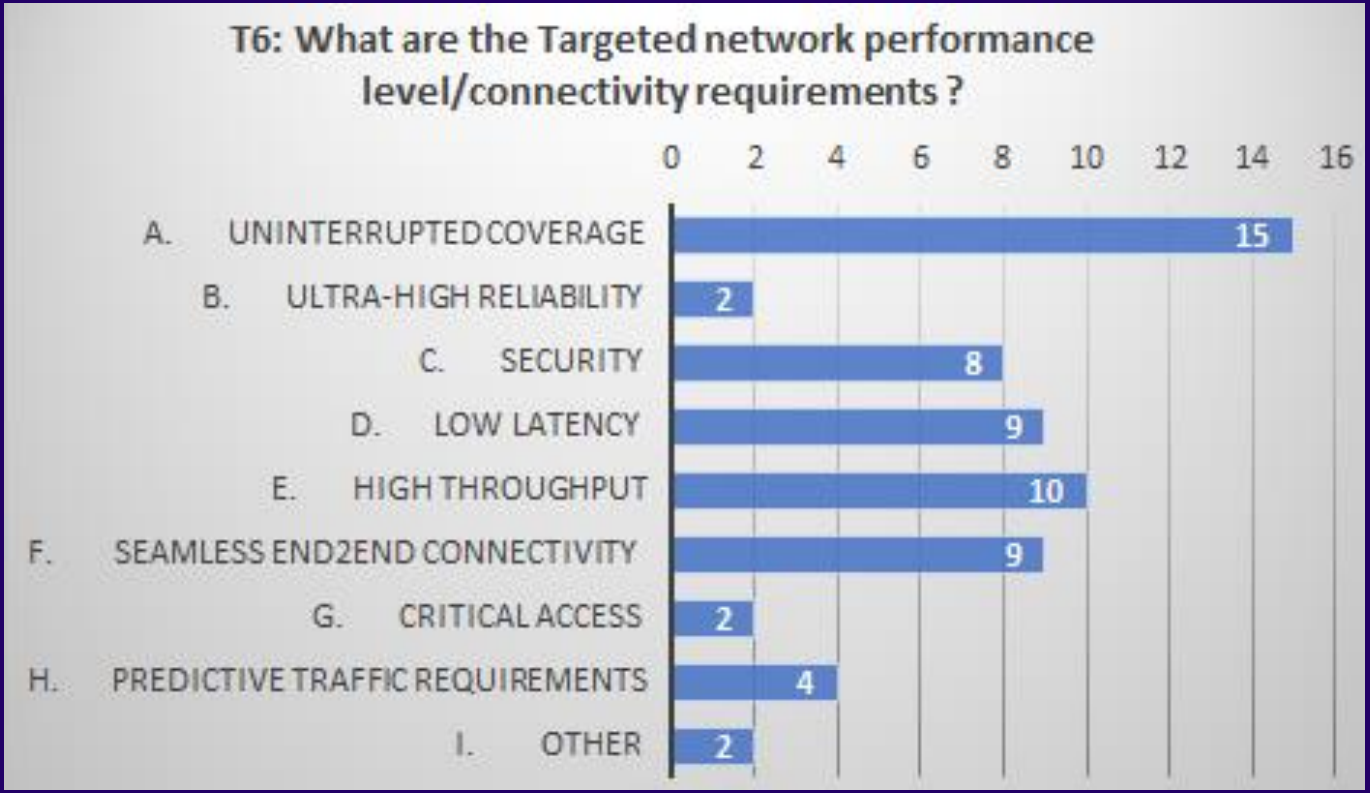
# Technical questions analysis T6




Most of the projects are planning or addressing Uninterrupted coverage, security, low latency, high throughput and seamless end to end connectivity

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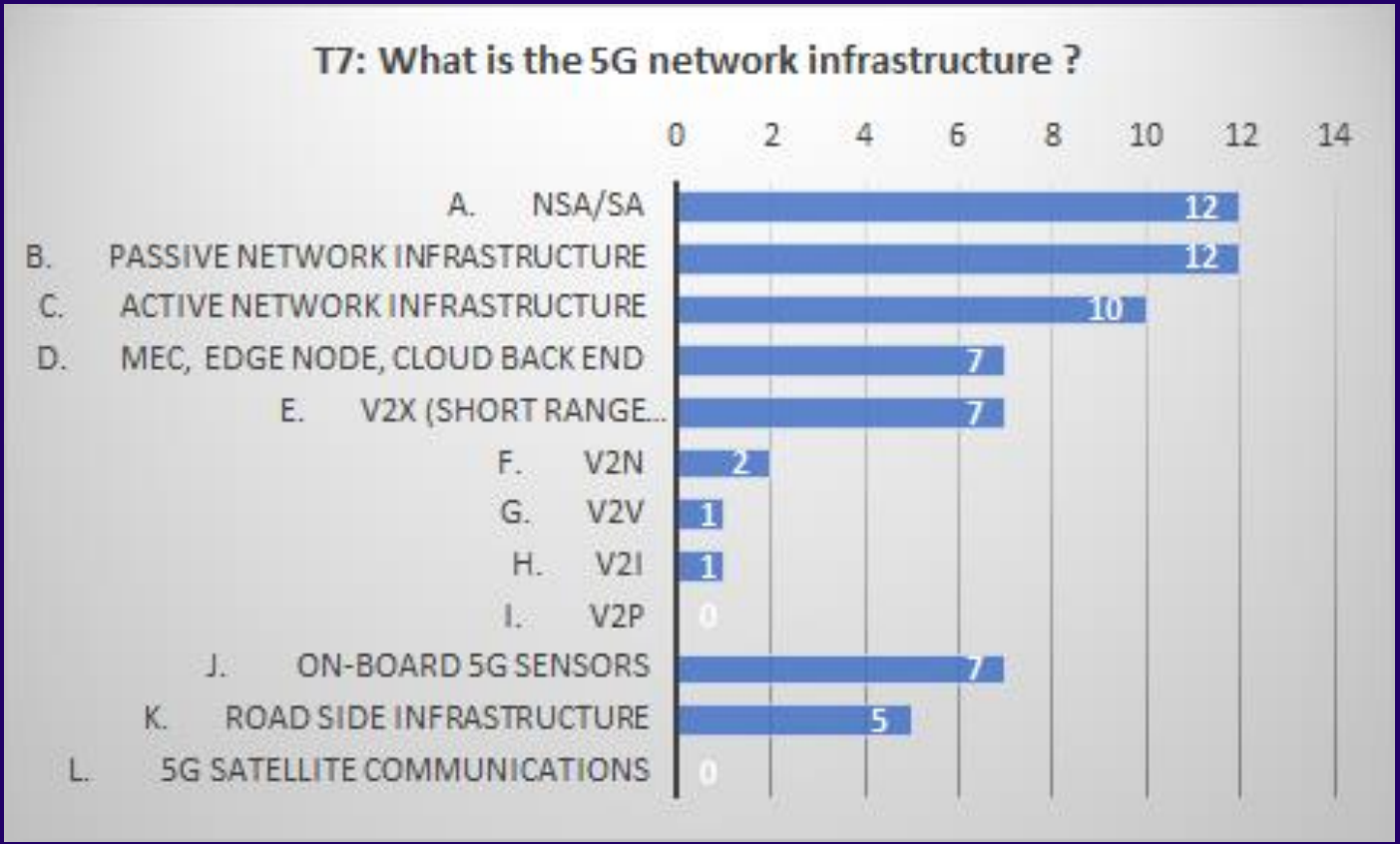
# Technical questions analysis T7




Most of the projects are planning to put in place NSA/SA, passive network infrastructure, active network infrastructure and Edge computing.

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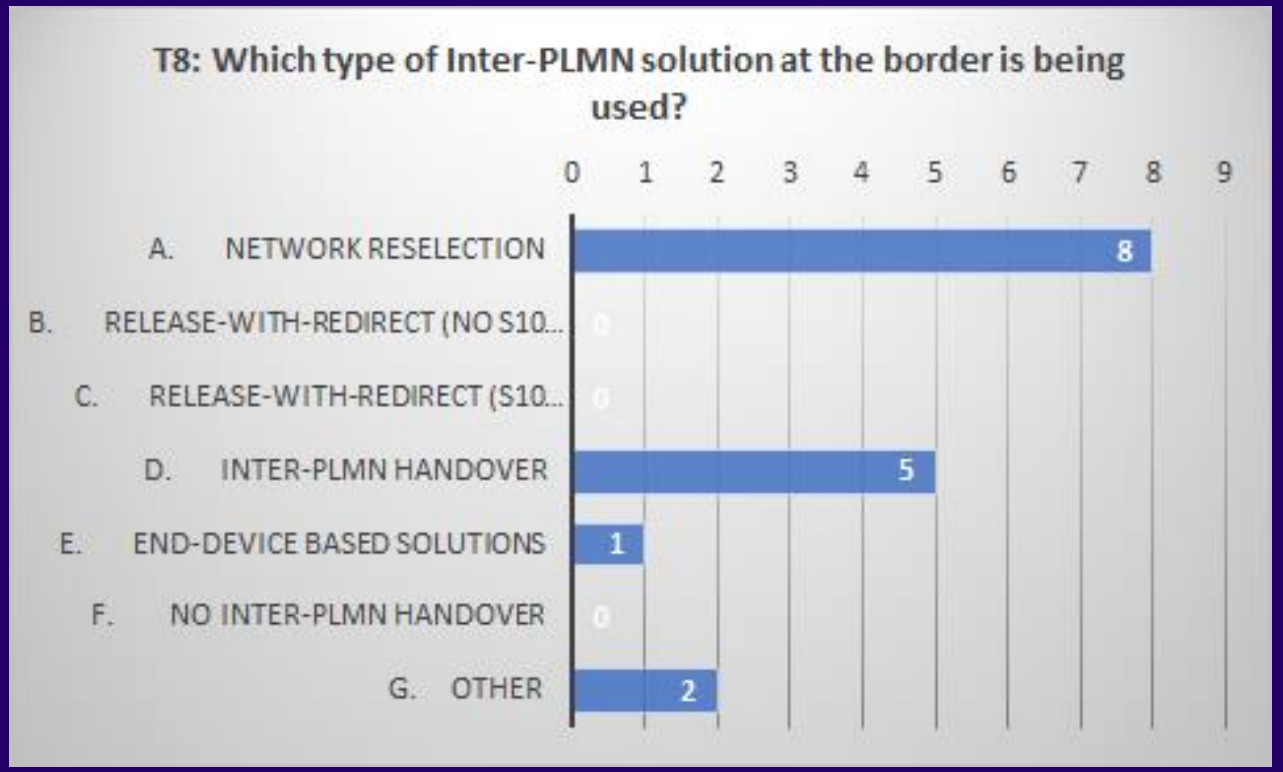
# Technical questions analysis T8




