

## White Paper

# Ensuring Europe Achieves its 2030 Connectivity Targets

January 2024

The Computer & Communications Industry Association (CCIA Europe) fully supports Europe's digital ambitions. It therefore publishes this industry paper in an effort to show how Europe can reach the 2030 Digital Decade connectivity targets in the most efficient way, ensuring the EU digital ecosystem remains competitive, open, and innovative.

To that end, this paper puts forward **six proposals** to help deliver on Europe's digital and connectivity ambitions.

## I. Diversify broadband supply

*Diversify broadband supply through different technologies to ensure Europe has reliable and diverse connectivity infrastructure, including by promoting:*

- A. Satellite connectivity
- B. Open-RAN technology

## II. Recognise and facilitate content delivery practices and investment partnerships

*Support improved data handling and delivery practices to ensure Europe's connectivity remains efficient and performing, for example by supporting the roll-out and use of:*

- A. Content delivery networks (CDNs) and caches
- B. Video compression techniques
- C. Subsea cables

## III. Improve transparency and control over European connectivity funding

*Increased control and transparency on how EU funds are spent for more efficient allocation.*

## IV. Support open peering policies

*Support open peering policies for more efficient internet connectivity.*

## V. Foster consumer demand for fast connectivity such as 5G services

*Foster consumer demand for 5G services in order to create market-driven incentives to deploy 5G networks.*

## VI. Ensure the sustainability of networks

*Ensure sustainability of networks to make sure the digital sector is in line with European green goals.*

## Introduction

In 2021, the European Commission presented its Digital Decade targets for 2030.<sup>1</sup> These quantitative goals were set in four key areas (digital infrastructure, digital skills, digital business, and digital public services) with a view to strengthening the EU's digital economy.

In February 2023, the European Commission launched an exploratory consultation on the future of the electronic communications sector,<sup>2</sup> to have a broader reflection on Europe's digitalisation, the feasibility of the 2030 digital targets, and the overall health of the telecoms and digital sector.

In light of this debate, as well as of the upcoming connectivity package foreseen by the European Commission<sup>3</sup>, which is expected to tackle the future of telecom networks and infrastructure, the Computer & Communications Industry Association (CCIA Europe) takes this opportunity to share its view on how to boost Europe's digital ecosystem, as well as putting forward some proposals on how to achieve the 2030 connectivity infrastructure targets<sup>4</sup> in the best way possible.

CCIA believes that if EU policies need to guarantee Europe's connectivity for the next 10 to 20 years, they should be made with the future in mind, not the past. EU lawmakers and regulators should thus adopt an approach to connectivity that is holistic and considers all technologies and partnerships that can help deliver on Europe's ambitions.

## I. Diversify broadband supply

In order to reach its 2030 connectivity targets, the European Commission so far has mainly focused on the deployment of 5G and fibre networks. While these are key technologies that will help to ensure high speed connectivity in Europe, they are also both cost intensive and difficult to deploy in rural and remote areas.<sup>5</sup> According to data collected by the European Commission, more than 30% of the EU's population lives in such rural areas.<sup>6</sup>

Indeed, rural and remote areas are particularly challenging for connectivity deployment, as acknowledged in the Commission's latest State of Digital Decade report: "more than half of rural households (55%) are still not served by any fixed very high-capacity network [...]; 65.3% of populated rural areas are not covered by 5G and 9% of rural households are not yet covered by any fixed network at all."<sup>7</sup>

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<sup>1</sup> Europe's Digital Decade: digital targets for 2030, available [here](#).

<sup>2</sup> European Commission's consultation on "The future of the electronic communications sector and its infrastructure", February 2023, available [here](#).

<sup>3</sup> Tentative agenda for forthcoming Commission meeting, available [here](#).

<sup>4</sup> Please note that this paper refers to the connectivity targets, i.e. the digital infrastructure targets as defined in the 2023 Report on the state of the Digital Decade, available [here](#).

<sup>5</sup> Phonandroid, "Le 100% fibre optique est impossible selon Orange, tout le monde n'y aura pas droit", October 2023, available [here](#).

<sup>6</sup> EU rural areas in numbers, available [here](#).

<sup>7</sup> Digital Decade report, 2023, available [here](#).

## What is the problem, if any?

A shortsighted approach, which does not take into consideration all available technologies to guarantee connectivity, risks undermining the 2030 connectivity targets.

