SNS-CO-OP Annual Questionnaire Market Section Results

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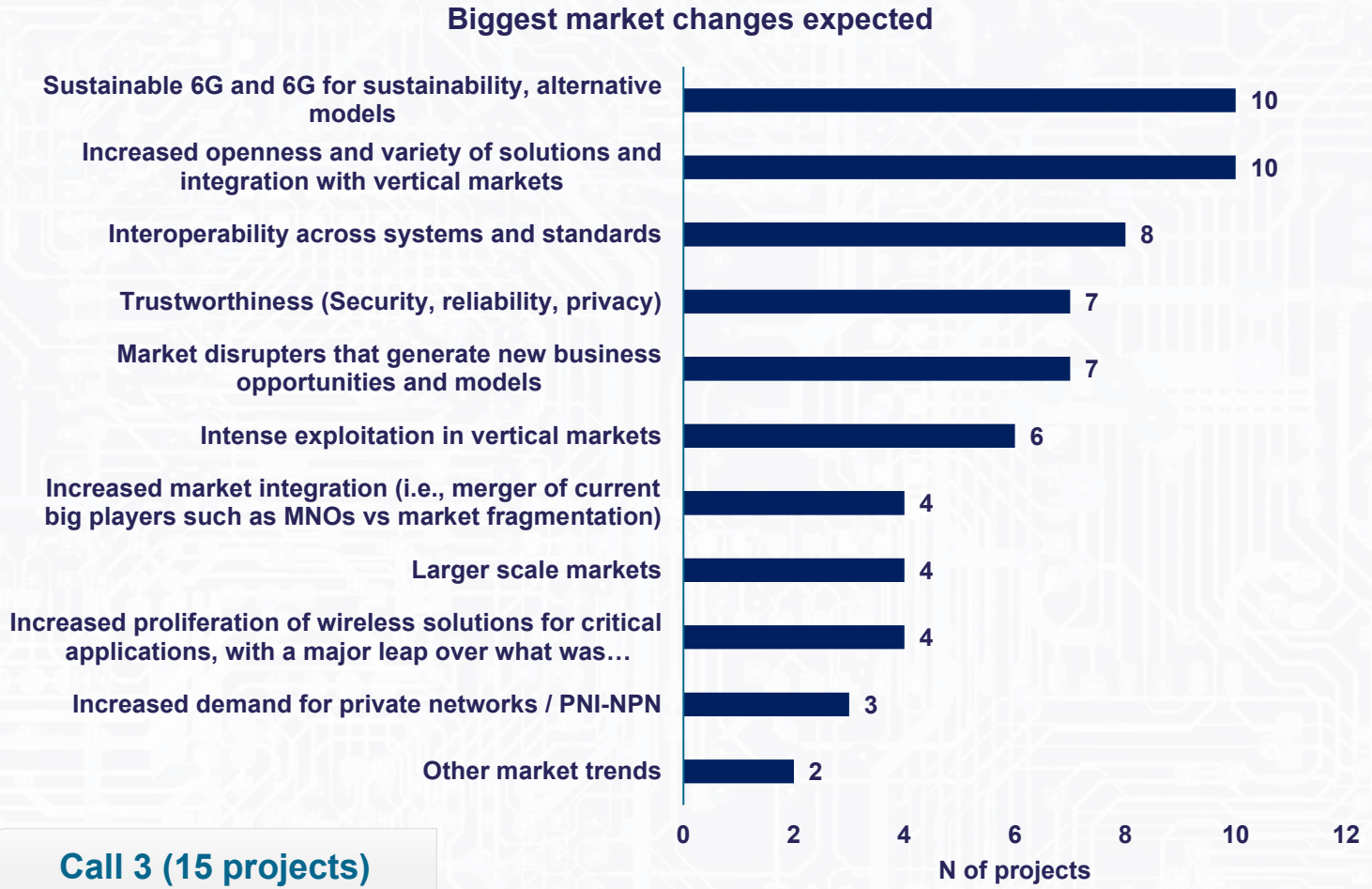
Market Section

Market Section

- Key technologies and innovations for 6G
- Main market trends in the advent of 6G
- 6G impact on vertical sectors
- Validation of business opportunities
- Main obstacles to the development of 6G
- Novel markets for 6G development
- Key exploitable results (KERs) and TRLs
- SME participation
- 6G Return of Investment

Question

Market, M1:
Which are the biggest market changes you expect in your domain/market area with the advent of 6G?



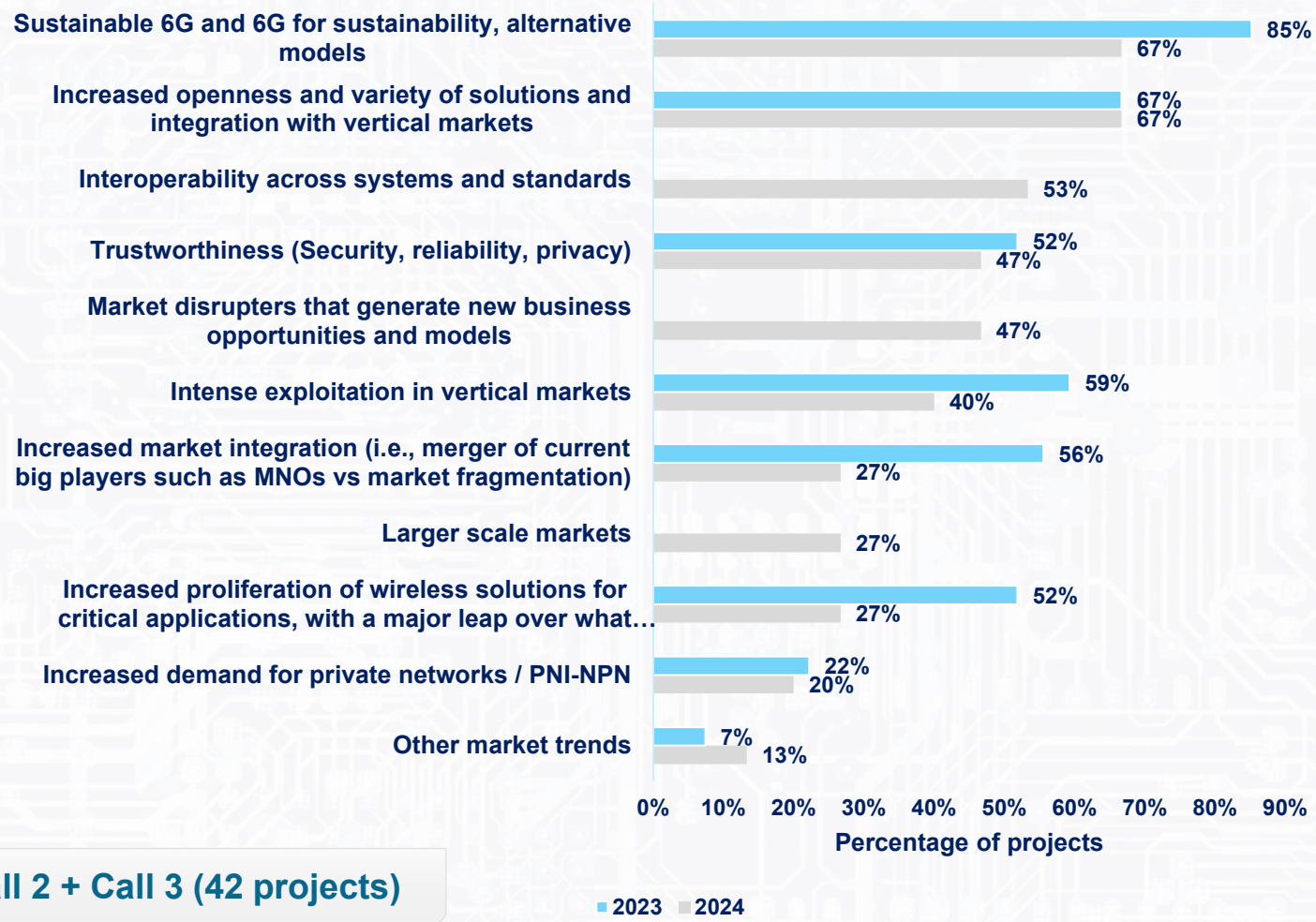
Call 3 (15 projects)

