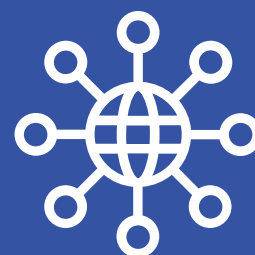


MIND THE GAP

A new Connectivity Act
for the Digital Decade



DIGITALEUROPE 



FOREWORD

Europe has had a connectivity problem for some time. When the strong move to devote 20 per cent of the €723 billion EU stimulus package was announced, DIGITALEUROPE gave clear recommendations for how Member States should go about maximising the funds' impact in several areas.¹

Connectivity was front and centre of our priorities, with a particular focus on connecting rural areas and boosting growth in traditional sectors.

The recovery funds can play an important role, if used wisely. Europe has been lagging other world regions, in terms of speed and coverage of networks. To sum it up in one recent figure, in 2021 5G reached 62 per cent of Europe's population, as opposed to 93 per cent in the US.²

In this report, we aim to provide an assessment of the state of European connectivity, identifying the major roadblocks and how to address them.

To this end, we have asked leading industry experts from our membership. What do they think about Europe's connectivity standing? How do they feel about our prospects for being a connectivity leader in the future? Unfortunately, the collected answers don't paint a rosy picture.

One of the recurrent findings is that Europe is too fragmented and slow to attract investment. To compete globally, businesses have first to be able to overcome 27 different national frameworks, such as spectrum auctions. If tragic recent events – from the pandemic to the war in Ukraine – have taught us anything, it is that we need a coherent approach to connectivity. Other world regions will always have the upper hand if we don't fix our fundamentals. Doing so will require resolute political choices.

Across Europe, there is still wide variance in approaches to and timetables for spectrum licensing and renewal, deterring industry investment in some Member States and jeopardising the ambitions of the single market. High spectrum prices and ineffective auction rules have resulted in delays, higher costs and under-investment in some Member States.

Back in 2015 with the Digital Single Market Strategy, the European Commission announced a telecoms reform aiming to provide incentives for network investment, bring a more consistent approach to radio spectrum policy and management, and tackle regulatory fragmentation to deliver a true internal market, among other things.

Although Europe has since enacted a comprehensive new rulebook for telecoms regulation, the European Electronic Communications Code (EECC),³ none of these objectives appear to have been achieved according to our experts, who still put lack of return on investment and slow spectrum auctions top of the list of what Europe needs to correct.

The good news is, we can still reverse this trend if we want to. In this report, we have identified four policy actions that, if undertaken in an ambitious way, can assert Europe as a connectivity leader in the Digital Decade.

We hope that our findings can contribute to a sincere discussion about much-needed reforms to help Europe break its investment and global leadership impasse. To turn the tide, brave decisions must be taken, particularly by Member States in an area that has so far been largely their competence. It is time for Europe to act as one team.

In 2021 **5G reached**
62%
of Europe's population



Cecilia Bonefeld-Dahl
Director General
DIGITALEUROPE

¹ See our report *How to spend it: A digital investment plan for Europe*, available at https://www.digitaleurope.org/wp/wp-content/uploads/2020/10/DIGITALEUROPE_How-to-spend-it_A-digital-investment-plan-for-Europe.pdf.

² State of Digital Communications 2022, research conducted for ETNO by Analysys Mason, available at https://www.etno.eu/downloads/reports/state_of_digi_2022.pdf.

³ Directive (EU) 2018/1972.

Overview of findings

This report provides a snapshot of how well Europe is doing when it comes to connectivity.

We have interviewed leading experts from across DIGITALEUROPE's membership of both corporates and national trade associations (NTAs) to ask them how they evaluate the current state of fixed and mobile connectivity in Europe, and how they see the future leading to Europe's Digital Decade.

The picture they provide is bleak:

56%

Lack of return on private investment is seen as the main factor hampering European leadership in fixed networks by over half of respondents.

69%

Considerable delays in spectrum auctions is seen as the main factor hampering European leadership in mobile networks (69 per cent of respondents).

None

of our interviewed experts feel very confident that Europe will be leading the future 6G race under current conditions. Half are only somewhat confident, and one-quarter are openly sceptical.

25%

A sizable minority of experts (one-quarter) find Europe's fixed connectivity targets not to be ambitious enough in light of available multi-gigabit technology. Support for the targets is mild, with 70 per cent of respondents considering them appropriate.

38%

More than one in three respondents (38%) find **Europe's 2030 mobile targets to be either partially or completely inappropriate**, and believe they should **focus on clear 6G targets** as opposed to merely playing catch-up on 5G. Only 50% of respondents find the targets to be appropriate.

44%

Currently available public funds can contribute to network investment. Funds can rebalance historically insufficient funding at Member State level, and facilitate demand-side uptake in verticals such as industrial applications, energy, healthcare, connected mobility and public safety. **44 per cent of respondents will be using the Recovery and Resilience Facility (RRF).** Public money, however, is deemed insufficient by most experts to change the overall investment landscape in Europe.

Recommendations

With mixed numbers from their responses, our interviewed experts appear on the whole disillusioned about the vision, ambition and process that should support Europe's digital transformation by 2030 – at least when it comes to the role of connectivity infrastructure.

While several important initiatives are already underway, they appear inadequate to the challenge we are facing. The Connectivity Toolbox outlined several recommendations and best practices on, most notably, spectrum and siting policy.⁴ The upcoming reviews of the Radio Spectrum Policy Programme (RSPP), the Broadband Cost Reduction Directive (BCRD) and the guidelines on broadband state aid rules will be the three legal instruments at European level that could offer more predictability and consistency, and contribute to a more favourable investment environment.