A majority of the projects are planning to put in place network reselection and some the inter-PLMN handover

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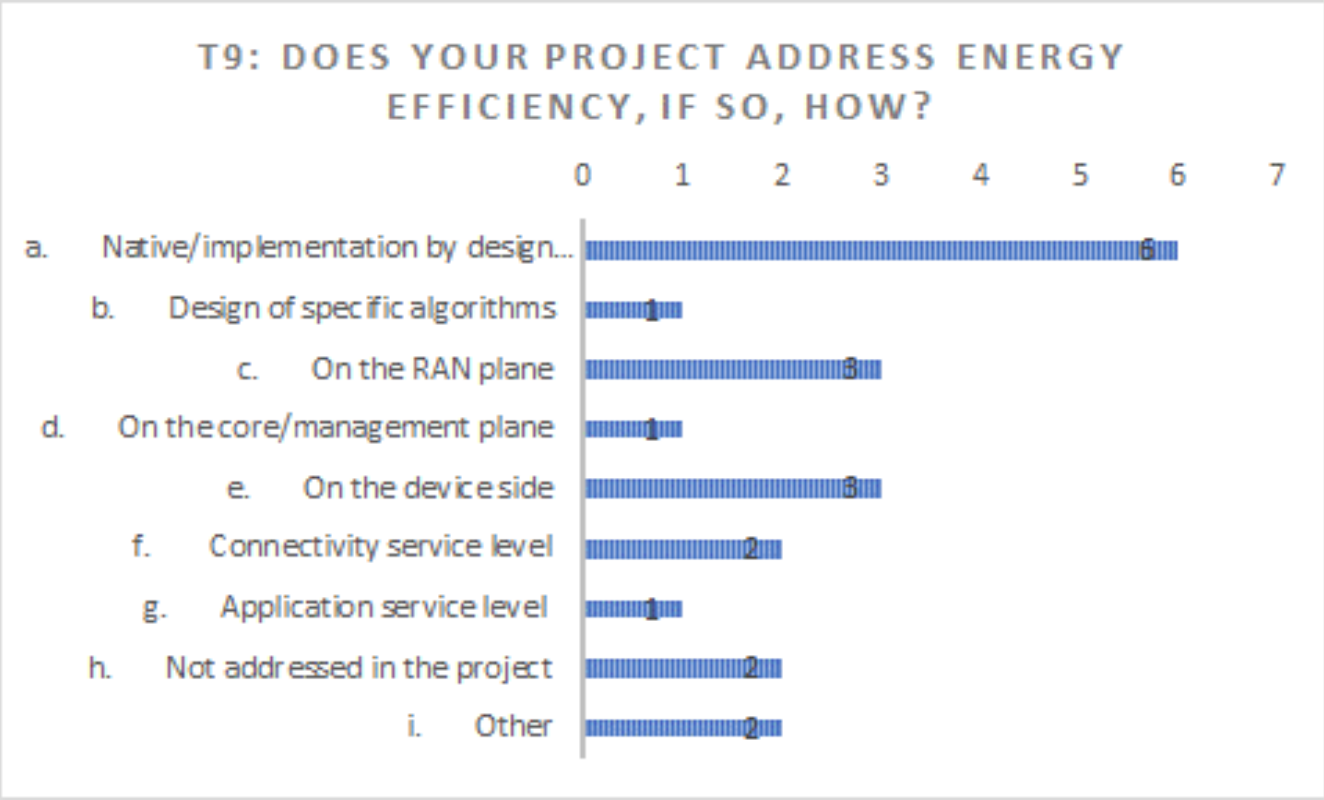
# Technical questions analysis T9




Most of the projects are planning to take into account energy efficiency using several possibilities.

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# Replicability section

R1: Replicable on the technology dimension?

R2: Replicable on the Data dimension

R3: Replicable on the Market dimension

R4: Replicable on the Acceptance dimension

R5: Replicable on the Regulatory/Policy dimension

R6: Replicable on the Sustainability dimension

R7: Replicable on the Financial dimension

R8: What is the methodology put in place to facilitate the replication

**Only applicable to Works projects**

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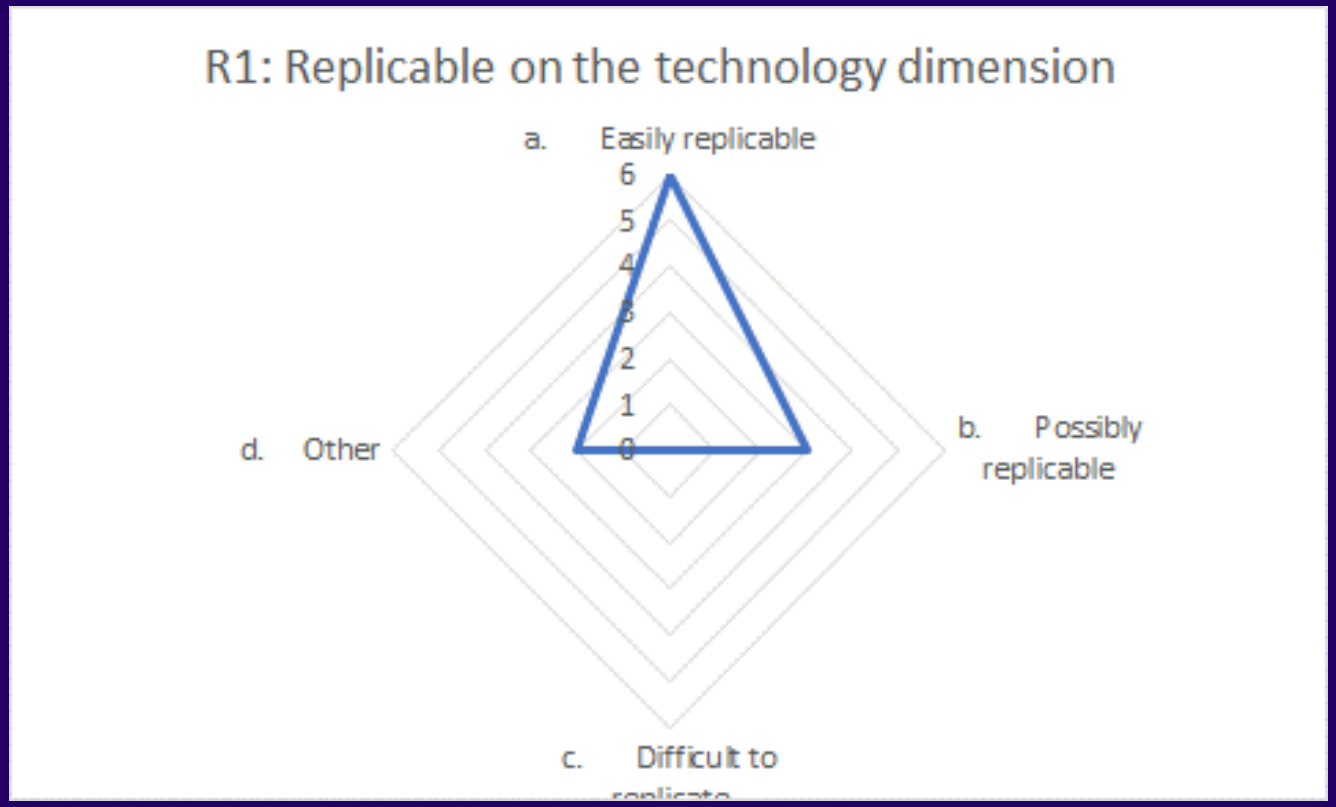
# Replicability questions analysis R1




Most of the Works projects have in mind that the solution could be easily replicable from a technology point of view

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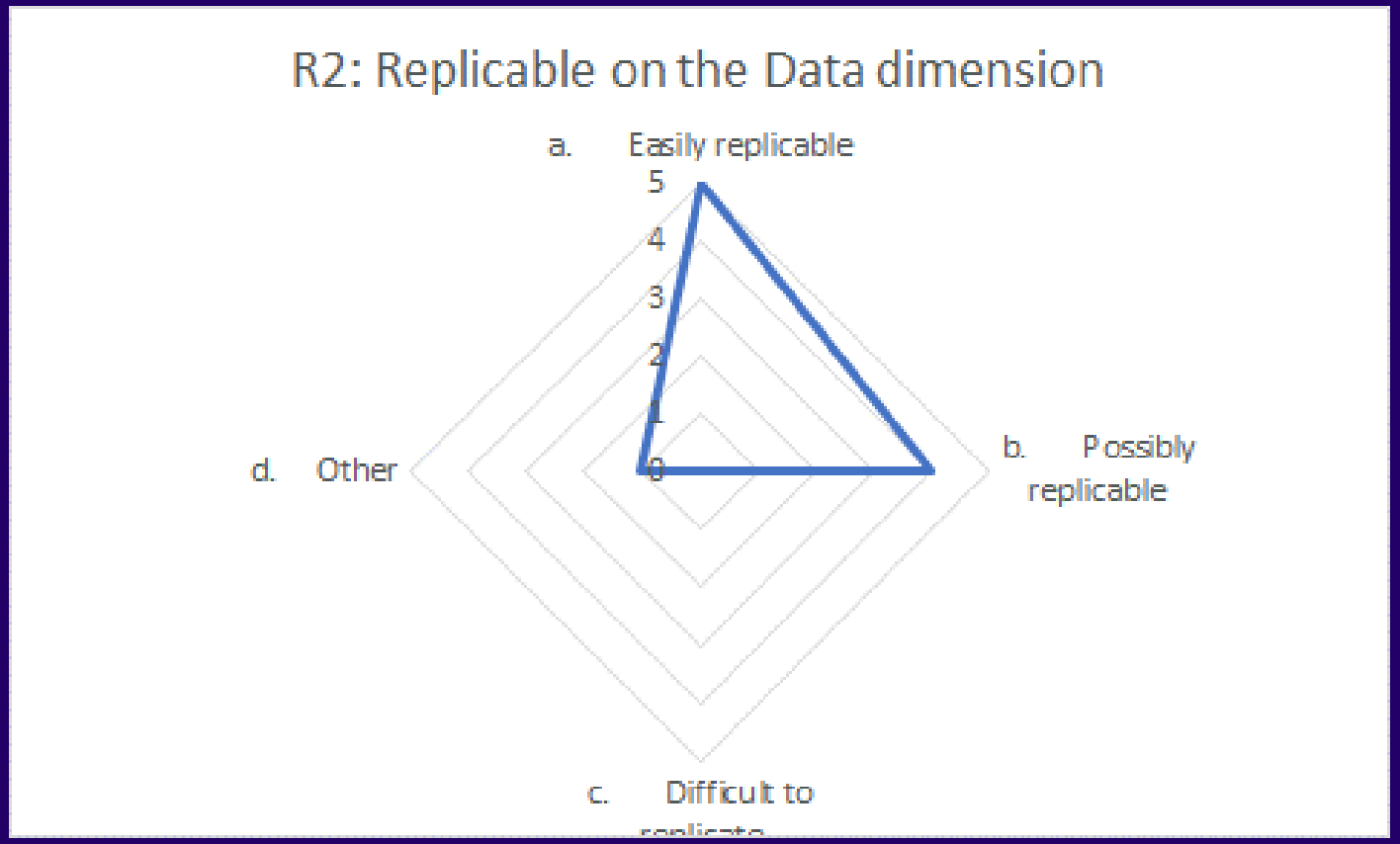
# Replicability questions analysis R2