In particular, satellite connectivity is a viable – but often overlooked – way of providing high-speed internet to consumers, both in populated and rural areas, at competitively low prices. Both alternative market players including CAPs and some telecom incumbents<sup>8</sup> are already providing satellite connectivity in rural and remote areas, with positive results. Furthermore, satellite connectivity provides for a faster roll-out compared to terrestrial networks such as 5G or fibre, and has higher resilience, for example in cases of natural disasters.

Similarly, Open-RAN technology offers another cost-effective solution. These networks are software-driven, based on open standards, and run in the cloud on commercial off-the-shelf servers. Over the last few years, open access models have proven to be very successful in the submarine cable industry.

For instance, the disaggregation of single-supplier solutions has resulted in technical innovations, cost reduction, and led to new entrants, with benefits for competition in this sector. As with satellite connectivity, Open-RAN solutions have already been successfully deployed by some telecom operators in Europe,<sup>9</sup> but this technology is not part of the Commission's approach yet.

## PROPOSAL 1.A – SATELLITE CONNECTIVITY

### Why is this important?

- People in remote areas can benefit from high-speed internet thanks to satellite connectivity, rather than having to wait for (expensive) physical infrastructure to be rolled out.
- Satellite connectivity is one of the best alternatives to provide affordable internet connectivity in rural areas.
- Diversifying the means through which connectivity is provided ensures a more resilient infrastructure.
- Ensuring connectivity in scarcely populated and remote areas will help Europe to achieve its Digital Decade targets, but also increases people's social mobility and their access to work, education, and healthcare.

### What to do?

- ✓ Acknowledge that high speed connectivity does not need to be deployed via fibre cables or 5G networks alone.

<sup>8</sup> Orange, "Orange launches its Satellite offer", November 2023, available [here](#).

<sup>9</sup> Rakuten, "Europe's first Open RAN is fully functional - Rakuten and Mavenir are technology partners in 1&1's cloud-native mobile network", December 2023, available [here](#).

- The Commission, in its State of Digital Decade report<sup>10</sup> states that “satellite broadband can bring broadband services with up to 100 Mbps download speeds to very rural and remote areas, where no fixed or mobile very high-capacity networks are available. [...] They can also provide resilient emergency services in disaster or crisis situations”.
- Hence, the Commission should adopt a holistic approach that looks at all available technological solutions, rather than proposing policies that mainly deal with technologies deployed by incumbent telecom operators.
- ✓ Ensure that the Commission and Member States take into account alternative technologies such as low earth orbit (LEO) satellite broadband to contribute to the reform of two-decade-old satellite spectrum rules to speed up satellite connectivity, reduce space waste, and achieve the Digital Decade connectivity targets.
  - Include LEO satellite broadband as one of the technologies that are part of the fixed broadband connectivity targets of the Digital Decade.<sup>11</sup>
  - Ensure the new EU space law is evidence-based, fosters a competitive ecosystem for companies to provide connectivity services in Europe, and avoids regulatory fragmentation with other jurisdictions.
- ✓ Develop a favourable regulatory framework for CAPs to ensure they can drive additional consumer demand for very high capacity networks (VHCNs).

### What to avoid?

- ✗ Preemptively hinder competition in the satellite connectivity space or focus exclusively on terrestrial options to the detriment of a stronger and more diversified European offering.

## PROPOSAL 1.B – OPEN-RAN TECHNOLOGIES

### Why is this important?

- Consumers can benefit from high quality connectivity at lower costs.
- Telecom companies can also lower their own costs by adopting Open-RAN technology. We are talking about cost savings of up to 30% on infrastructure building and 40% on operations, compared to traditional mobile networks. In Japan, the introduction of a new Open-RAN mobile network helped drive down mobile phone subscription costs for Japanese consumers by up to 60%.<sup>12</sup>
- Deployment of Open-RAN solutions can increase competition in the telecoms market, which would benefit all market players.

<sup>10</sup> Digital Decade report, 2023, available [here](#).

<sup>11</sup> Note that this would be consistent with the view of respondents to the Commission’s consultation on The future of the electronic communications sector and its infrastructure who note the ability for LEO satellite broadband to provide connectivity in remote areas, as well as with Commissioner’s Breton statements at the press conference following the informal telecoms meeting in León on 23-24 October.

<sup>12</sup> Bloomberg, “Japan’s Key Consumer Price Gains Hit 2% After Dialing Out Phones”, December 2021, available [here](#).