But beyond these measures, bold moves are needed to change the current paradigm of a Europe that's too slow to deploy networks. If policy makers really want Europe to have the best networks, there must be a fundamental shift at EU and, most importantly, Member State level.

In the coming years, Europe should:



1. Radically overhaul telecoms governance with a new Connectivity Act to achieve greater European harmonisation

Fragmentation remains a central problem that is slowing down the European market. Nowhere is this more evident than in the considerable delays that have accompanied national auctions for 5G spectrum. The comprehensive reform of telecoms regulation contained in the EECC has done little, if anything, to fix this fundamental problem. To date, as many as 18 Member States are yet to even enact the Code into national law.

Slow deployment of 4G compared to the rest of the world has quickly turned into slow deployment of 5G compared to the rest of the world. It is crystal clear that Europe cannot afford to continue with the status quo.

Member States and the Commission should urgently discuss a profound reform of telecoms regulation in Europe. Crucially, they must look at further sharing of binding decisions at European level, first and foremost when it comes to spectrum. Merely perpetuating closer cooperation, sharing of information or monitoring mechanisms will not pass muster.

If Member States are not willing to agree on, and commit to, these reforms upfront – before a Connectivity Act is proposed by the Commission and discussed with the European Parliament – Europe will be bound to repeat its mistakes all over again with 6G.

⁴ <https://digital-strategy.ec.europa.eu/en/policies/connectivity-toolbox>.

2. Put network investment at the top of policy and regulatory action

Whilst European consumers have benefitted for years, the singular focus on low prices has come at a cost for European competitiveness and the rollout of high-speed connectivity. A new Connectivity Act should rebalance policy towards promoting investment in networks.

The current model does deliver networks in the end, but at a glacially slower pace compared to other world regions. We can either preserve it as is, and then stop complaining that we are not leaders, or switch to a different paradigm that allows Europe to lead on future network deployments.

If policy makers want the best networks, they must understand that they might come at a cost, rather than solely taking pride in the fact they are very cheap. Competition between operators should be fostered towards better network quality, ubiquitous coverage and efficient spectrum usage, rather than the cheapest service or the highest licence fees. When it comes to consolidation proposals in the market, a main criterion for competent authorities should be to focus on service quality and coverage, in addition to the level of consumer prices.



3. Implement the Connectivity Toolbox to address the investment gap in the immediate term

Pending more profound reform, Member States should start implementing the best practices outlined in the Connectivity Toolbox. In the short term, this would help remove some of the big bottlenecks that connectivity providers face in their investment scenarios.

Importantly, all Member States who have not already done so should urgently make available all three 5G pioneer bands (700 MHz, 3.4–3.8 GHz and 26 GHz) under investment-friendly conditions.

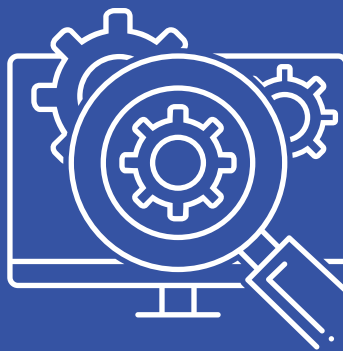
4. Make full use of available public funds for connectivity

The amount of public funds presently available for connectivity is unprecedented. While our experts agree that public funds cannot in and of themselves fix deep-rooted investment problems, they nevertheless play a key role in the short term and should be used to their fullest extent.

The RRF's €723.8 billion, 20 per cent of which must be spent on digital investments, represents the biggest public financing to date potentially available for network infrastructure and digital transformation. The digital part of the Connecting Europe Facility (CEF Digital) plans to invest €2 billion until 2027 to support investment in European connectivity infrastructure of common interest.

These public funds should be used immediately and in their entirety as a transformative mechanism, moving Europe into recovery mode whilst acting as a catalyst for further investment from the private sector.





Survey methodology

The data in this report is derived from interviews conducted with 20 connectivity experts from DIGITALEUROPE's corporate and national trade association members. The full list of interviewees is available on the 'Acknowledgments' page.