Key Insights

- Sustainability and increased openness and variety of solutions and integration with vertical markets (67%) are expected to be the most impacted areas by 6G.
- Interoperability, trustworthiness and market disrupters generating new businesses and models are also anticipated to be remarkably transformed by 6G
- Private networks/PNI-NPN are considered to have the least overall impact.

Question

Market, M1: Comparison across calls



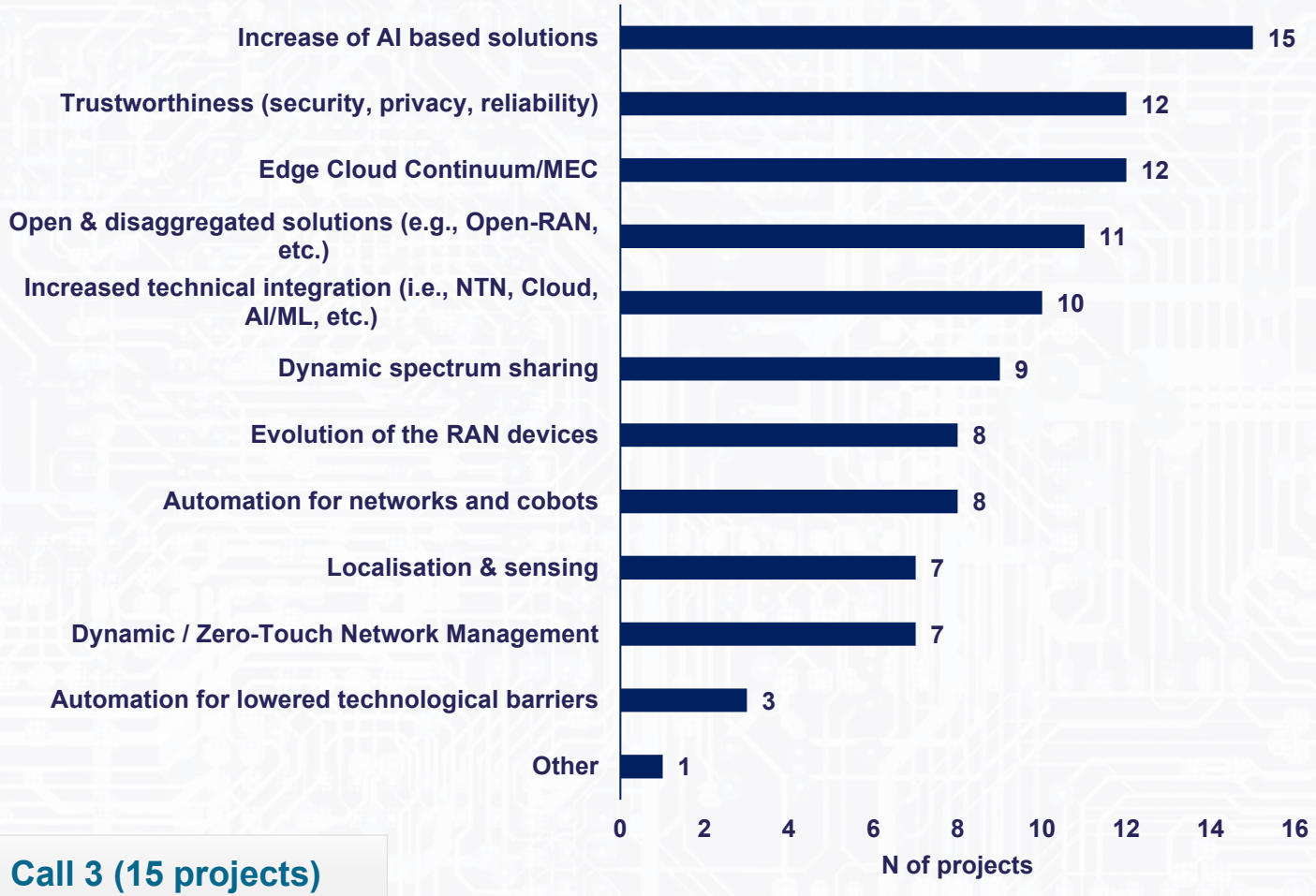
Call 2 + Call 3 (42 projects)

Key Insights

- Overall, the SNS 2024 projects show more variety of opinions regarding biggest market changes expected with 6G.
- Sustainability and increased openness remain at the top, although the later has experienced an important drop from the previous year.
- Trustworthiness closes the top 3, with more projects anticipating a notable impact with the advent of 6G.
- The decline in increased market integration and proliferation of wireless solutions is remarkable.
- Private networks are at the bottom of the rank.

Question

Market, M2:
Which technologies/innovations do you expect to play an important role in the future telecommunications market?