## What to do?

- ✓ Ensure the Commission and Member States take into account alternative technologies such as Open-RAN when introducing funding and policy instruments to achieve the Digital Decade connectivity targets.
- ✓ Develop a global system for the integration testing and system certification of Open-RAN solutions.
  - The Telecom Infra Project (TIP)<sup>13</sup> has introduced a global system certification platform called SCOPE.
  - Widespread adoption of a programme such as SCOPE could increase operator confidence to purchase Open-RAN systems, reduce operators' need for requests for information and proofs of concepts, and enable savings by reducing the need for extensive testing.
- ✓ Support such efforts and provide funding – in the form of grants or competitions – to enable industry to align around such a process, and to spur commercial deployment more broadly (e.g. Open-RAN proof of concepts in brownfield telephone networks).

## What to avoid?

- ✗ Policies that will make it harder to invest in and promote Open-RAN solutions. For example, any protectionist measures that could disincentive legitimate Open-RAN suppliers from investing in Europe.
- ✗ Monolithic solutions from a single vendor based on customised integration that make it harder to promote disaggregation of network interfaces.
- ✗ Policies that are tailored to the regional level, and not global in scale, which will lead to further fragmentation of the single market.

## II. Recognise and facilitate content delivery practices and investment partnerships

Europe's telecom networks are resilient and well performing infrastructure that has proven to function well even in periods of (unexpected) high data usage, such as at the peak of the COVID-19 pandemic.<sup>14</sup>

Over the next few years, data traffic will only grow at a stable or declining rate, as suggested by Ericsson's forecast.<sup>15</sup> It is thus fair to say that ISPs can (and will) efficiently handle data flows on their networks in the future, especially with so many operators having already successfully invested in the core long-term infrastructure needed for the coming decades.

<sup>13</sup> Telecom Infra Project, "TIP's Open RAN System Certification process (SCOPE): Aligning the Industry and Accelerating Open RAN Commercial Deployments", June 2023, available [here](#).

<sup>14</sup> Lemstra, Wolter, "Beyond the Pandemic: Exploring the Impact of COVID-19 on Telecommunications and the Internet. Chapter 13: Impact on telecom infrastructure investments", November 2023, available [here](#).

<sup>15</sup> Ericsson mobility report 2023, available [here](#).

ISPs ability to handle data undoubtedly also has been vastly improved by the significant network investments of CAPs, which have been identified by multiple studies<sup>16</sup> as well as analysis by regulators such as Ofcom<sup>17</sup> and BEREC<sup>18</sup>. Major investments by CAPs include:

1. Deployment and use of content delivery networks (CDNs) and caches to handover traffic closer to the user, which helps reduce latency, the amount of traffic that traverses telecom operators' networks, energy consumption, and telecom operators' costs.<sup>19</sup>
2. Best practices to use networks responsibly: prioritisation of wi-fi downloads, avoidance of peak time for downloads, as well as continuous improvement of video encoding and adaptive bitrate delivery techniques, to ensure viewers are receiving the best possible quality video, in the most efficient manner possible. This, in turn, helps to reduce ISPs' costs and the traffic volume required to deliver CAPs' content.
3. Deployment of subsea cables, which allow CAPs to deliver content closer to the end user on their own private networks, thereby reducing ISPs' costs again.<sup>20</sup>

In addition to the help they get from CAPs, ISPs are also supported with significant public funding available for the rollout and maintenance of their network infrastructure<sup>21</sup>, as well as through regulatory intervention which is aimed at facilitating investment in the rollout of broadband networks, such as the European Electronic Communications Code (EECC), the Broadband Cost Reduction Directive (BCRD), as well as the recent legislative proposal for a Gigabit Infrastructure Act.<sup>22</sup>

### What is the problem, if any?

A minority of voices still allege that:

1. Network infrastructure will be incapable of handling data traffic in the future.
2. Data traffic will grow exponentially in the next years.
3. CAPs do not invest in Europe's network infrastructure and play no part in improving the consumer experience.
4. CAPs do not handle their data in the most responsible way possible.
5. Additional private investments from CAPs are needed to deploy fibre network infrastructure.

Policymakers should recognise and support data handling best practices and investments which are already undertaken by the industry.

<sup>16</sup> Analysys Mason, "The impact of tech companies' network investment on the economics of broadband ISPs", October 2022, available [here](#).

<sup>17</sup> Ofcom, "Statement: Net neutrality review", October 2023, available [here](#).