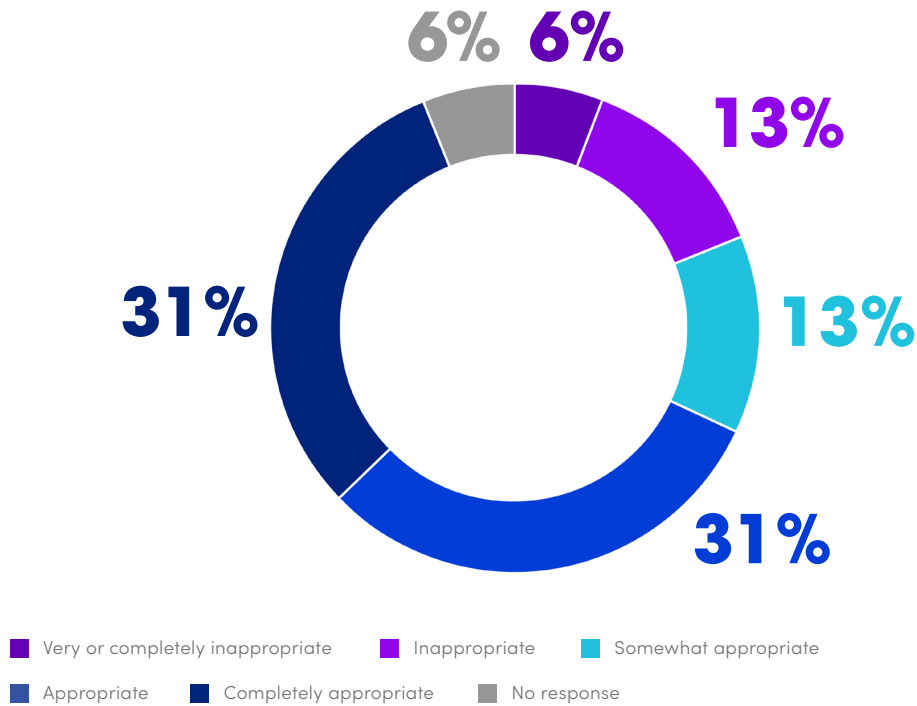


**Underwhelming fixed networks,
poor return on investment
the main challenge**

Our surveyed experts show moderate support for Europe's upcoming connectivity targets concerning fixed networks.

MODERATE SUPPORT FOR FIXED CONNECTIVITY TARGETS

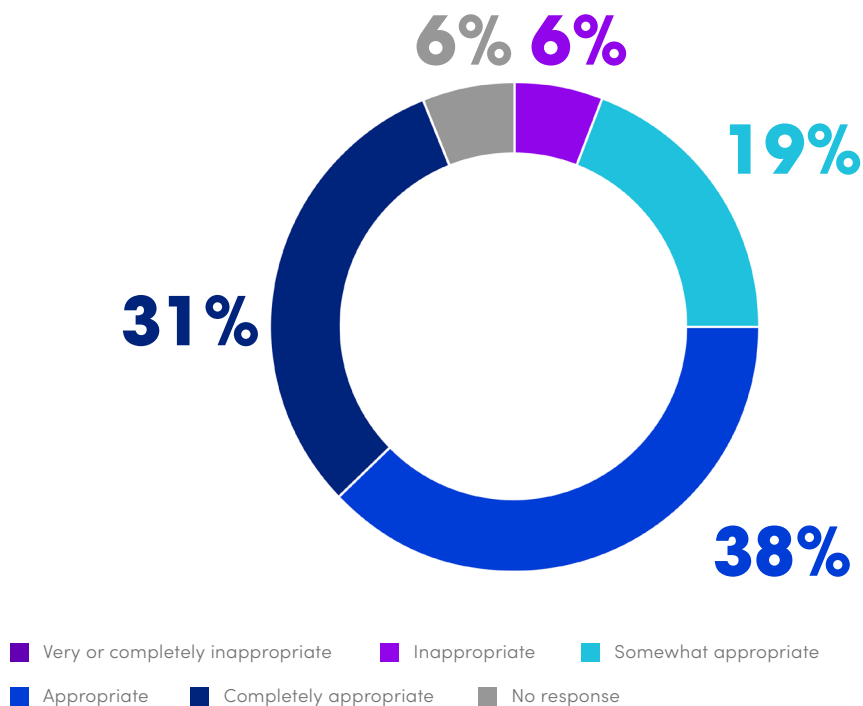
% of respondents who consider the target of 100 Mbps networks reaching all European households by 2025 to be...



“
The Digital Decade
targets should be
the floor, not
the ceiling.”

from one of our
interviewed experts

% of respondents who consider the EU 2030 target to have all European households covered by a Gigabit network by 2030 to be...



The 2025 target to bring 100 Mbps connections to all European households is deemed perfectly appropriate by just over 60 per cent of respondents. Looking at 2030, the target to cover all European households with a gigabit network is considered appropriate by almost 70 per cent of respondents.

Behind this general support, a non-negligible minority of experts finds the targets to be either partially or completely inappropriate. This is 32 per cent and 25 per cent of experts for the 2025 and 2030 targets, respectively. Most of these experts highlight that the present targets are not ambitious enough in light of available technology – multi-gigabit services up to 10 Gbit/s are already commercially available in several markets, 25 Gbit/s services are emerging, and 50 Gbit/s services will be possible in a few years' time.⁵

All our experts agree that the targets should be seen as a baseline, not a ceiling threshold. While pragmatic and desirable, they should not be seen as simply a way to catch up on the deployment of gigabit networks, but rather as the minimum Europe should aspire to in the global technology race.

When it comes to the current challenges related to deployment of fixed networks, 56 per cent of respondents rate the lack of return on investment for the private sector as the main barrier. Average revenue per user (ARPU) for fixed broadband was less than half that of the US, and one-quarter less than Japan in 2020.⁶ This is followed by historically insufficient funding at Member State or EU level (44 and 31 per cent, respectively) and by a lack of policies to stimulate demand (44 per cent).