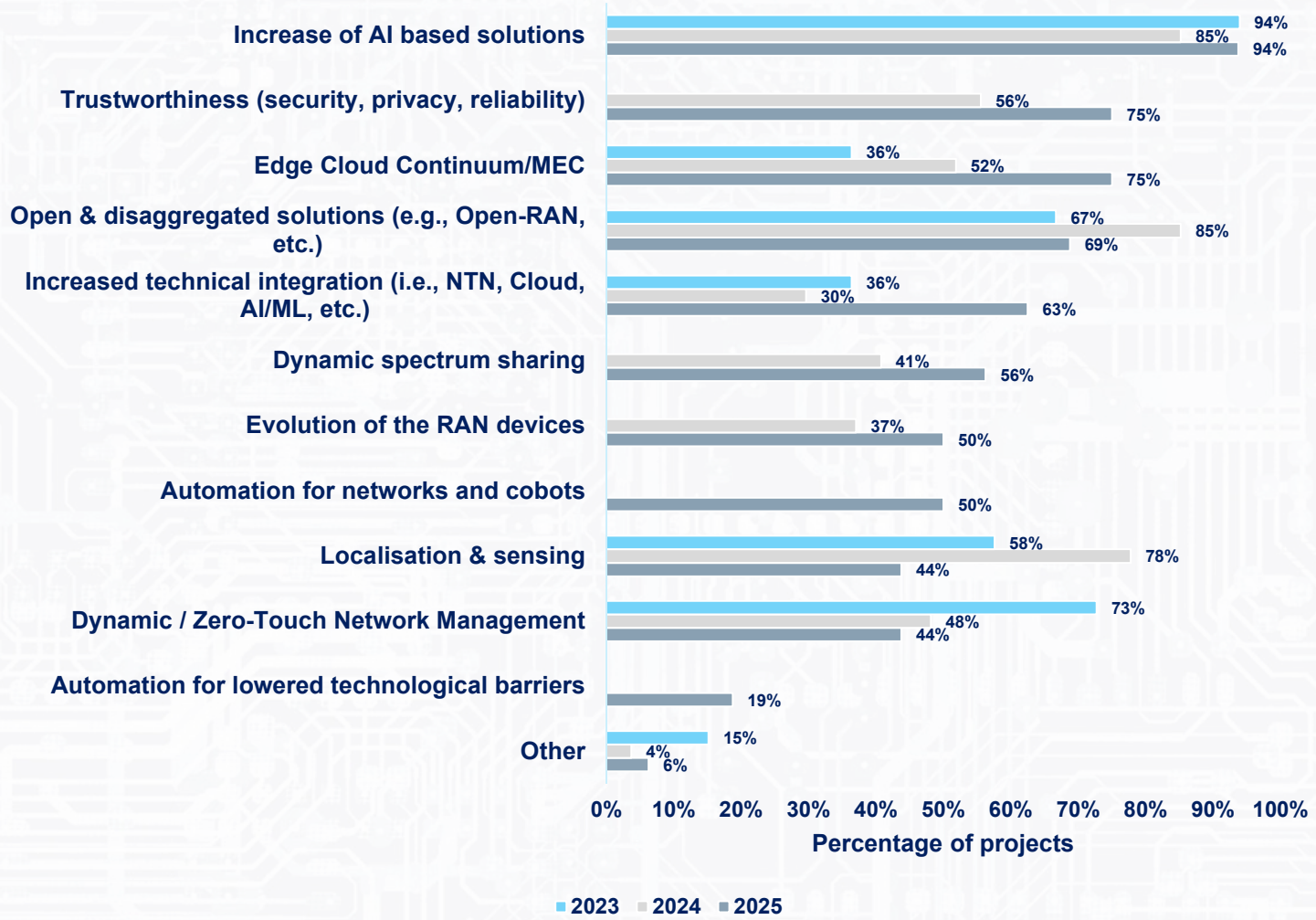
Call 3 (15 projects)

Key Insights

- All projects anticipate that AI-based solutions are the main driver the in future telco market.
- Trustworthiness and Edge Cloud Continuum/MEC (80%) are tied in second place. Open & disaggregated solutions and Increased technical integration are also noteworthy.
- Automation for lowered technological barriers is ranked last.
- Other innovation and technologies include semantic and goal-oriented communications and advanced RF technologies.

Question

Market, M2: Comparison across calls



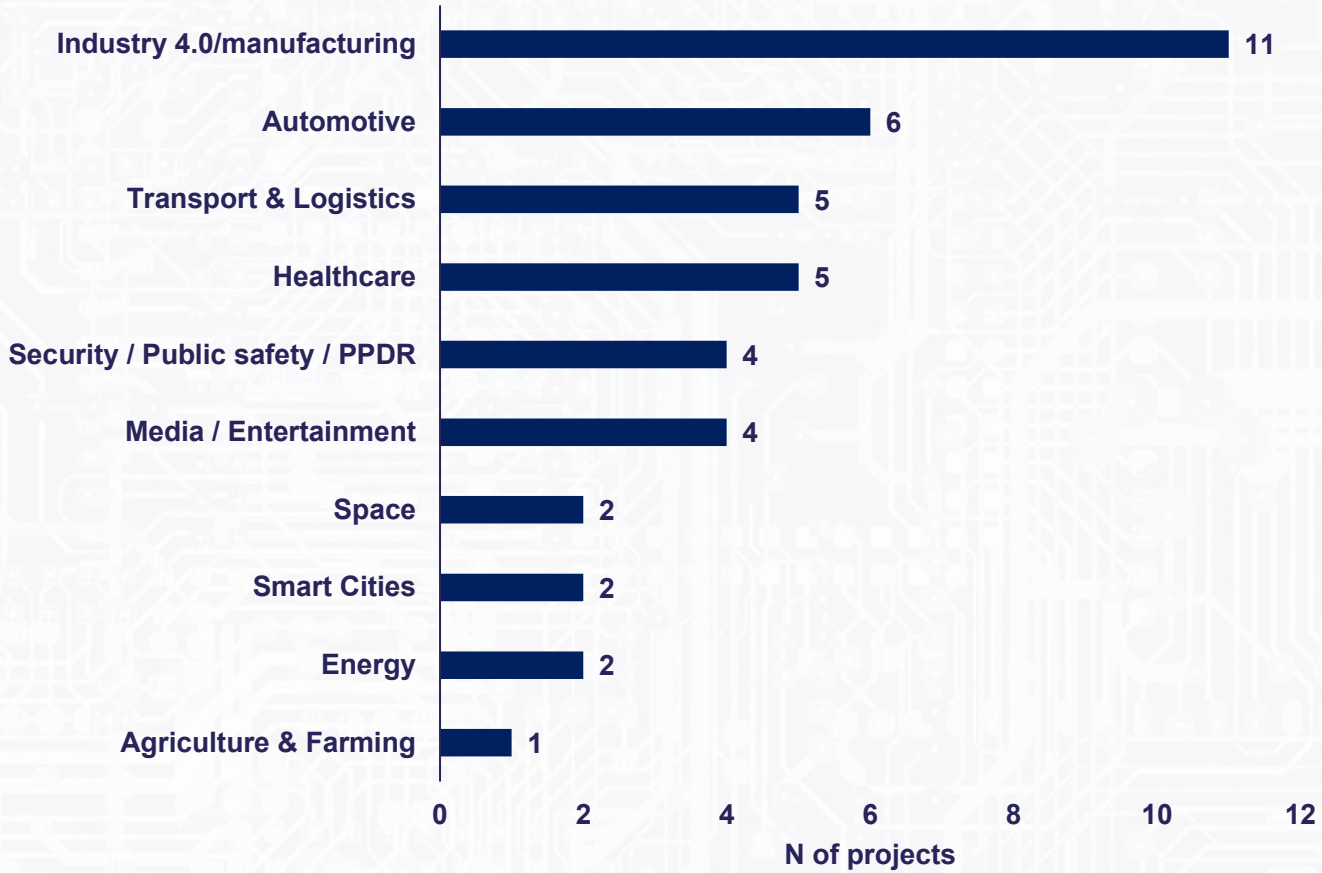
Key Insights

- Almost all projects across calls agree that **AI-based solutions** are key in the future of telecommunications.
- The perceived importance of **trustworthiness and edge cloud** in telco has steadily increased since 2024.
- Localisation and sensing technologies appear to be less central, after peaking in 2024. Likewise, dynamic/zero touch-network management is at the bottom of the rank.