<sup>18</sup> BEREC, "BEREC preliminary assessment of the underlying assumptions of payments from large CAPs to ISPs", October 2022, available [here](#).

<sup>19</sup> Ibidem.

<sup>20</sup> Ofcom, "Statement: Net neutrality review", October 2023, available [here](#).

<sup>21</sup> Such as the European Recovery and Resilience Facility and the Connecting Europe Facility (CEF) Digital.

<sup>22</sup> BEREC, "BEREC's Response to the Exploratory Consultation", May 2023, available [here](#).



## PROPOSAL 2.A – CONTENT DELIVERY NETWORKS (CDNS)

### Why is this important?

- Caches and CDNs significantly improve the quality of content delivery for end users. They reduce latency and the distance data needs to travel to reach end users, improve energy efficiency, and reduce costs for both ISPs and end users.
- However, restrictive policies implemented by certain ISPs reduce the possibilities of CDN providers to roll out their services, ultimately leading to suboptimal connectivity and a worse user experience.
  - Indeed, as reported by Ofcom, CAPs sometimes face issues with ISPs, such as “lack of physical space in suitable ISP network exchanges to install caches, or lack of agreement from ISPs allowing any installation of caches in their buildings”.<sup>23</sup>

### What to do?

- ✓ Incentivise ISPs to allow the installation of CDNs and/or caches in their networks, which will benefit end users and ISPs alike.
- ✓ Develop policies that incentivise the adoption of efficient and mutually beneficial technologies such as caching, foster the adoption of CDNs, and allow more for efficient delivery of traffic.

### What to avoid?

- ✗ Allow incumbent ISPs to leverage their market power in order to impose restrictive policies in relation to the installation of caches and CDNs.

## PROPOSAL 2.B – VIDEO ENCODING TECHNIQUES

### Why is this important?

- CAPs continue to develop new video encoding techniques that compress the size of files, which in turn reduces the amount of bandwidth required to deliver those files to end users. This helps ISPs in delivering traffic to customers, thereby driving down ISPs’ costs and significantly improving the user experience.
- CAPs’ best practices in data bandwidth management increase end users’ experiences and reduce ISPs’ costs.

### What to do?

- ✓ Support industry-led initiatives on best data handling practices that help to formalise some of CAPs’ existing practices (e.g. prioritisation of wi-fi downloads, avoidance of peak time for downloads, video encoding, and adaptive bitrate delivery techniques).

<sup>23</sup> Ofcom, “Statement: Net neutrality review”, October 2023, available [here](#).

- ✓ Encourage exchange of information and good practices on how voluntary ISP-CAP collaboration on peak and spike traffic management (e.g. planning for large updates or downloads) is possible while respecting existing policy objectives.

### What to avoid?

- ✗ Any internet levy, or other new instruments and obligations for mandatory payments, that claim to incentivise better data handling practices, given the absence of structural congestion and the fact that the 2015 Open Internet Regulation already provides for rules on traffic management in case of congestion.
- ✗ Any unilaterally mandated obligation on video optimisation or compression technique.

## PROPOSAL 2.C – SUBSEA CABLES

### Why is this important?

- Subsea cables are a key part of our internet infrastructure, guaranteeing interconnection between different parts of the globe.
- Subsea cables significantly help ISPs in the delivery of content to end users.<sup>24</sup>
- Subsea cables also have a positive impact on Europe's GDP and digital economy.<sup>25</sup>
- The necessity to deploy subsea cables fosters partnerships and consortia between ISPs and CAPs, with positive spillover and benefits for both sectors.

### What to do?

- ✓ Support increased partnerships between CAPs and local ISPs for the deployment of additional subsea cables.
- ✓ Support uniform approaches on subsea-cable permitting and on exclusive economic zones under UNCLOS.

### What to avoid?

- ✗ Proposals that would impose more burdensome regulatory requirements on subsea cable projects, e.g. general authorisation / licensing requirements or burdensome approval processes.
- ✗ Policies which discriminate against Europe's transatlantic partners and deter the development of partnerships in the context of subsea cables.

<sup>24</sup> Analysys Mason, "The impact of tech companies' network investment on the economics of broadband ISPs", October 2022, available [here](#).

<sup>25</sup> Anderson, B., Merker, J., Wagstaff, J., Brower, A., Lakhani, R., O'Connor, A.C. "Economic impact of Meta's subsea cable investments in Europe." RTI International. December 2021, available [here](#).