Most of the Works projects have in mind that the solution could be easily or possibly replicable from a Data point of view

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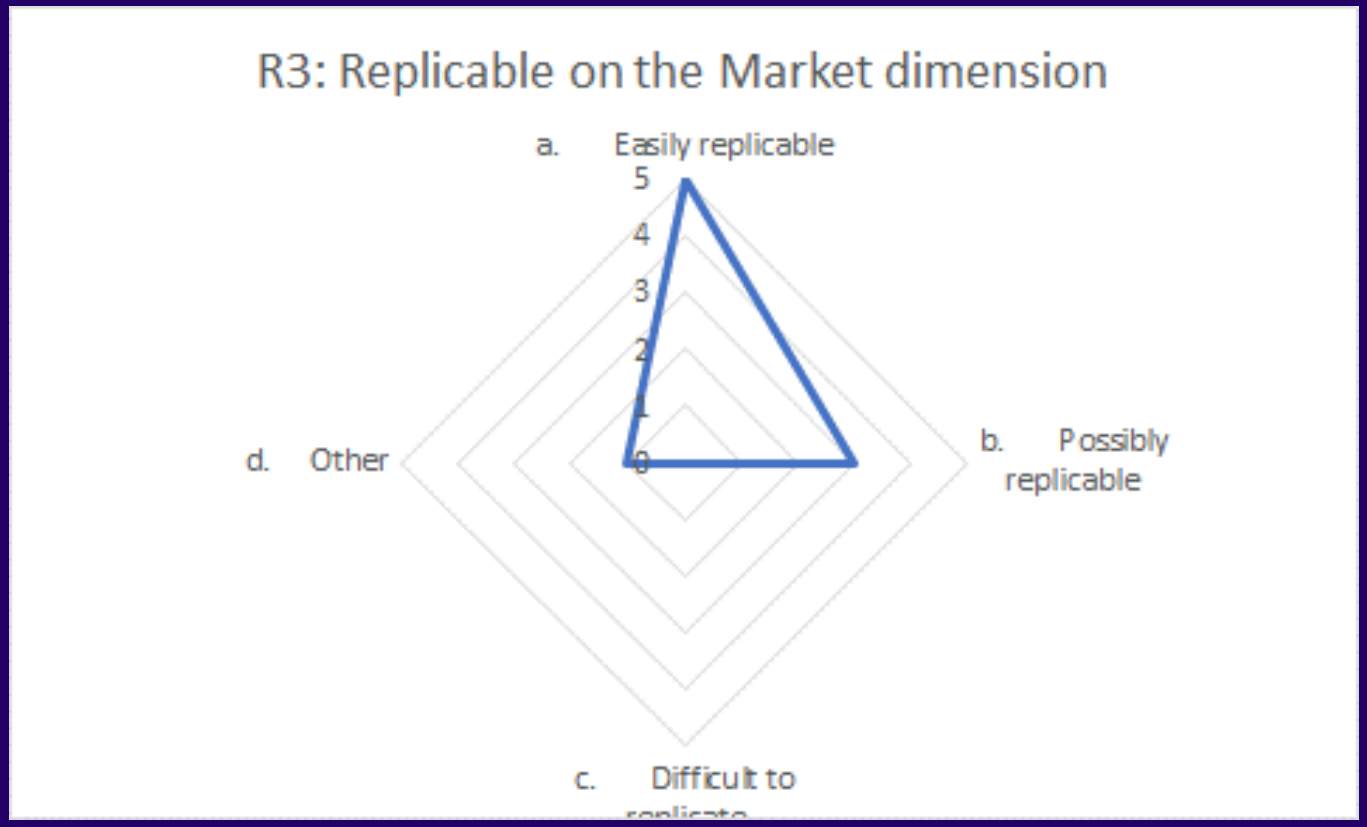
# Replicability questions analysis R3




Most of the Works projects have in mind are considering that the solution is easily or possibly replicable.

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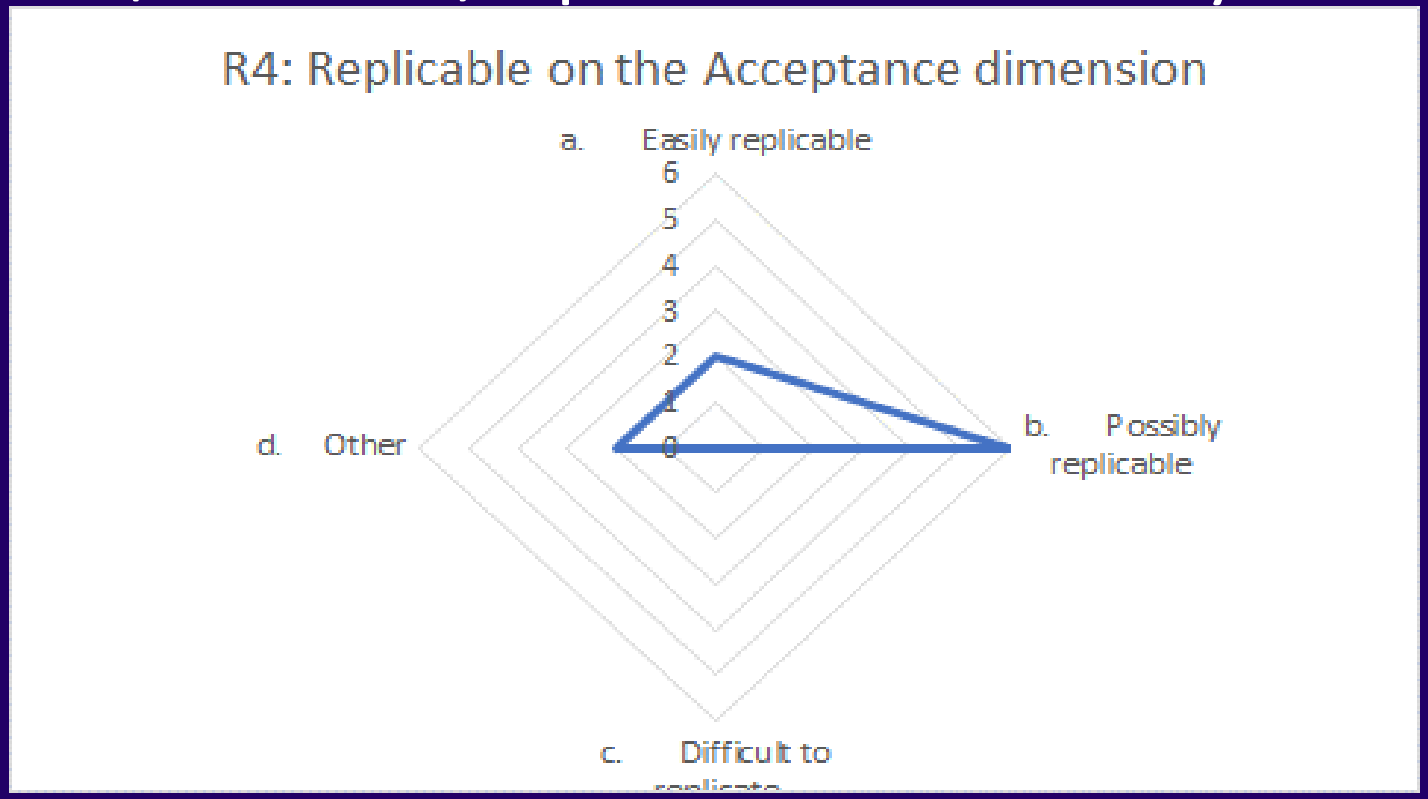
# Replicability questions analysis R4




Most of the Works projects have in mind that the solution could be possibly replicable from an Acceptability point of view