Call 1 + Call 2 + Call 3 (78 projects)

Question

Market, M3:
Which vertical sectors do you expect to be affected the most with the advent of 6G?



Call 3 (15 projects)

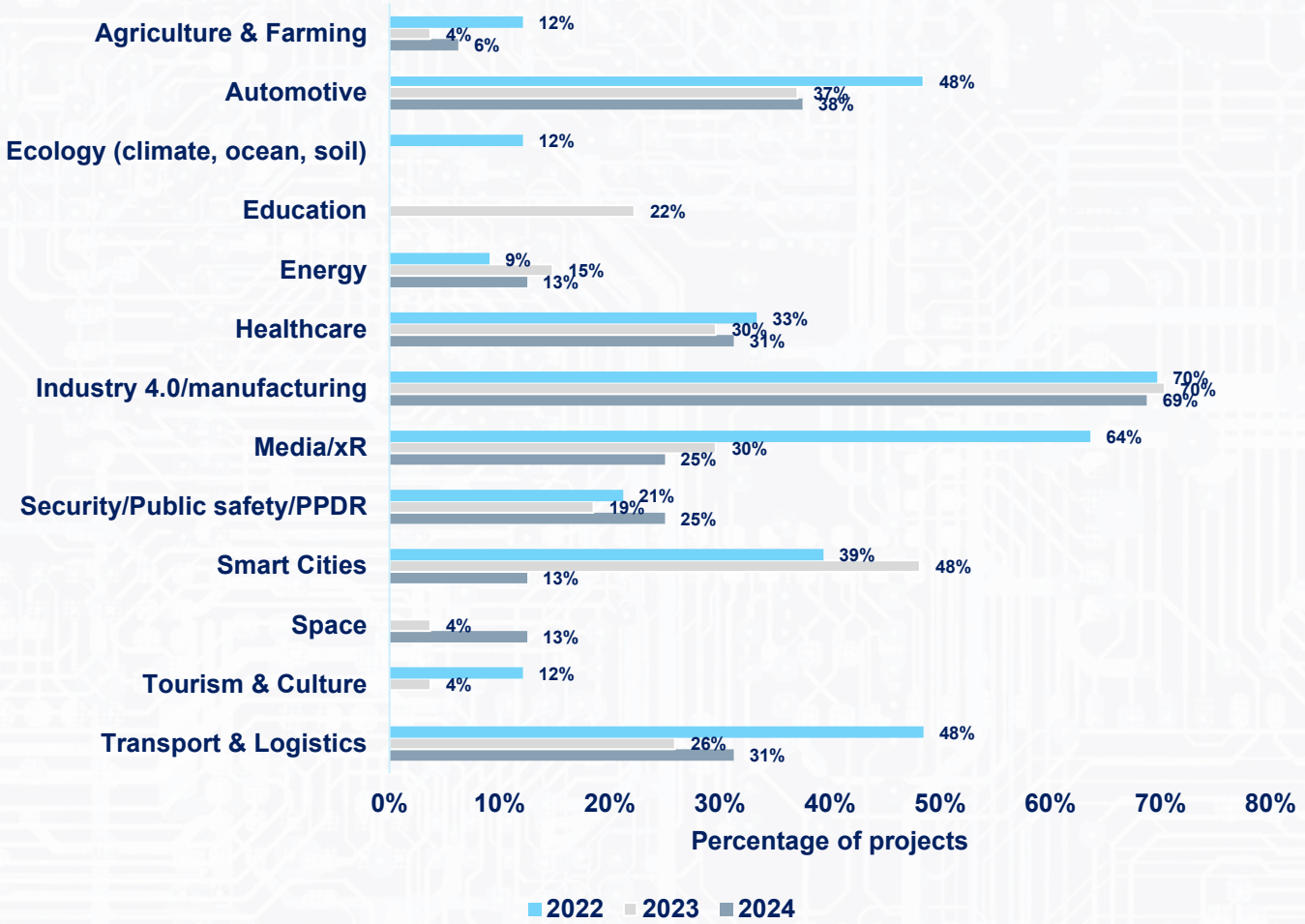
Key Insights

- Industry 4.0/Manufacturing (73%) is expected to be the vertical sector most impacted by the advent of 6G by a significant margin. Opinions are very divided regarding the remainder verticals.
- Automotive is ranked second in terms of estimated 6G impact, closely followed by Transport & Logistics and Healthcare.
- Agriculture & Farming, Energy, Smart Cities and Smart Cities are the sectors in which 6G may have the least impact.
- No project has noted Construction as a vertical affected by 6G.