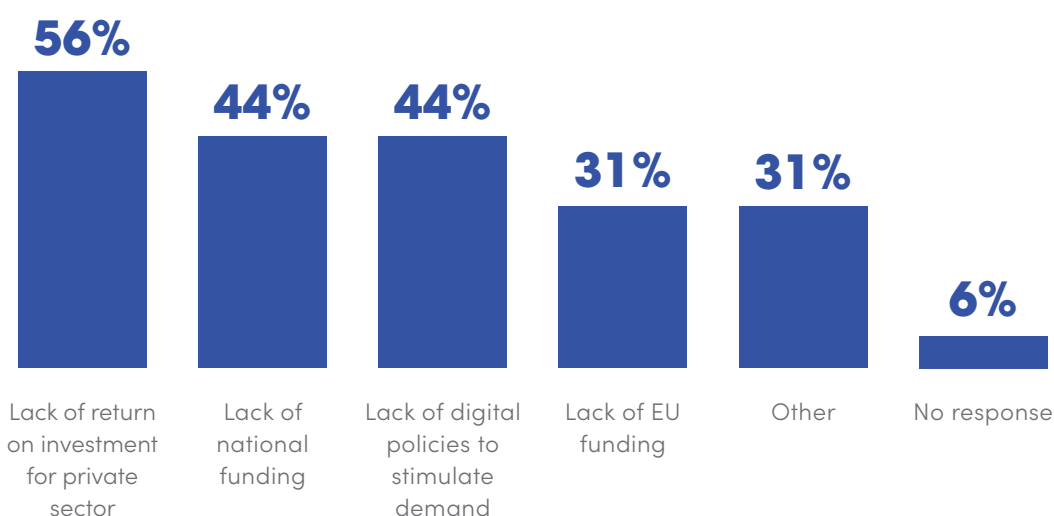
Looking at 2030,
**the target to cover
all European
households with
a gigabit network**
is considered
appropriate by
almost

70%

of respondents.

POOR RETURN ON INVESTMENT IS KEY FACTOR FOR SLOW FIBRE DEPLOYMENT

% of respondents that rate barriers to deploying fibre in Member States



⁵ State of Digital Communications 2022.

⁶ Ibid.

Lack of return on investment is graded lower as an obstacle to fibre deployment in rural areas (at 38 per cent as opposed to 56 per cent overall), where the impact of insufficient funding and the need for state aid are proportionately higher.

30 per cent of interviewees mention other hurdles, including notably overburdensome administrative processes – in the form of permits, forms, and notification and reporting requirements – that halt network deployment. Red tape is particularly burdensome for smaller businesses, as highlighted by our NTAs, and may act as a disincentive to new business start-ups.



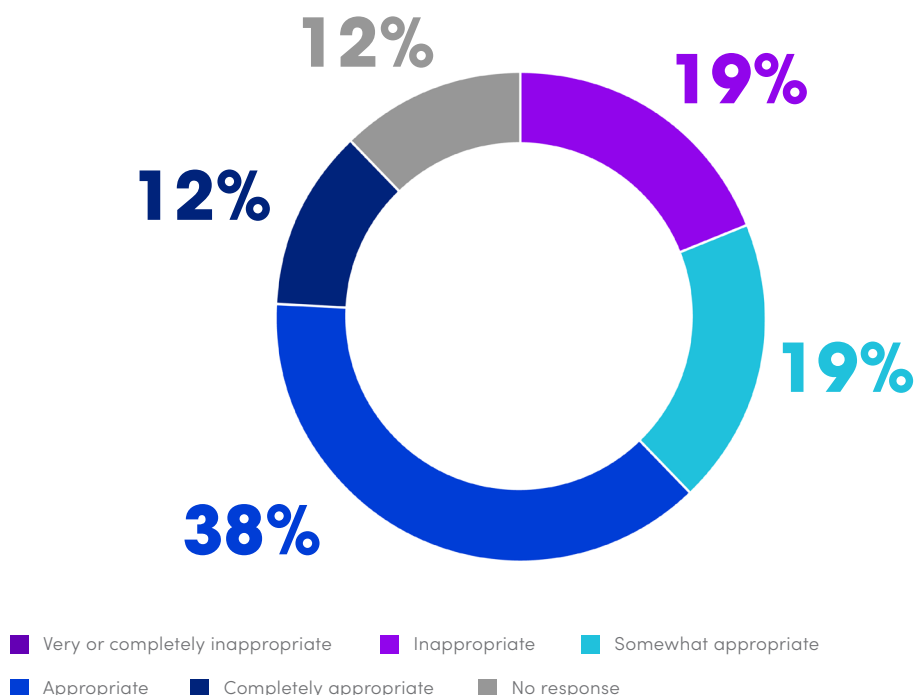


**Not delivering on 5G and
poor 6G prospects, spectrum
auctions to blame**

Interviewed experts are more pessimistic when it comes to mobile networks. The target to have all populated areas covered by 5G by 2030 is judged as appropriate by only 50 per cent of respondents, while 38 per cent believe it to be either partially or completely inappropriate.

BLEAK OUTLOOK FOR EUROPE'S MOBILE TARGETS

% of respondents who consider the target of all populated areas covered by 5G by 2030 to be...



69%
of interviewed experts identify **the considerable delays** in spectrum assignments that Europe has experienced **as the main reason for weak 5G deployment**

Experts in the latter group consider the target to be too conservative. While 6G research is just starting, they expect 6G to have become a reality by the end of the decade, and would want Europe to already define targets for commercial 6G deployment, underpinned by widespread 5G adoption and coverage.