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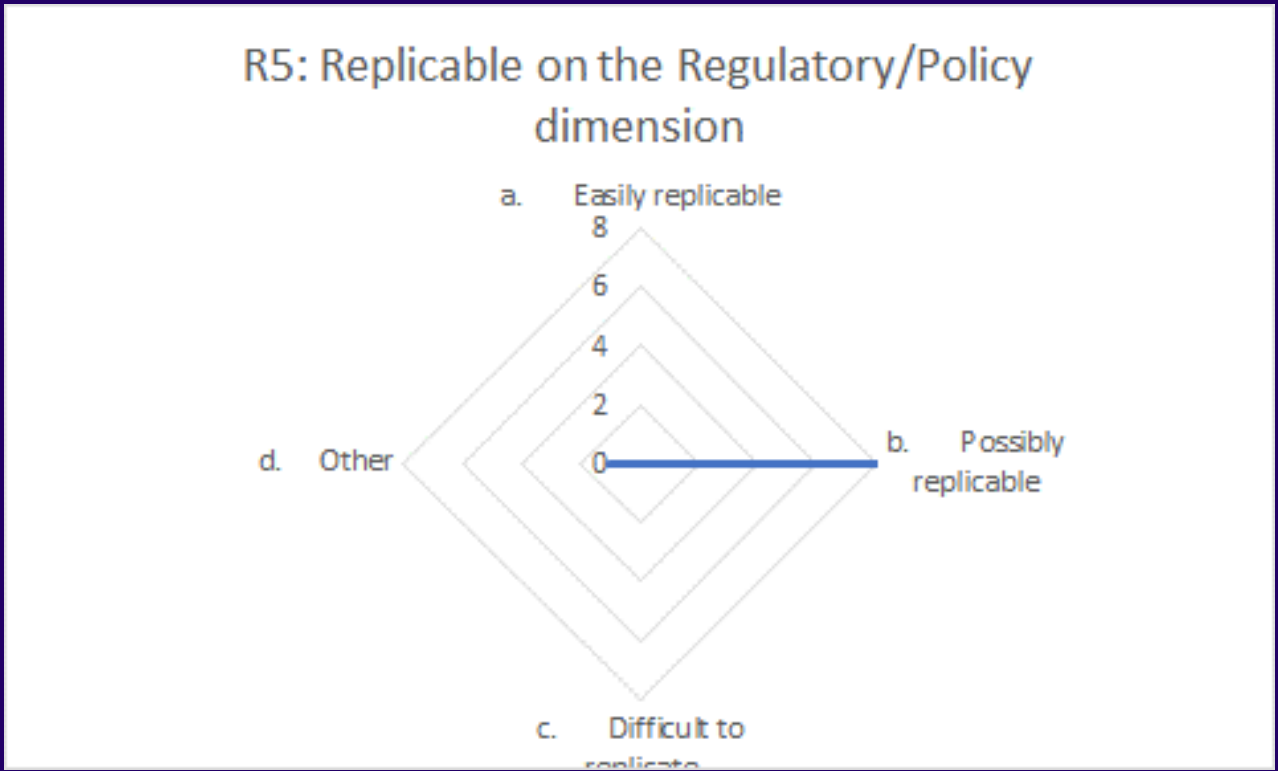
# Replicability questions analysis R5




Most of the Works projects have in mind that the solution could be possibly replicable from an Regulatory point of view

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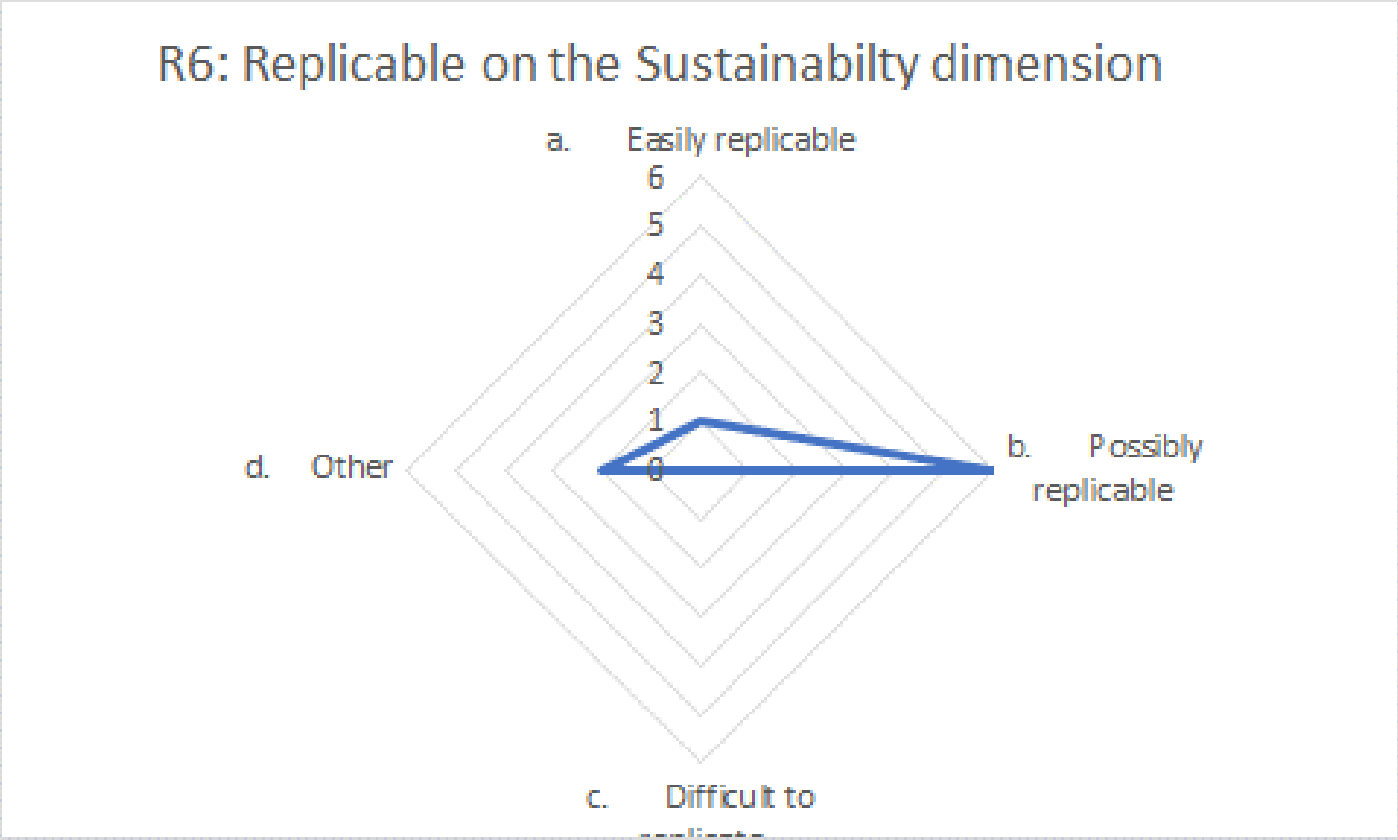
# Replicability questions analysis R6




Most of the Works projects have in mind that the solution could be possibly replicable from an Sustainability point of view

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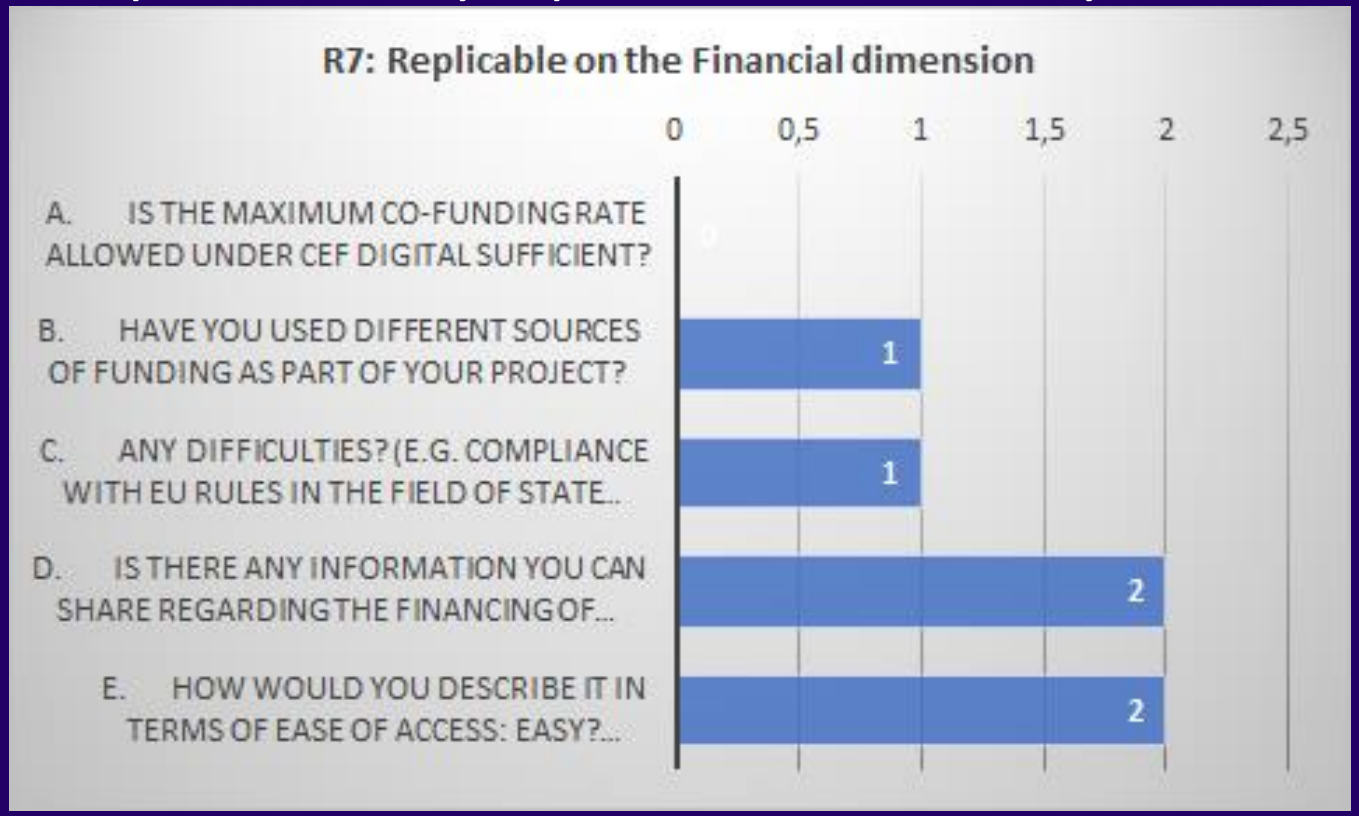
# Replicability questions analysis R7




Most of the Works projects did not use additional source(s) of funding and think that the CEF funding rate is not sufficient to cover the cost

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# Deployment section

D1: Which type of corridors are you targeting

D2: What are you planning to deploy as passive network

D3: What are you planning to deploy as active network?

D4: What are you planning to deploy as end devices?

D5: Do you plan to use NTN connectivity? If yes

D6: What is your deployment process?

D7: What are the main issues that you are foreseeing?