Note: projects could select a max of 3 options

Question

Market, M3: Comparison across calls



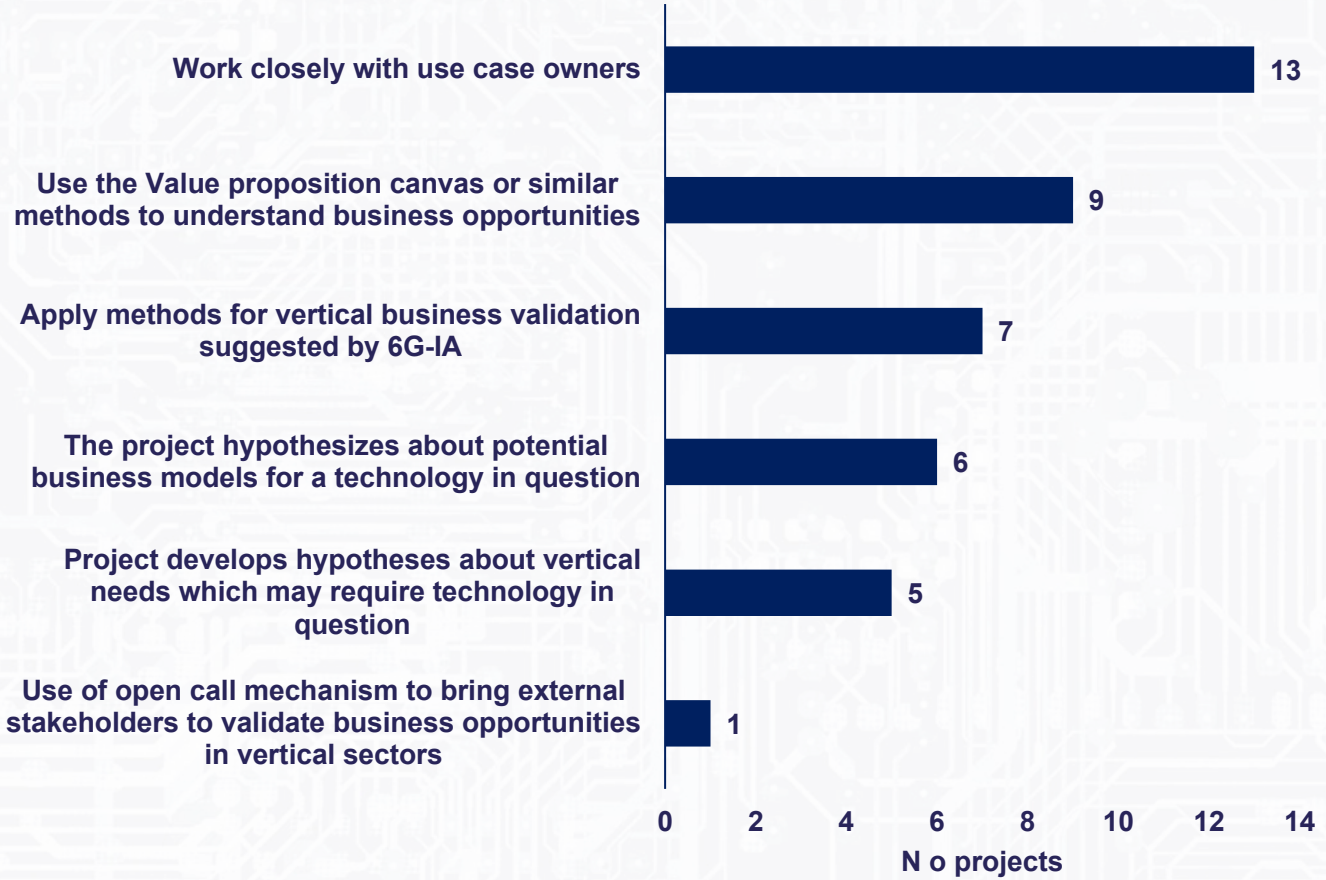
Key Insights

- Industry 4.0/Manufacturing is expected to be the vertical sector most impacted by the advent of 6G.
- Automotive and Transports & Logistics are also anticipated to be highly influenced by 6G. Although to a lesser extent, healthcare is also forecasted to experience an important transformation.
- There is a growing consensus on the impact of 6G in security, public safety and PPDR.
- Media/xR is expected to undergo profound changes even with the decline observed over the last three years.
- Construction, Ecology and Education are the verticals anticipated to be less affected by 6G.

Call 1 + Call 2 + Call 3 (78 projects)

Question

Market, M4:
How do you validate business opportunities in vertical sectors?



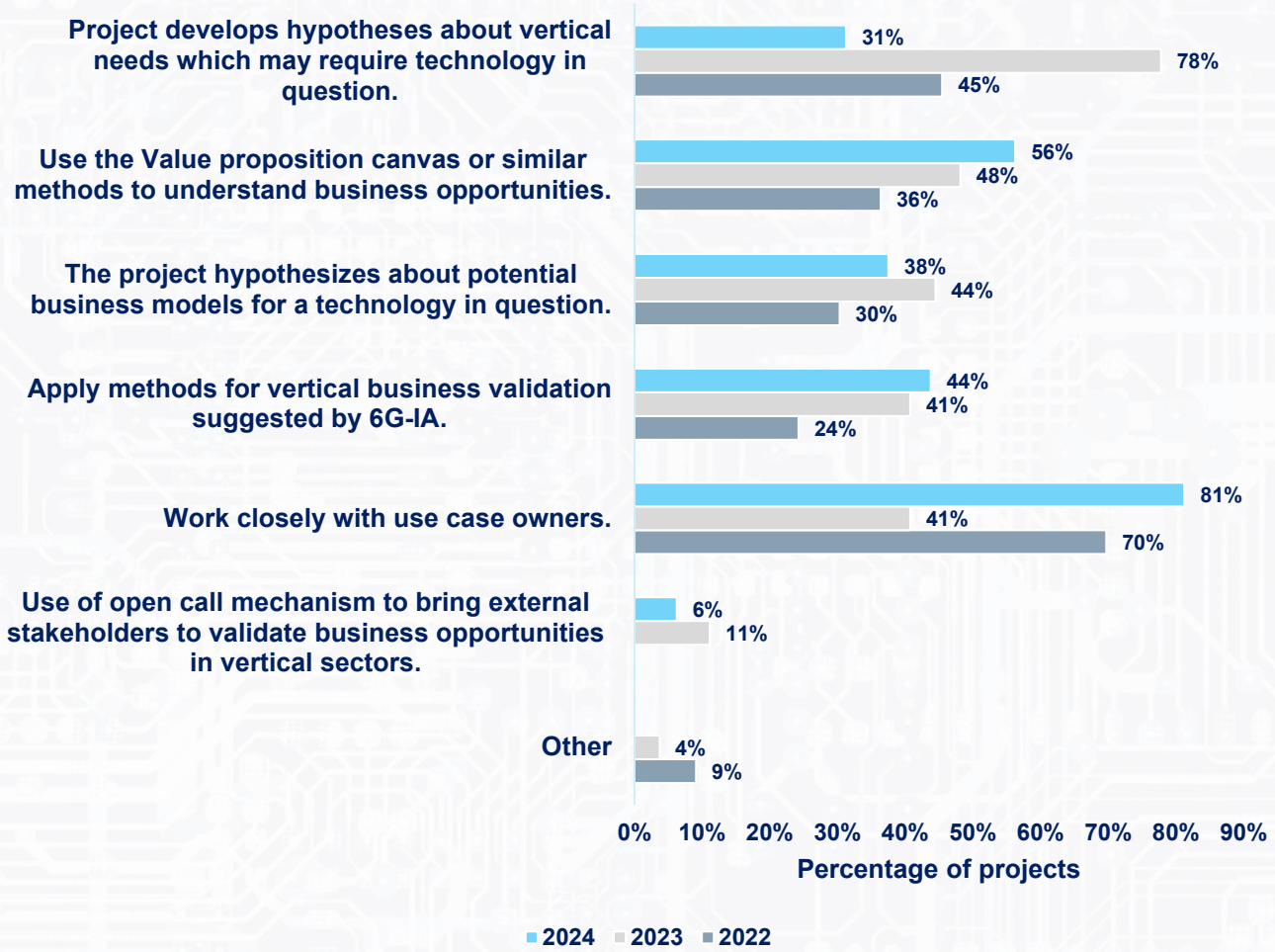
Key Insights

- Working with use case owners (87%) is the preferred method to validate business opportunities, followed by the Value proposition Canvas (53%).
- The Validation methods suggested by 6G-IA closes the top three.
- The Use of open call mechanisms is the least used method, which can be explained by the projects' limitation to access these (successful applications).

Call 3 (15 projects)

Question

Market, M4: Comparison across calls



Key Insights

- Working with use case owners is the overall preferred option to validate business opportunities, with 64% of all projects choosing it on average.
- The development of hypothesis about verticals in need of a certain technology is ranked second.
- The value proposition canvas and the methods suggested by 6G-IA are used by around 35% of projects on average.
- The use of open call mechanisms is the least used method, which can be explained by the projects' limitation to access these.

Call 1 + Call 2 + Call 3 (78 projects)

Question

Market, M5:
How do you assess commercial viability (RoI) from investing in and deploying 6G?