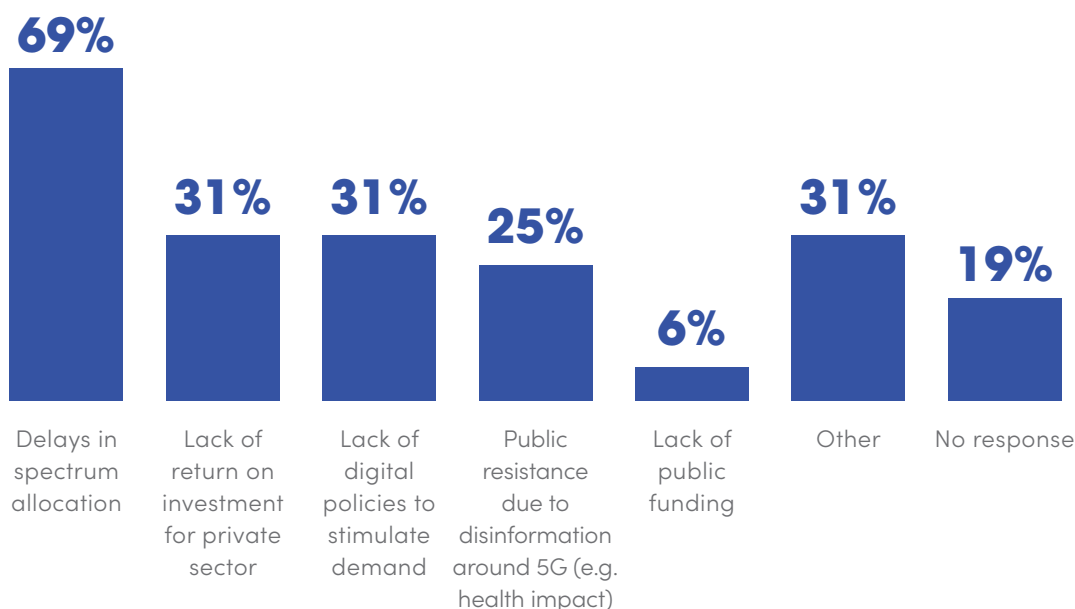
69 per cent of interviewed experts identify the considerable delays in spectrum assignments that Europe has experienced as the main reason for weak 5G deployment so far. Although required to do so by the end of 2020,⁷ as of January 2022 there were only seven Member States who had assigned spectrum in all three 5G pioneer bands, and as many as five were yet to assign any of the pioneer bands.⁸

⁷ Art. 54 EECC.

⁸ 5G Observatory, Quarterly Report 14, January 2022, available at https://5gobservatory.eu/wp-content/uploads/2022/02/5G-Obs-PhaseIII_Quarterly-report-14_FINAL-Clean-for-publication_16022022.pdf.

SLOW, FRAGMENTED AUCTIONS MAIN REASON FOR SLOW 5G DEPLOYMENT IN EUROPE

% of respondents who consider the main obstacles causing delays in 5G deployment across the EU to be...



“

We cannot continue to look at spectrum the way we have. Member States must be bold. We need to discuss governance.

”

from one of our interviewed experts

Interviewed experts are concerned that spectrum policy has been profit driven, with spectrum auctions conducted when demand is high to maximise revenue for Member States, as opposed to making spectrum available well in advance to ensure timely uptake. This is a short-term strategy that has been detrimental to Europe for too long and has not allowed it to stay ahead of the race of ultra-fast connectivity.

In addition to slow and unfavourable auctions, other factors for slow 5G deployment identified by experts include a lack of demand-side policies and poor return on investment (31 per cent of respondents for both, respectively). Mobile ARPU in Europe was only one-third that of the US, less than half that of Japan and just over half that of South Korea in 2020.⁹

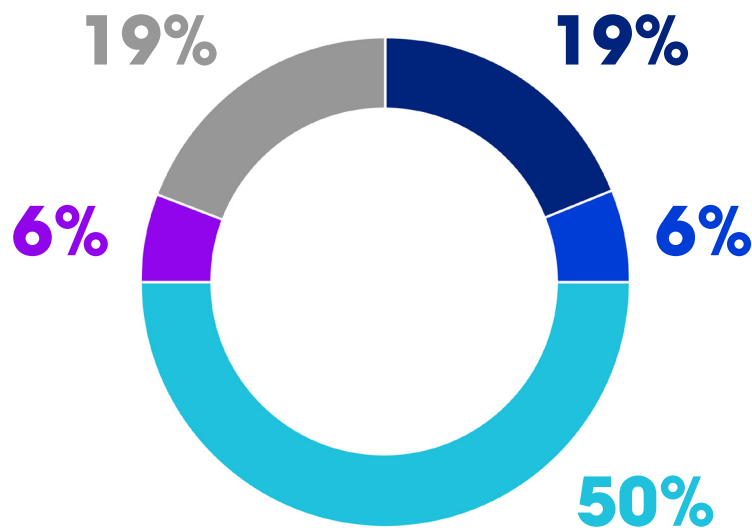
Importantly, experts also lament public resistance due to disinformation around the health effects of 5G as having contributed to delays (25 per cent of respondents). In contrast to fixed networks, only 6 per cent of experts find that a lack of public funding can be blamed for slow 5G deployment.

Not surprisingly, based on their assessment of how 5G has been deployed to date, none of our interviewed experts feel very or completely confident that Europe will be leading the future race towards 6G. 25 per cent of interviewees are openly not confident that Europe can lead the 6G race, while 50 per cent are only somewhat confident.

⁹ State of Digital Communications 2022.