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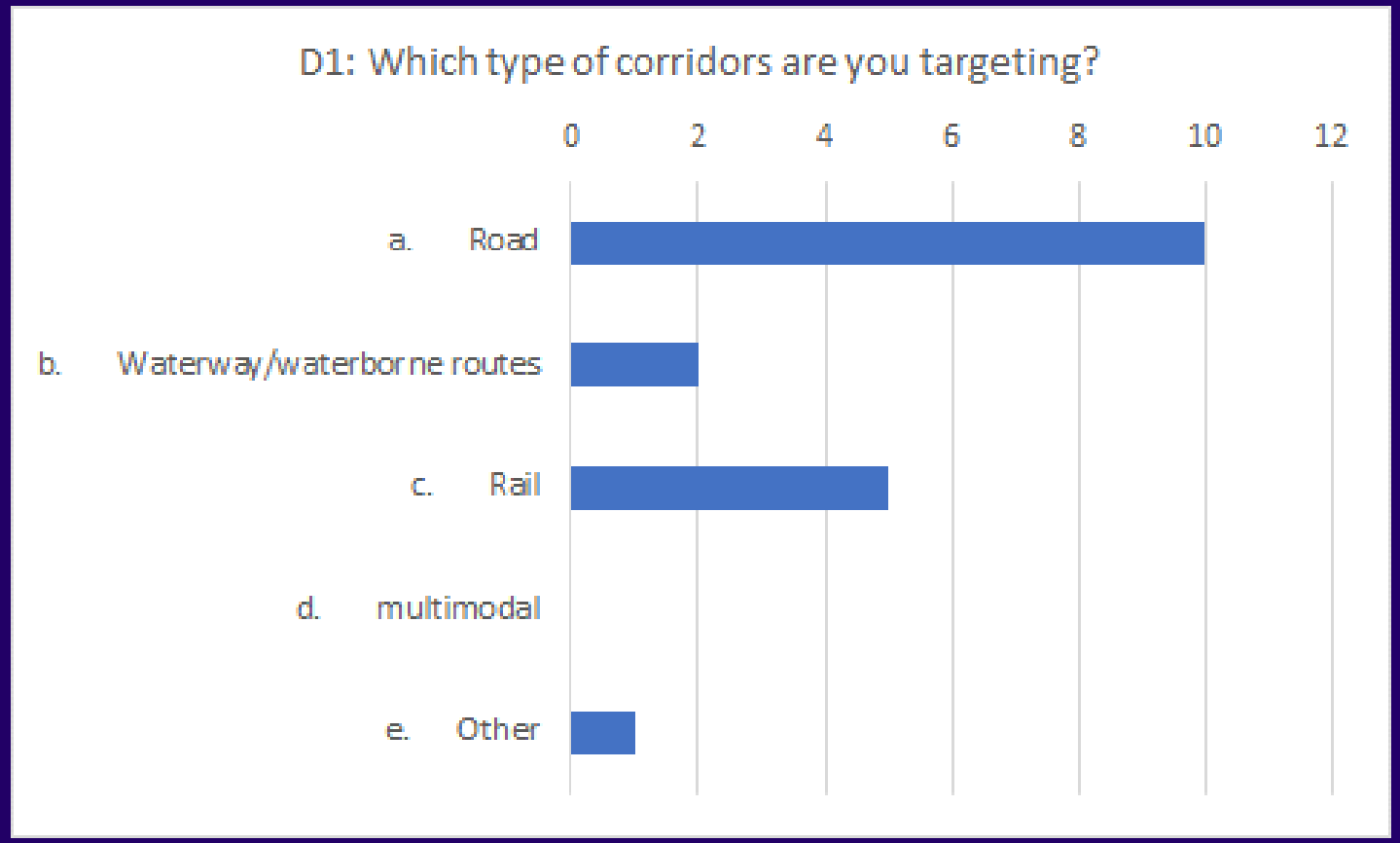
# Deployment questions analysis D1




Most of the projects will, or plan to, address road corridors

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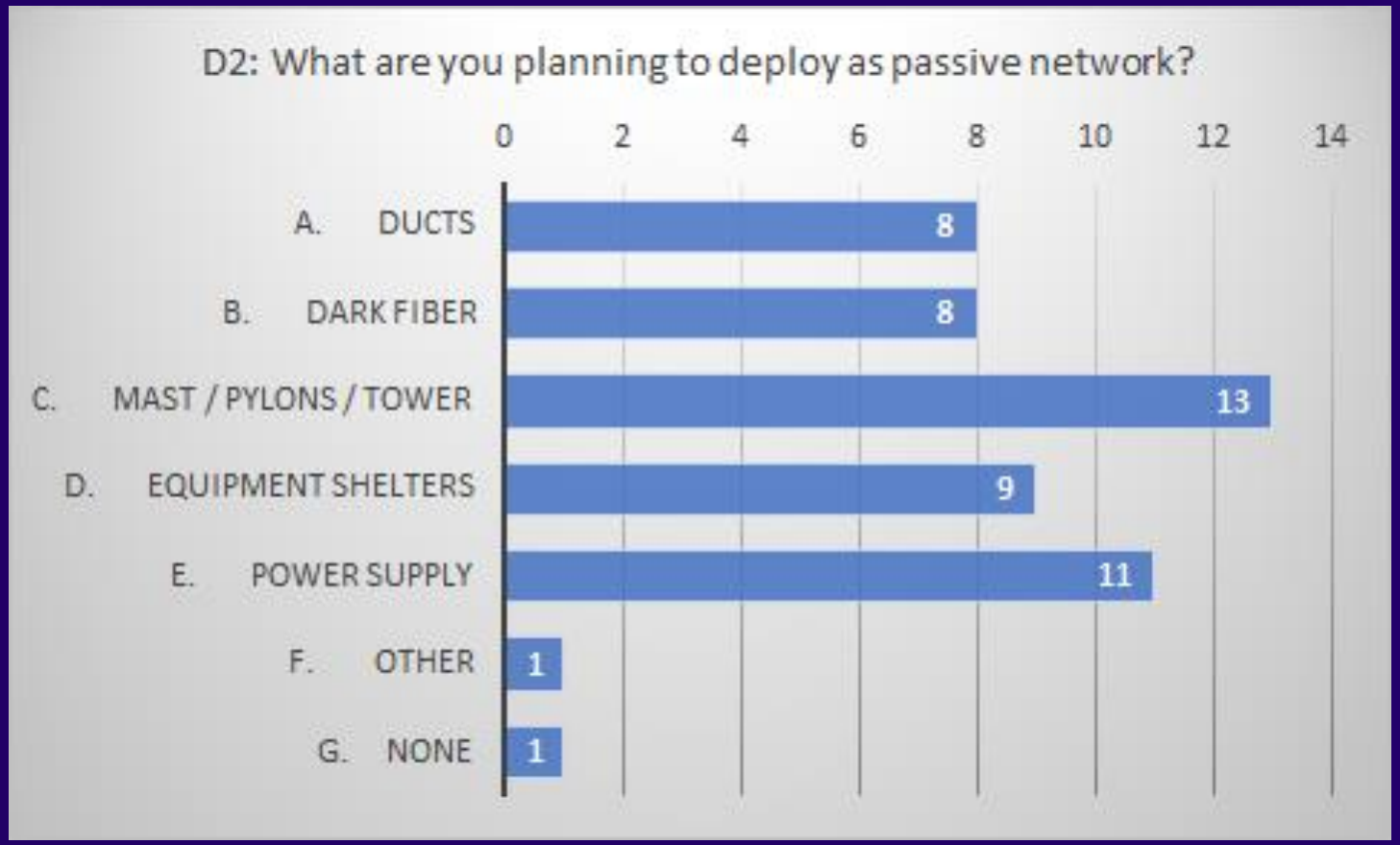
# Deployment questions analysis D2




Most of the projects will or plan to install Mast and power supply, some projects are installing ducts, fiber and shelters

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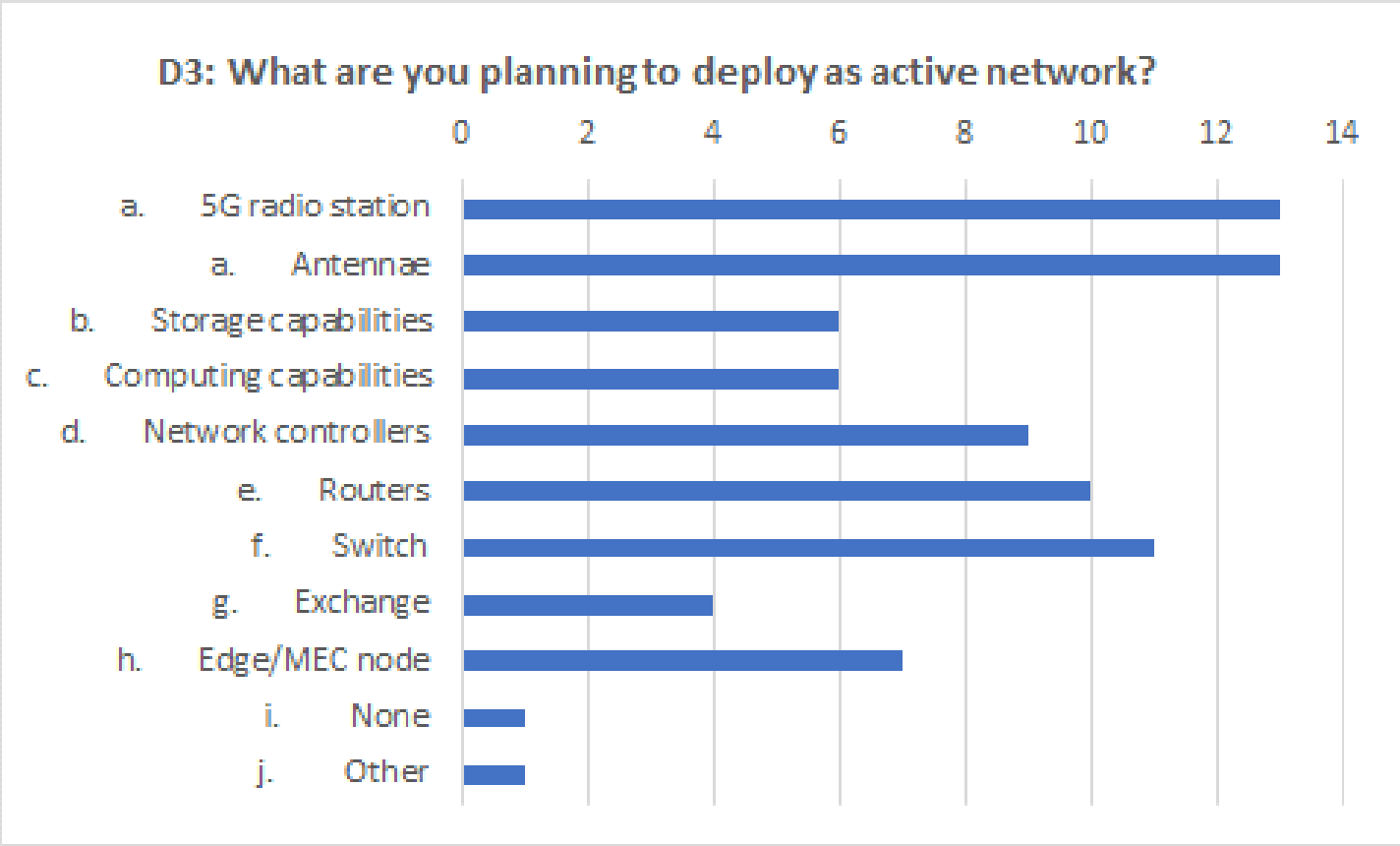
# Deployment questions analysis D3