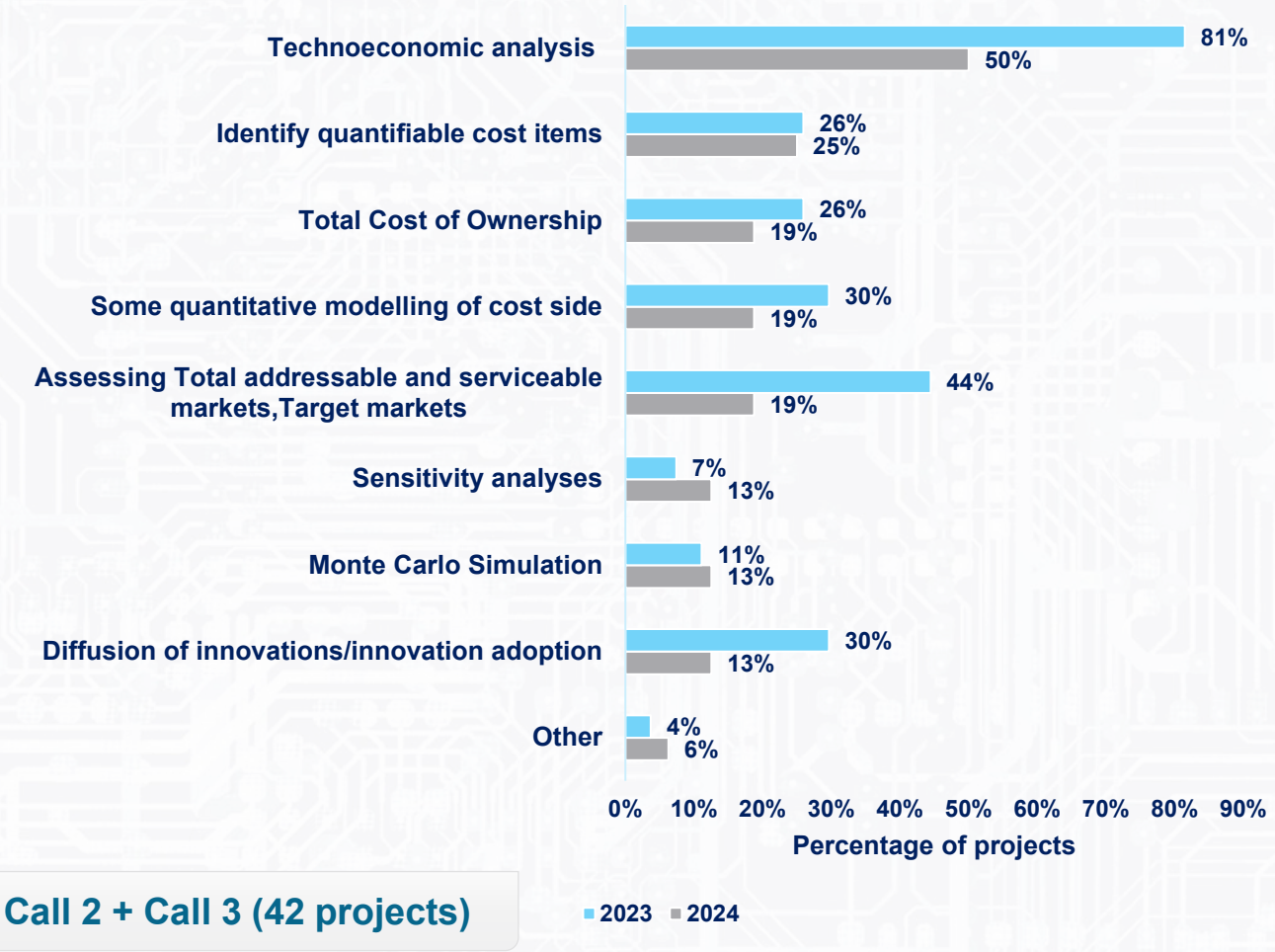
Key Insights

- Responses largely vary across the options provided.
- **Technoeconomic analyses** are the most used method to assess RoI despite only half (53%) of the projects using it.

Call 3 (15 projects)

Question

Market, M5: Comparison across calls



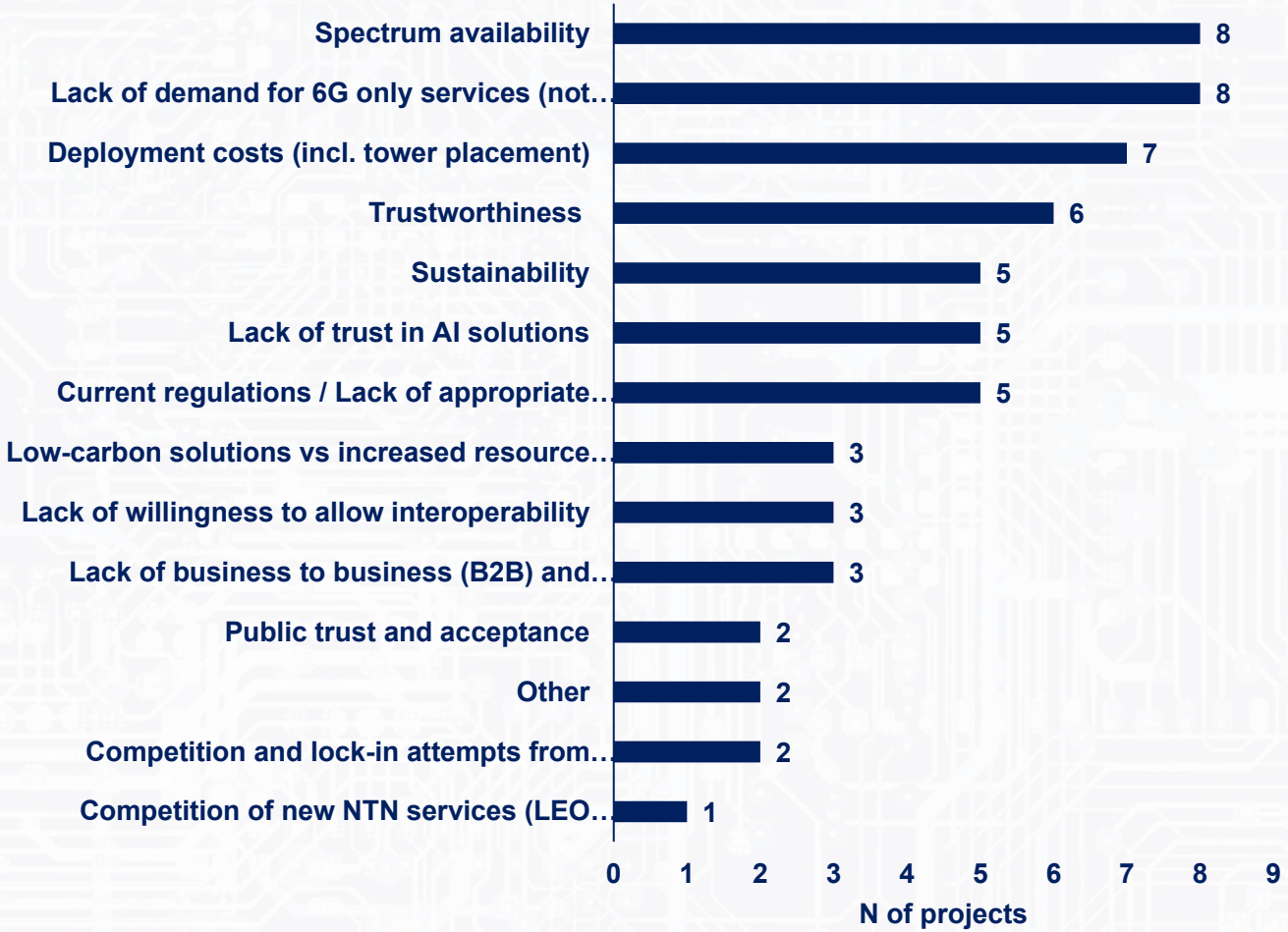
Call 2 + Call 3 (42 projects)