### III. Improve transparency and control over European connectivity funding

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Networks are a key part of the strategic infrastructure upon which Europe will build its future in the digital space. It is therefore fundamental that this vital backbone is resilient and further diversified. This also requires more clarity on the resources needed to maintain this infrastructure. The European Union has allocated vast amounts of money to network infrastructure rollout and maintenance, through funds such as the European Recovery and Resilience Facility<sup>26</sup> as well as the Connecting Europe Facility (CEF) Digital<sup>27</sup>.

#### What is the problem, if any?

The debate of recent years on network infrastructure rollout has been characterised by a lack of transparency and common understanding around the real costs involved and resources required for the deployment and maintenance of network infrastructure. There also is a lack of clear-cut analysis on how plenty available funds to deploy 5G and fibre connections are currently employed. Indeed, some EU countries seem to have achieved better network coverage with less resources in a shorter amount of time than others.

#### Why is this important?

- Having a clear idea of exactly how EU funds are being spent would allow for the more efficient allocation of future funding.

#### What to do?

- ✓ Establish a comprehensive overview of all public resources that are available, or could be made available, for supporting network infrastructure rollout.
- ✓ Assess how these resources have been used so far, or why they have not been (properly) used, and employ these insights to address any major barriers that hamper infrastructure deployment – including by fostering a competitive market.
- ✓ Create a pan-European database of best practices regarding network infrastructure rollout, learning from countries that have achieved better network rollout what variables helped them produce these better results.

#### What to avoid?

- ✗ An inefficient allocation of funds, which lacks evidence based approach.

### IV. Support open peering policies

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<sup>26</sup> European Recovery and Resilience facility, available [here](#).

<sup>27</sup> Connecting Europe Facility - CEF Digital, available [here](#).

The IP interconnection market is competitive<sup>28</sup>. Within this ecosystem, networks successfully interconnect with one another to deliver traffic. This is done both through (largely settlement-free) direct peering relationships, as well as agreements with wholesale transit providers.

According to Analysys Mason,<sup>29</sup> 99.998% of all peering agreements were settlement-free in 2021. Similarly, transit prices remain low thanks to a competitive environment, which in turn incentivises smaller independent internet service providers (ISPs) to enter the market.<sup>30</sup>

### What is the problem, if any?

The problem in the market is the documented anti-competitive behaviour of certain incumbent telecom companies, that operate selective or restrictive peering policies. Indeed, the very few disputes<sup>31</sup> in the IP interconnection market stem from the behaviour of some big telecom operators.

In order to connect to their networks, these incumbent ISPs, leveraging their historic market positions for negotiating power, demand prices higher than the industry standards. This forces other networks and service providers – who reasonably want to abide by standard market practices to reach customers – to take a detour, having to use longer routes and thereby increasing latency, costs, and ultimately leading to a worse internet experience for end users.

The experience in South Korea is a clear example of how these practices lead to negative consequences. South Korea is experiencing one of the highest latency rates among OECD countries<sup>32</sup>, some content providers exited the country's market<sup>33</sup>, and consumers are experiencing lower quality of service and increased prices.<sup>34</sup>

### Why is this important?

- Consumers want a fast and reliable internet connection. The best way to achieve that is through settlement-free peering, since it ensures:
  - Local delivery of traffic, which leads to low latency (i.e. no buffering).
  - Increased resilience of networks through multiple traffic paths, which leads to a more reliable internet experience and addresses diversity and security considerations.

<sup>28</sup> BEREC, “BEREC input to the Commission's exploratory consultation on the future of the electronics communications sector and its infrastructure”, May 2023, available [here](#).

<sup>29</sup> Analysys Mason, “IP interconnection on the Internet: a European perspective for 2022”, September 2022, available [here](#).

<sup>30</sup> Cloudflare “The European Network Usage Fees proposal is about much more than a fight between Big Tech and Big European telcos”, May 2023, available [here](#).

<sup>31</sup> WIK Consult, “Competitive conditions on transit and peering markets: Implications for European digital sovereignty”, February 2022, available [here](#).

<sup>32</sup> OECD, “Broadband networks of the future, OECD Digital Economy Papers, No. 327”, July 2022, available [here](#).

<sup>33</sup> Tech Crunch, “Twitch to shut down in Korea over ‘prohibitively expensive’ network fees”, December 2023, available [here](#).

<sup>34</sup> Research ICT Solutions, “Competition and Investment in the Internet Value Chain in Europe”, October 2022, available [here](#).