VERY LITTLE CONFIDENCE EUROPE CAN LEAD THE GLOBAL 6G RACE

% of respondents by how confident they are that Europe will lead the 6G race, based on the development and deployment of 5G technology



63%

of interviewees believe that the EU should focus on advanced R&D

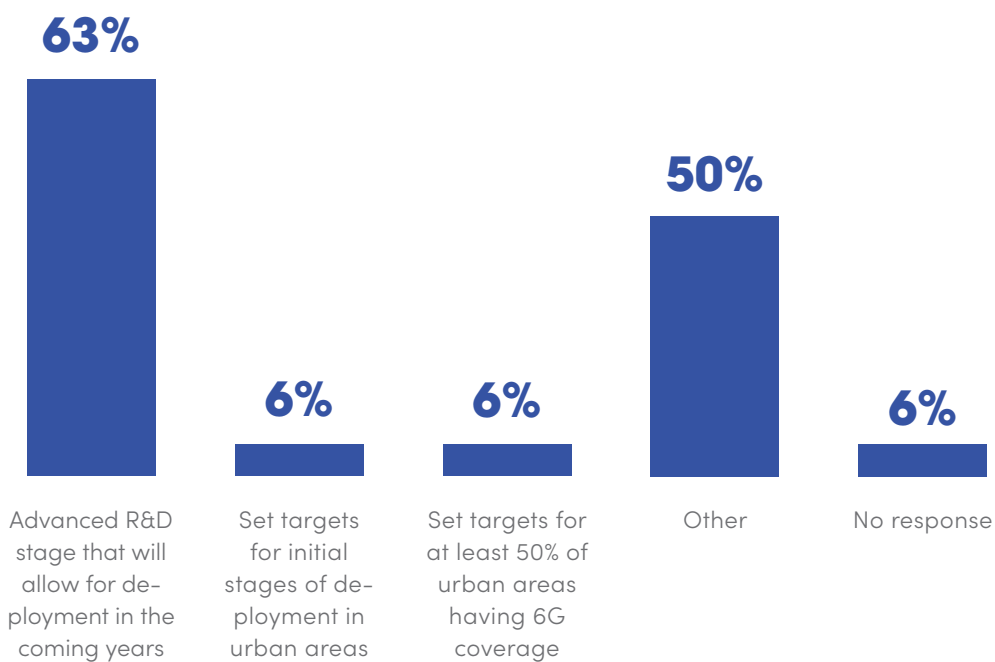
■ Not confident at all ■ Not confident ■ Somewhat confident
■ Confident ■ Very or completely confident ■ No response

When asked about what could remedy this, 63 per cent of interviewees believe that the EU should focus on advanced R&D that can more directly target deployment scenarios in the coming years, as opposed to basic and applied research.



ADVANCED RESEARCH FOR DEPLOYMENT COULD SAVE EUROPE'S 6G FATE

% of respondents by what measures they believe the EU should take to lead on 6G by 2030



Notwithstanding their criticism of Europe's conservative 2030 targets, interviewed experts do not find that setting specific 6G targets will in and of itself propel Europe towards a leadership position. Only 12 per cent of experts mention targets as a key contributing factor.

By contrast, 50 per cent of respondents mention other actions Europe should consider in order to improve its 6G prospects. These include: fostering Europe's start-up ecosystem; more funding for ETSI and other standards bodies to lead on 6G standardisation; and strengthening Europe's production capacity, notably in semiconductors.





**Putting available public
funds to good use**

In the final part of our survey, we explored experts' experience as to how public funds are being used to facilitate network deployment.

Overall, there appears to be mild confidence in the total amount of funds. Almost 38 per cent of interviewees believe there is sufficient funding at EU and Member State level combined to achieve the EU connectivity targets. These respondents find that the amounts currently available can go to some lengths to remedy historically insufficient funding, particularly at Member State level (lamented by 50 per cent of respondents).

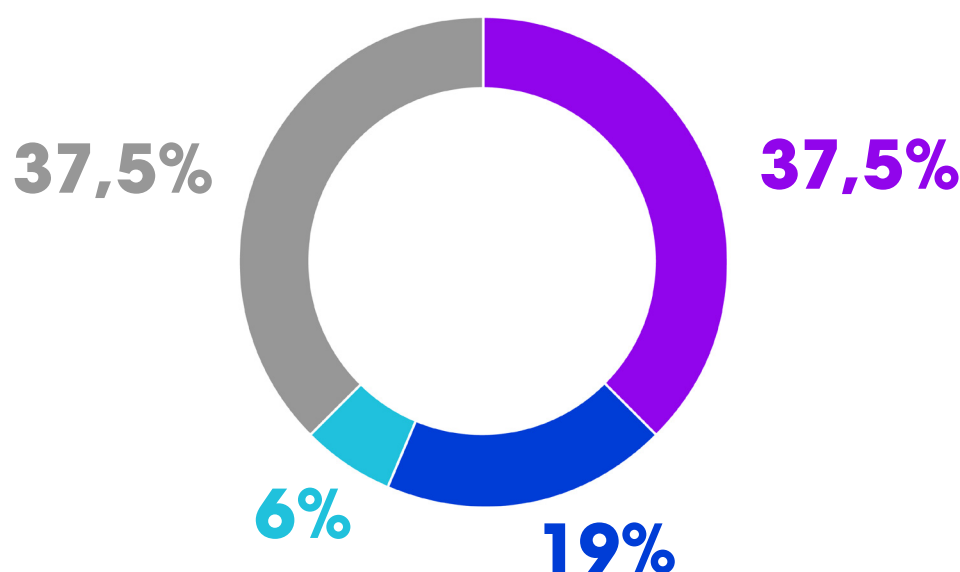
Most respondents, however, cannot confirm whether in their view the allocated EU and national public funds will be sufficient. This is almost 44 per cent of respondents. Another 19 per cent believe that, although an improvement, public money will not be sufficient to appreciably change the investment landscape in Europe.

~38%

of interviewees
believe there is sufficient funding at EU and Member State level combined to achieve the EU connectivity targets.