Most of the projects will or plan to deploy 5G station, antennae, network controllers, routers, switch and edge capacities

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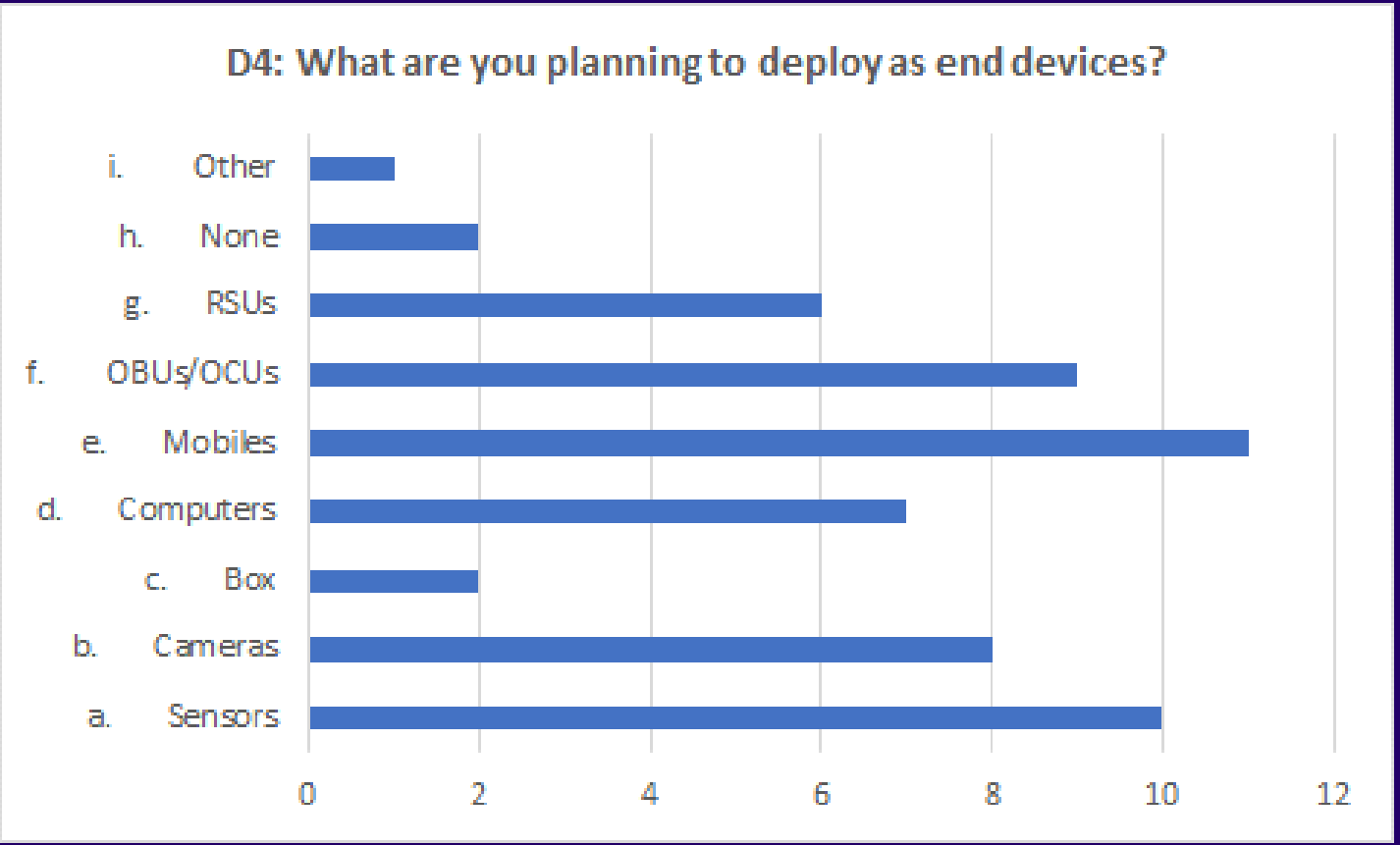
# Deployment questions analysis D4




Most of the projects will or plan to use Mobiles, car box, computer and sensor devices

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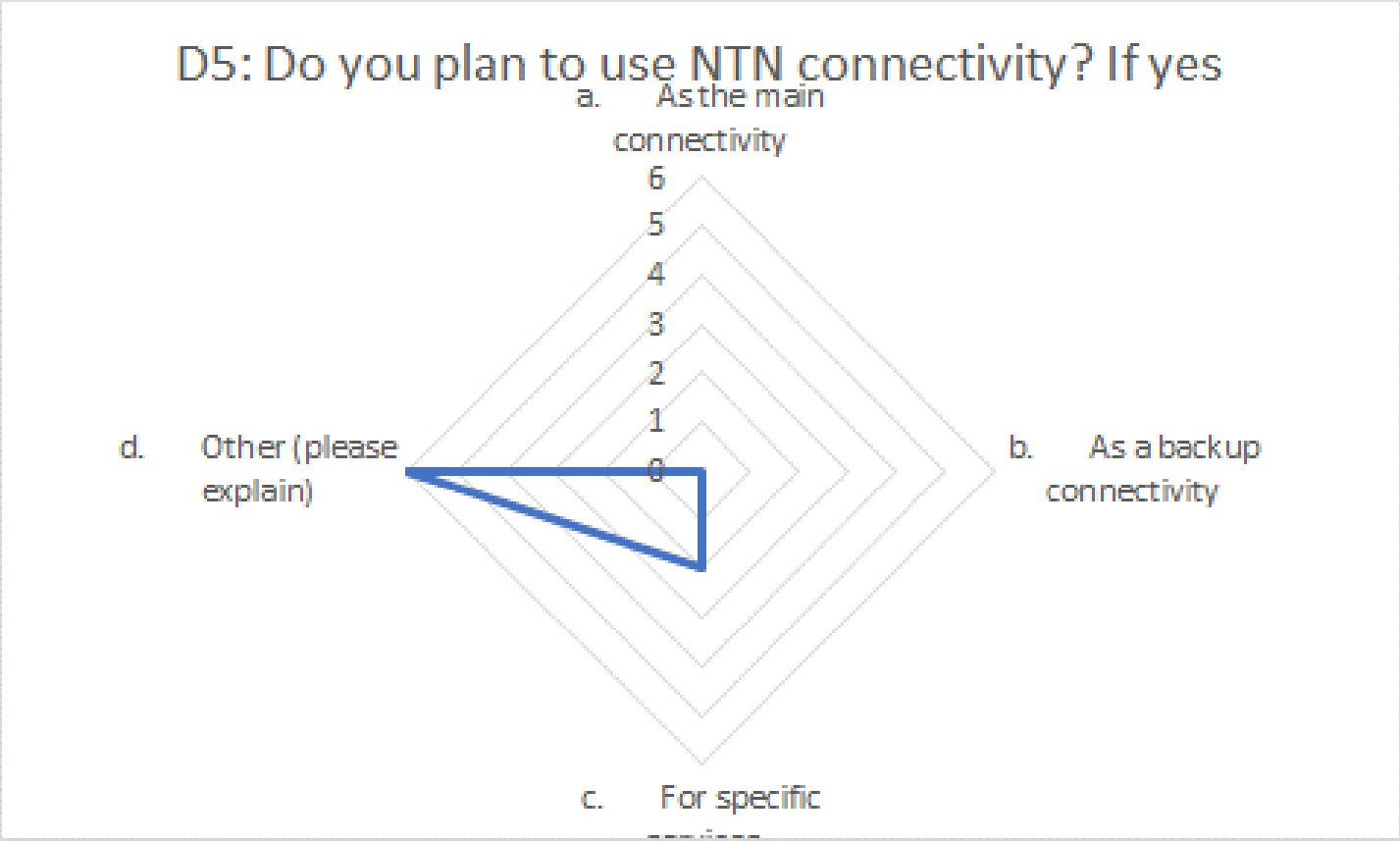
# Deployment questions analysis D5