Key Insights

- Technoeconomic analysis is the most used method by project. Yet, in the 2024 call only half of projects indicated its use.
- Responses vary significantly across options and across calls.
- Identifying quantifiable costs items is the second preferred method according to 2024 projects, yet it is fourth for 2023 projects. For these, assessing target markets ranks second whilst for 2024 projects this ties in third place with quantitative modelling cost side and total cost of ownership.
- The use of Monte Carlo Simulation and Sensitivity analysis, both amongst the least used methods, has nonetheless increased.

Question

Market, M6:
What do you consider to be the greatest obstacle for the deployment of 6G networks??



Key Insights

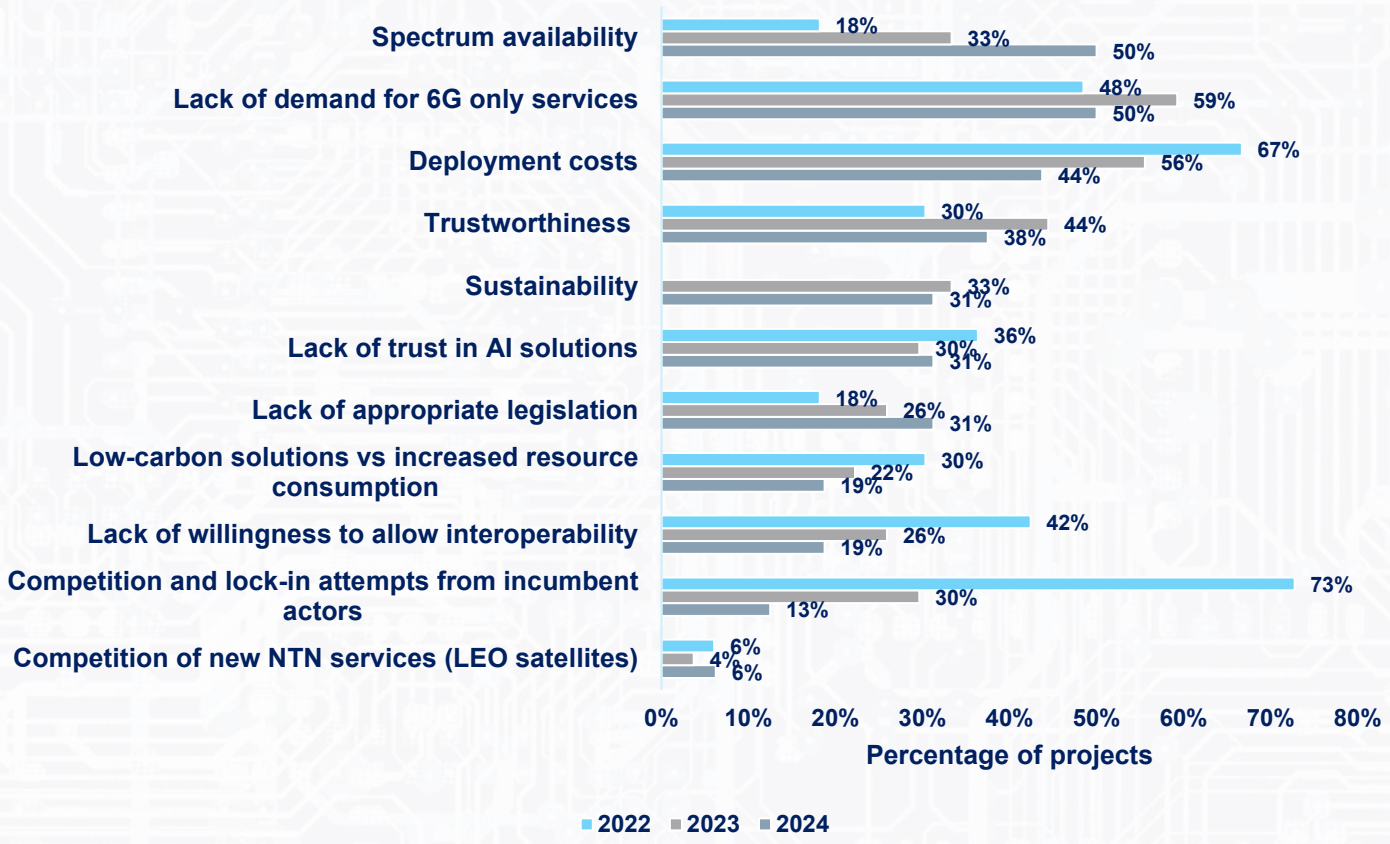
- The lack of demand for unique 6G services and the spectrum availability are tied (53%) as the main pressing issues.
- Deployment costs (47%) and Trustworthiness (40%) are deemed potential obstacles to 6G implementation.
- Competition of new NTN services alongside Public trust and acceptance and Competition and lock-in attempts from incumbents appear to be the less threatening to 6G deployment.

Call 3 (15 projects)

Question

Market, M6: Comparison across calls

Call 1 + Call 2 + Call 3 (78 projects)



Key Insights

- Deployment costs are considered one of the main obstacles to 6G deployment, although its importance has declined over time.
- Lack of demand for unique 6G services is deemed a significant obstacle across different calls.
- Trustworthiness, sustainability and lack of trust in AI are emphasised as some of the main issues to overcome for the implementation of 6G.
- Concerns regarding spectrum availability have risen notably. Similarly, the current regulation/lack of appropriate legislation is also becoming a pressing issue.
- The views on competition and lock-in attempts from incumbents have changed substantially, from ranking amongst the greatest obstacles in 2022 to be a rather minor concern in 2024. Likewise, opinions on interoperability have improved.

Question

Market, M7:

Do you believe enhancing 5G towards 6G can mobilise the ecosystem forward? If yes, which novel market sector(s) do you estimate that 6G may enable?