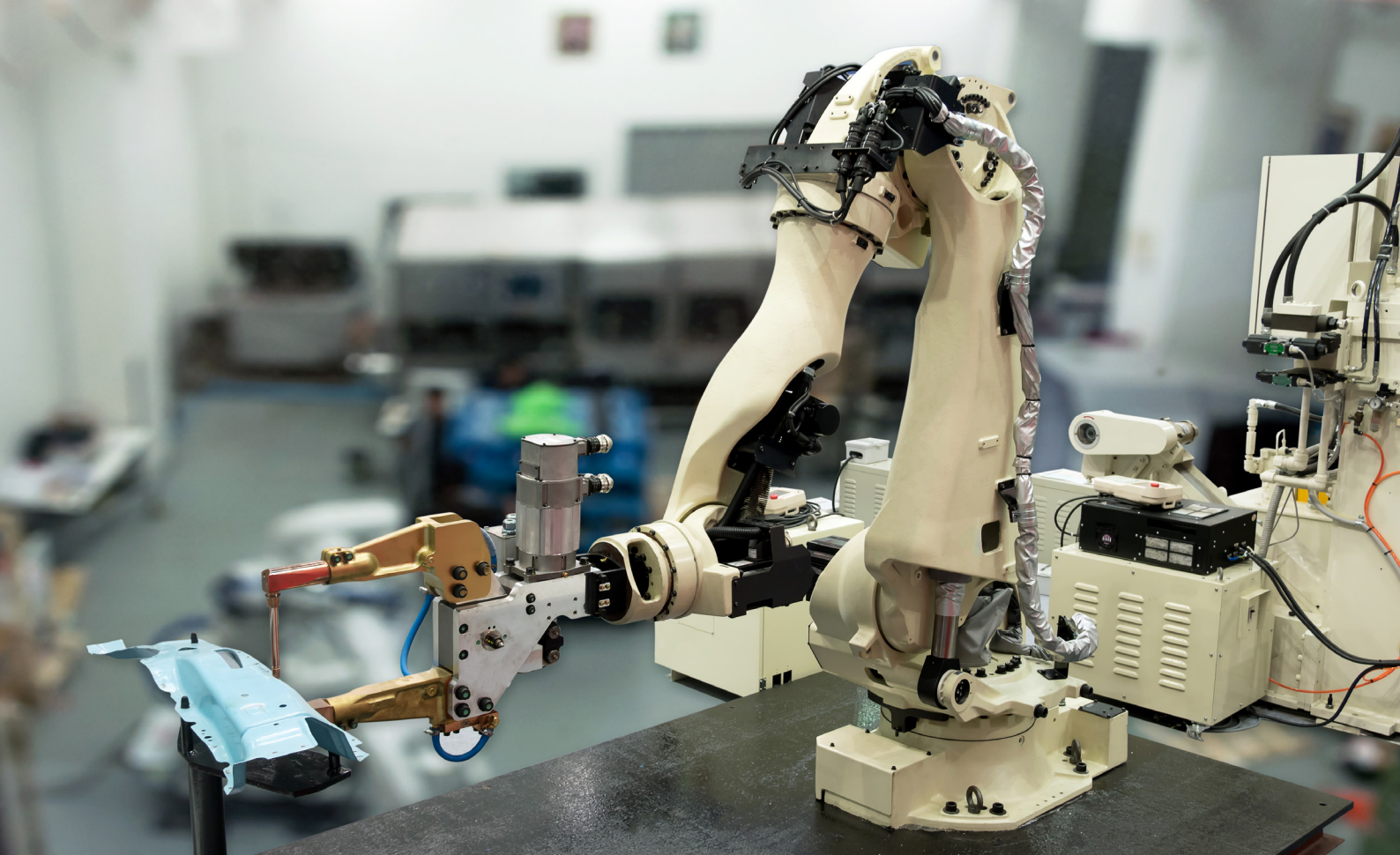
PUBLIC FUNDS CAN HELP, BUT UNLIKELY TO CHANGE INVESTMENT INCENTIVES

% of respondents who believe funding from the EU Recovery and Resilience Facility and other EU programmes and national initiatives is sufficient to achieve the EU targets on infrastructure and connectivity