Most of the projects will not or do not plan to use back up satellite networks

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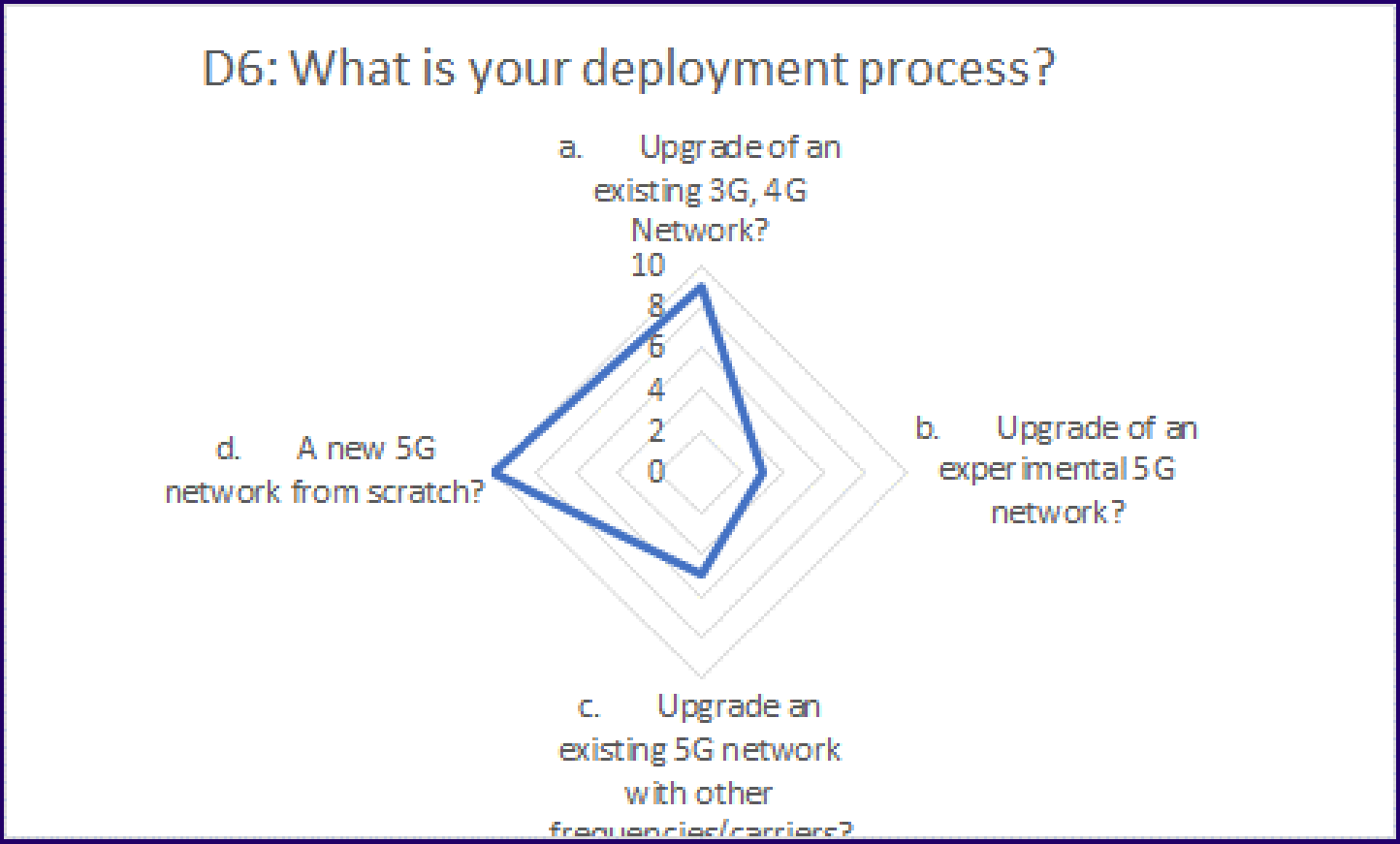
# Deployment questions analysis D6




Most of the projects will or plan to upgrade existing networks or build a new 5G network

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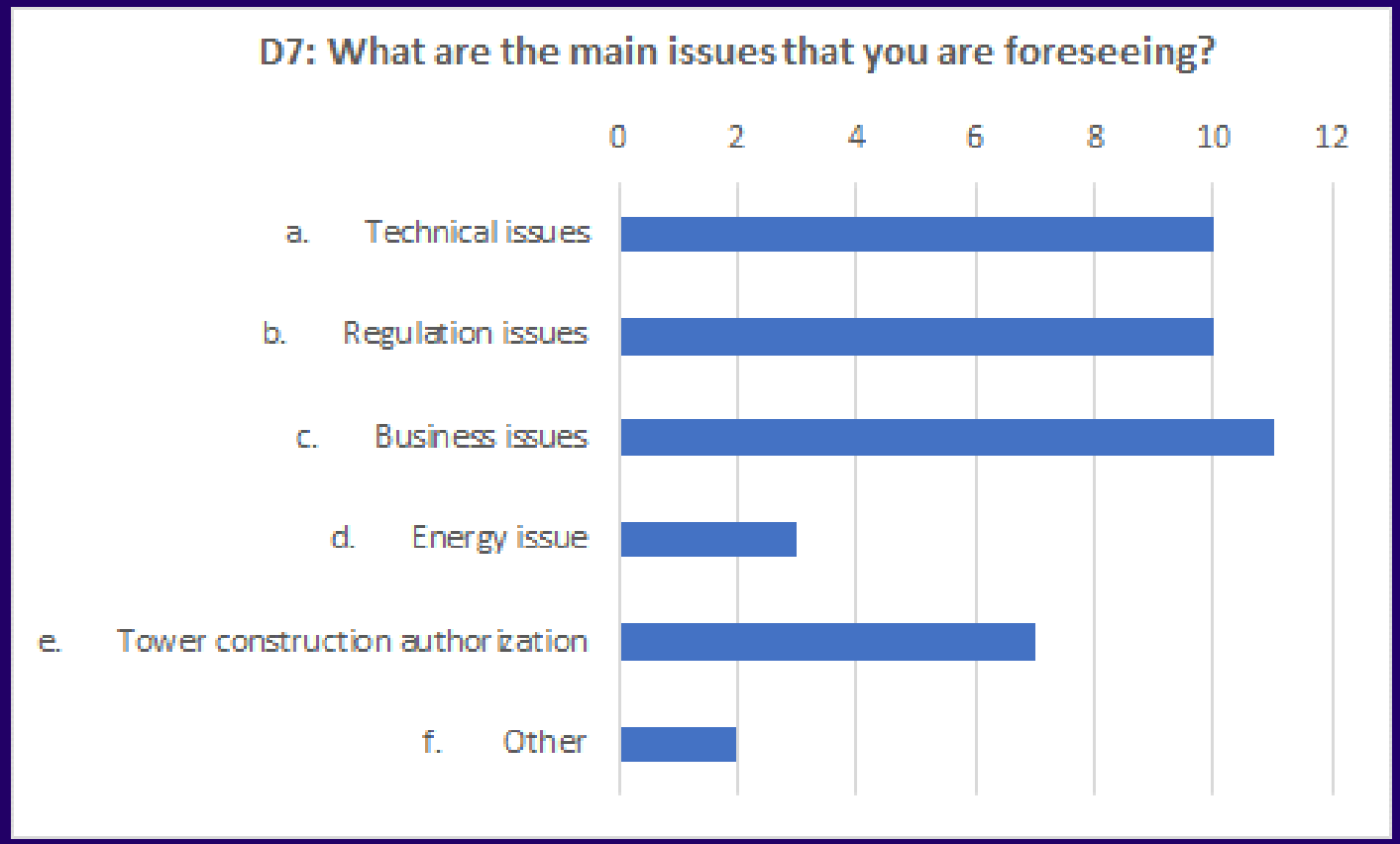
# Deployment questions analysis D7




Most of the projects are experimenting or foreseeing technical issues, regulation issues, business issues and authorization

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# Regulation section

R1: What are the main regulatory obstacles or gaps you are facing?

R2: Is there a willingness to share the infrastructure among several MNOs?

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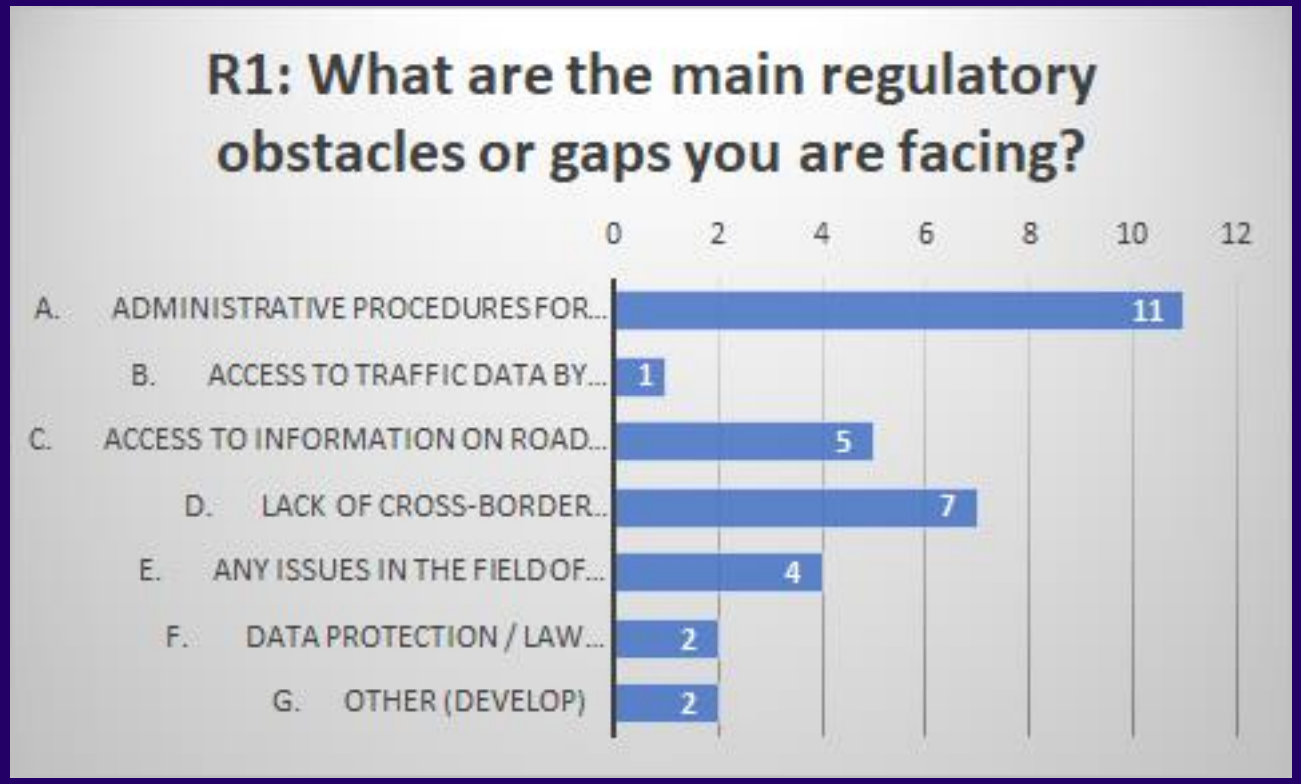
# Regulation questions analysis R1




Most of the projects are experimenting or foreseeing administrative problems and lack of cross-border cooperation of spectrum allocation authorities