- 6G is is poised to introduce new capabilities that will mobilise the ecosystem forward. It will integrate sectors and technologies unlocking entirely novel market sectors and thus, driving significant economic and societal opportunities.
- Key market segments include:
  - **Immersive & Interactive Digital Services,** i.e., holographic communication and metaverse applications, "Internet of Senses" (enabling immersive XR and and multisensory experiences) will transform verticals such as entertainment, education, and remote collaboration.
  - **AI-Native & Autonomous Industries:** 6G will drive advancements in industrial automation , enabling highly reliable, ultra-low latency, and secure networks essential for smart factories, autonomous industrial systems and connected robotics. It will power smart factories, intelligent energy grids, and dynamic supply chains.
  - **Public Services:** 6G will enhance public safety, telemedicine, smart mobility, and emergency response systems.
  - **Network-as-a-Service (NaaS) & AIaaS:** 6G will introduce new business models, enabling on-demand AI, compute, and network resources, creating an AI-powered cloud economy.
  - **IoT** will make everything smart, connected, and self-powered
  - **Mission-critical services**: 6G will drive advancements in remote-controlled operations

Question

Market, M7:

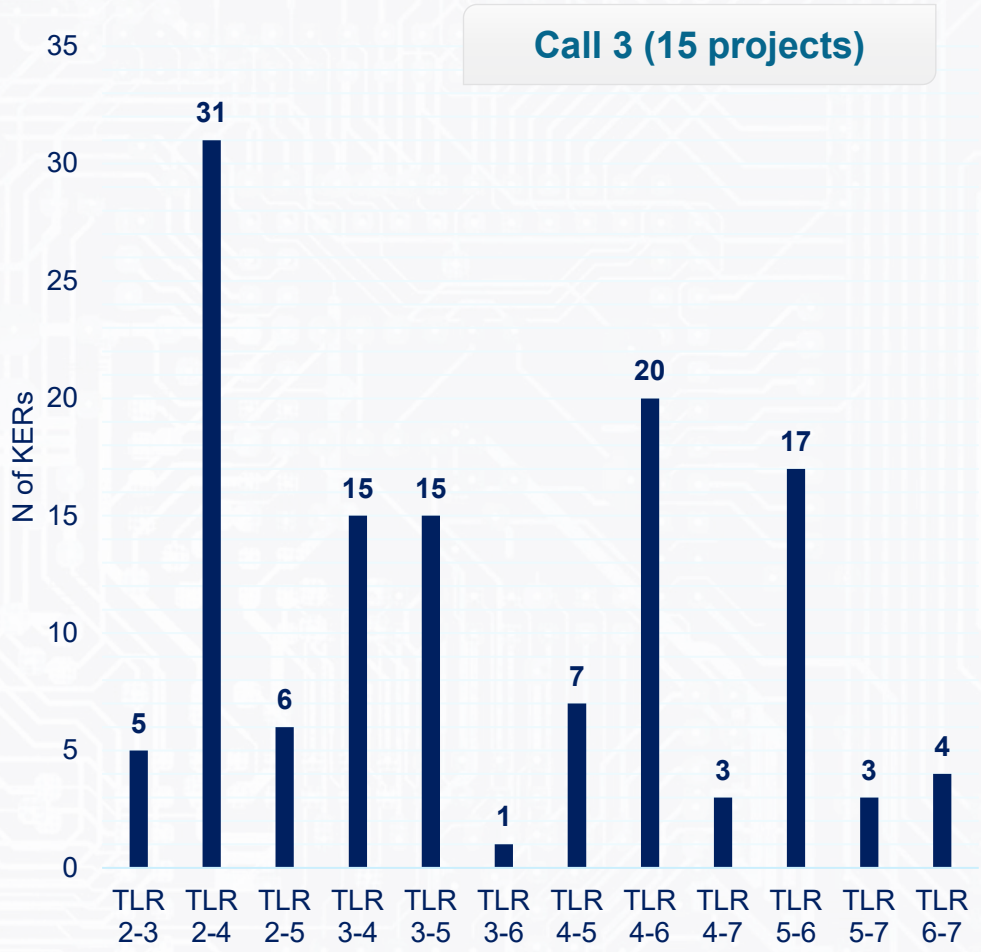
Do you believe enhancing 5G towards 6G can mobilise the ecosystem forward? If yes, which novel market sector(s) do you estimate that 6G may enable?

- 6G is expected to:
  - Introduce zero-trust security, AI-driven threat intelligence, quantum-safe encryption, and blockchain-based trust mechanisms.
  - Foster green ICT and sustainability platforms, focusing on sustainability through AI-driven energy efficiency and environmentally sustainable communication infrastructures.
  - Enable demanding applications such as cobots and ubiquitous communication.
- Main challenges and requirements:
  - Simpler and more efficient standards are required for 6G to be implemented at a lower cost for end-users.
  - Finding solutions that address the requirements of a large variety of verticals instead of large numbers of tailored ones.
  - Sustainable solutions from societal, environmental, and economic perspectives require a cost-efficient implementation.

Question

Market, M8 - What are the Key Exploitable Results (KER) expected to be delivered by your project? At which Technology Readiness Level (TRL) is each of them expected to be delivered?

- **AI and ML Integration:** AI/ML enhanced device performance, solutions for optimised RAN and Core, AI-driven resource management, AI-enabled cloud-edge-end continuum, federated learning, AI-native 6G air interface, trustworthy framework
- **Network Architecture and Management:** DTs, automated, network orchestration, determinism, AI-native 6G RAN architecture, AI-driven architecture and interoperability
- **Security and Privacy:** E2E security, privacy and data protection plane, security platform management, identity and access management, quantum-safe tools, threat intelligence and security analysis.
- **Energy efficiency:** energy efficiency as a service, optimising energy usage with RedCap, energy harvesting solutions, predictive energy harvesting & energy-aware functionality placement, AI-driven solutions.
- **6G-Specific Technologies: hardware and network architecture** - AI-based network management frameworks, Network as Sensor, microelectronics processes; **communication and sensing** – 6G-RAN system integrating sensing capabilities from multiple technologies at control and sensing data plane, multiband ISAC, distributed MIMO, AI-enhanced ISAC, ISAC-enabled RIS, enablers. Compute-as-a-Service enablers



Question

Market, M9 - Does your project promote the participation of SMEs?

- **Active participation:** most projects involve more than one SME as consortium members, leveraging their expertise in areas such as AI, open RAN solutions, IoT, or digital twins,
- **Technology Development and Validation:** SMEs are often engaged in developing new technologies and enhancing existing products in in areas like AI/ML, network automation, security frameworks, predictive analytics, cybersecurity, immersive reality, as well as in their validation. This helps SME broadening their product portfolios and gaining visibility and direct market engagement, enhancing their competitive edge.
- **Market Expansion:** projects frequently aim to help SMEs expand into new markets by providing them with the technological insights and innovations necessary to meet emerging market demands.
- **Collaboration and networking**: the projects promote collaboration among SMEs and with larger industrial stakeholders, academic institutions, and research communities. This collaborative approach helps build a strong network that supports mutual growth and knowledge sharing. It also plays a critical role in the development of standards, favouring interoperability, and in scalability.
- **Creation of New Business Opportunities:** projects aim to create new business opportunities for SMEs and these participate in the development of new business models and innovative services.

Active participation

Technology development and validation

Market access

Collaboration and networking

New business opportunities

Call 3 (15 projects)

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