■ Yes
 ■ No
 ■ I do not know
 ■ No response

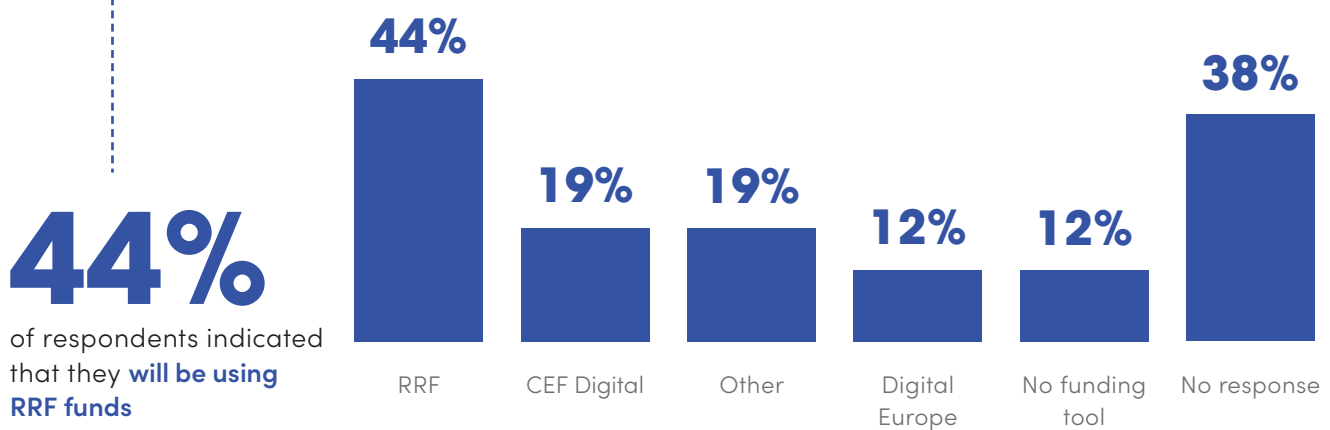




The RRF is the instrument that appears to be most promising, with 44 per cent of respondents indicating they will be using these country-specific funds. Only 19 per cent and 12 per cent of respondents indicate they will be relying on the digital branch of the Connecting Europe Facility (CEF Digital) or the Digital Europe programme, respectively.

RRF BEING LEVERAGED FOR CONNECTIVITY INVESTMENT

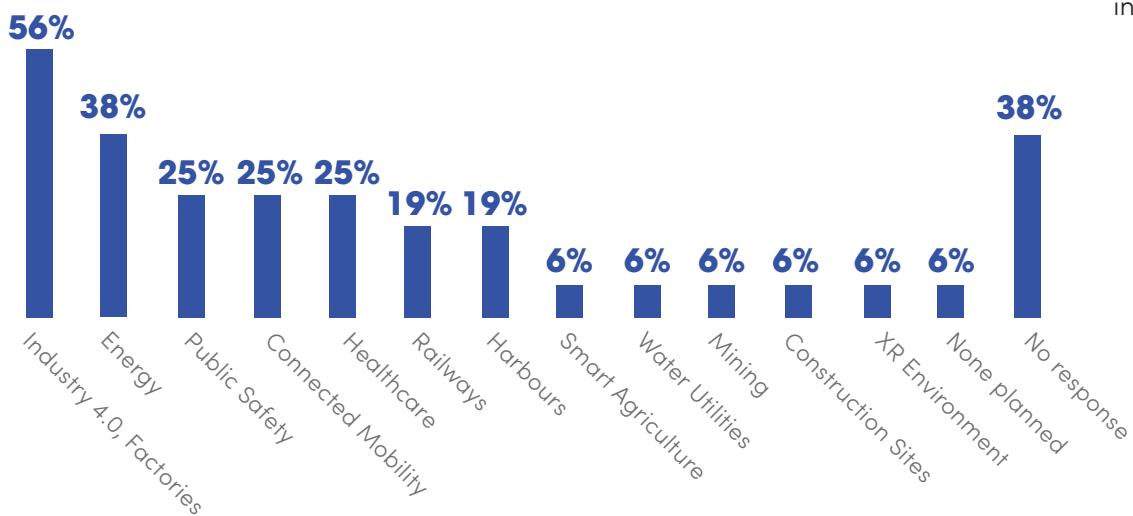
% of respondents by what funding tools they have used or are planning to use



Industrial use cases top the list of applications interviewed experts are using or planning to use public funds for (56 per cent), followed by energy (38 per cent), healthcare, connected mobility and public safety (25 per cent each). Only 6 per cent of experts who answered were not contemplating any vertical use cases.

VERTICAL USE CASES KEY TO HOW PUBLIC FUNDS ARE DEPLOYED

% of respondents by what vertical use cases they are planning to use EU funds for



“

There is no reason why network infrastructure should not be treated the same as other types of infrastructure, such as roads.

”

from one of our interviewed experts



Acknowledgments

The following experts have been interviewed for this report:

Mikael Bäck, VP & Corporate Officer,
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Wladimir Bocquet, Principal Public Policy,
Leading Licensing and Regulatory Affairs,
Project Kuiper, EMEA, Amazon

Denys Bornauw, Senior Business Group
Leader, Telecom Industries, Agoria

Paolo Campoli, VP, Head of Global
Service Provider Sector, Cisco

Monica Desai, Global Head, Connectivity
and Access Policy, Meta

Michael Eslamian, VP & Corporate Officer
for Strategy, Standardisation and Industry
Development Europe, Huawei

Eric Festraets, Strategic Marketing
Director Fixed Networks, Nokia and
President, FTTH Council Europe

Richard Hut, Service Provider Segment
Leader EMEAR, Cisco

Sophie James, Head of Telecoms &
Spectrum Policy, techUK

Jüri Jõeema, Advisor and previous CEO,
Estonian Association of Information
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Marja Matinmikko-Blue, Research
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of Oulu and Director of Sustainability and
Regulation at 6G Flagship, Centre for
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Anna Matsouka, Strategic, Analysis
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Communications Enterprises)

John O'Connell, Senior Technologist, HPE

Sander Rotmensen, Director of Industrial
Wireless Communication Products,
Siemens

Torben Rune, Founder, Civilingenjør and
DI Digital Board Member

Axel Simon, Chief Technologist, Aruba
Networks, HPE

Priit Soom, General Manager, Estonian
Broadband development Foundation

Martin Taylor, Program Management,
Azure for Operators, Microsoft

Anna Thomaidou, Senior Regulatory
Analyst, WIND Hellas & Member of SEPE
(Federation of Hellenic Information
Technology & Communications
Enterprises)

Dobias van Ingen, EMEA Senior Director
Systems Engineering & CTO Aruba
Networks, HPE



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