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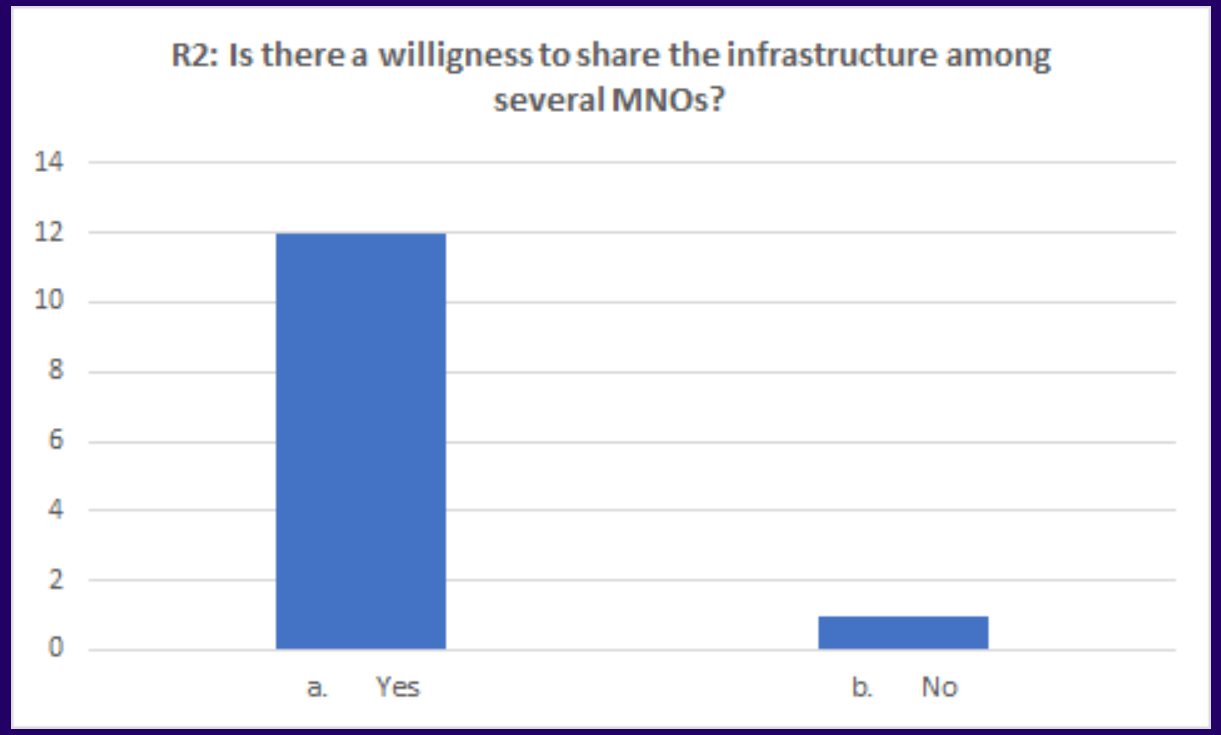
# Regulation questions analysis R2




Most of the projects are planning to share the deployed infrastructures between several MNOs

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# Operations section

O1: What type of organization do you put in place to operate your 5G corridor?

O2: What type of business plan are you putting in place?

O3: Are you planning to develop a Global project Cost Benefit Analysis?

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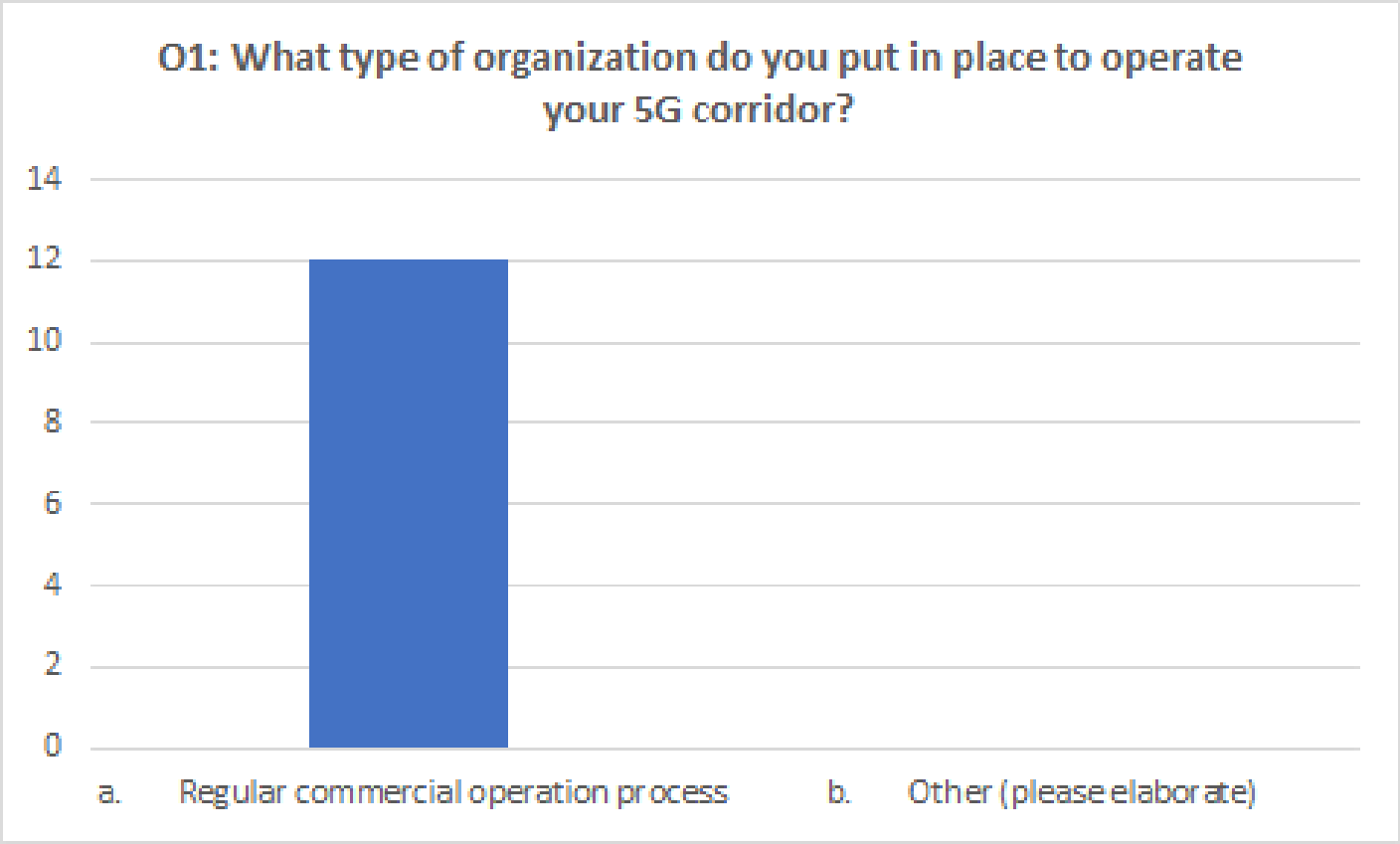
# Operation questions analysis O1




All projects are planning to integrate 5G corridors developments into normal commercial process

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# Operation questions analysis O2

What type of business plan are you putting in place?

- Too early to say
- Part of a future decision on deployment
- Main objective is an improved customer experience.
- Expected costs and Return on Investment (ROI) will be examined.
- Normal Business plan.

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# Operation questions analysis O3

O3: Are you planning to develop a Global project Cost Benefit Analysis?

- Majority are planning such an activity
- Some say they are but not yet,
- And a few do not currently plan a global CBA.

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# Best practices/Feedback section

F1: What are the main difficulties that you are expecting ?

F2: What are the good practices already experimented that you are planning to use ?

F3: What are the key stakeholders to involve? Which ones and why?

F4: Are OEM requirements mandatory?

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# Best practices/Feedback analysis F1

What are the main difficulties that you are expecting ?

- Support from National Administrations
- Modification of existing infrastructure (towers, rooftops) to add 5G.
- Regulatory and policy implications play a vital role in facilitating 5G deployment.
- Spectrum allocation, licensing requirements, interoperability standards, and safety regulations must be carefully addressed.
- Agree on the PPP project funding for the 5G corridor.
- The main issue is the creation of a strong and stable consortium. The agreements between the beneficiaries will be legally long to build in a short window. Financial Sourcing and lengthy permission procedures for construction of sites.
- That necessary actions are streamlined between the operators and their main suppliers/vendors in order to ensure that the cross-border corridor will have the needed coverage of 5G according to the project's mission.
- Agreement with MNOs
- Lack of willingness at some MNOs to roll out the solution along all borders.

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# Best practices/Feedback analysis F2

What are the good practices already experimented that you are planning to use?

- to involve key stakeholders regularly through the whole project for open and transparent discussions to have a common understanding on the situation.
- Social Impact analysis
- Agreement with mobile operators and communication with operators
- Use of the theoretical, concept & deployment best practice from other 5G highway corridors - projects in the works phase (deployment) like 5GroCo, CARMEN  und running DELUX, SEAGAL etc.
- The pooling of infrastructure between MNOs and railway companies is an experiment, even though we have already seen cases of infrastructure sharing in France. This mutualisation is experimental because we could share construction costs. During the study phase, the cooperation between the partners has been fruitful.
- Cross-industry collaboration, the ability to innovate & support by political agenda (green deal, modal change , CO2 reduction)
- The learning and insights gained from work in terms of challenges/obstacles, necessary processes and licensing, timetables for roll-out and configuration, best practices for network interconnection and roaming configurations, etc., are expected to be considered as well.
- Good architecture definition. Stake holders value chain definition
- Cooperation in our consortium is great. Also support of HaDEA

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# Best practices/Feedback analysis F3

What are the key stakeholders to involve? Which ones and why?

- key stakeholders: port authorities, authorities, users in the area,  and companies that develop solutions
- Public Administration for getting the permits and as potential clients, MNOs for connectivity, and OEMs as end-users and data providers
- Mobile operators with regard to radio planning and avoiding possible interference.
- Government bodies, telecom operators, and technology providers are therefore essential for the successful implementation of 5G services and intelligent transportation systems.
- Five key stakeholder: (1) EU/National states & their organization (ministry of transportation, road operators etc.), (2) OEM of passenger vehicles, vans and trucks, (3) Academic organizations, (4) MNOs and (5) TowerCos.
- Railway companies and MNO are the key stakeholders.
- MNOs, Tower Companies, Communication System Suppliers, Governmental and Regulatory bodies both on national and EU level.
- The operators and their main suppliers/vendors – Also Ministries, Municipalities, Road Infrastructure Entities, Police Authorities and Customs Agencies.
- MNO, road operator, car manufacturers, signals manufacturers
- MNOs involved, BMW, EC, 5GAA, 3GPP

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# Best practices/Feedback analysis F4

Are OEM requirements mandatory?

- Not for infrastructure construction. The mobile operators will do that.
- Standardization is a must
- Standardization
- Standardization
- Standardization

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# Thanks!

David Kennedy, Eurescom
(on behalf of Pierre-Yves DANET)

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