- Local exchange of data, instead of backhauled and aggregated in larger volumes at regional internet hubs, which again leads to low latency.
- A competitive IP interconnection market ensures the presence and development of different actors, competitive pricing, and generally speaking a healthier and better functioning internet ecosystem in Europe.

### What to do?

- ✓ Incentivise telecom operators to adopt open peering policies.
- ✓ Have periodic assessments by independent bodies, such as the Body of European Regulators of Electronic Communications (BEREC), as well as its national members for their respective markets, to analyse the behaviour of telecom players in the IP interconnection market, as well as the overall state of that market.

### What to avoid?

- ✗ Do not introduce any type of mandatory payments to ISPs for content and application providers (CAPs), regardless of the form they might take.

## V. Foster consumer demand for fast connectivity such as 5G services

5G is the latest standard for mobile communications. It allows for a faster delivery of data, lower latency, and more reliable connectivity for mobile devices and applications.

However, despite the promising nature of 5G technology, and with population coverage already standing at 81%,<sup>35</sup> “5G is still falling short in quality with regards to end-users' expectations and industry needs”<sup>36</sup>.

### What is the problem, if any?

To date, for most consumers there are not that many concrete use cases to use (or pay for) 5G technology. This has obviously created a demand gap: telecom operators have been investing in next-generation networks, but why would a consumer switch to more expensive technology, if they don't see any benefits?

Indeed, according to the 2023 GSMA Mobile Economy report,<sup>37</sup> in 2022 5G technology comprised only 11% of the market in Europe, whereas by 2030, 5G uptake is expected to grow up to 87%.<sup>38</sup>

<sup>35</sup> DESI 2023 indicators, available [here](#).

<sup>36</sup> 2023 Report on the state of the Digital Decade, available [here](#).

<sup>37</sup> GSMA, The mobile economy 2023, available [here](#).

<sup>38</sup> 5G Observatory Biannual Report October 2023, available [here](#).

## Why is this important?

- An increase in consumer demand for 5G could generate greater need for telecom operators' services, potentially yielding positive effects on their return on investments in 5G infrastructure.
  - Standalone 5G can allow for faster delivery of data, lower latency, and increased connection performance in critical locations (e.g. crowded event venues and airports).
  - 5G can also lead to the development of new industrial use cases, for example in healthcare (think of remote patient monitoring and telemedicine for example) and manufacturing (smart factories).

## What to do?

- ✓ Focus on nurturing a pro-innovation regulatory environment that encourages content and applications providers to deploy new products and services for which 5G can offer significant user-experience improvement.
- ✓ Encourage partnerships between CAPs and telecom companies, offering attractive innovative bundles with experience parameters that European consumers will really value and actually want, such as 5G cloud gaming for example.<sup>39</sup>

## What to avoid?

- ✗ Imposing network usage fees, or any similar mechanisms, which would reduce the incentive for content and application providers to innovate and develop new services, thereby also decreasing demand for 5G subscriptions.
- ✗ The generalisation of specialised services as a back-door to circumvent the net neutrality rules. Specialised services should only be provided in accordance with the BEREC Guidelines on the Implementation of the Open Internet Regulation.<sup>40</sup>

## VI. Ensure the sustainability of networks

CAPs increasingly invest in green technologies and energy-efficient traffic delivery, with positive environmental effects. Caches and content delivery networks significantly reduce the distance that data needs to travel to reach end users, thereby shrinking the environmental footprint. Moreover, CAPs' data centres are increasingly making the transition to being fully powered by renewable energy.

Cloud-powered solutions also have great environmental benefits, such as energy savings of up to 80%<sup>41</sup> when moving workloads from on-premise data centres to the cloud. Likewise,

<sup>39</sup> Ericsson, "5G cloud gaming drives service provider revenue growth", available [here](#).

<sup>40</sup> BEREC, "BEREC Guidelines on the Implementation of the Open Internet Regulation", paragraph 99, June 2022, available [here](#).

<sup>41</sup> Amazon, "EU businesses that move to AWS Cloud can improve energy efficiency and reduce carbon emissions", November 2021, available [here](#).

energy efficiency gains of up to 70% are reported when running 5G services in the cloud rather than on traditional processors.<sup>42</sup>

## What is the problem, if any?

The public debate around CAPs' energy consumption seems stuck in an old paradigm, whereby these activities are only looked at in isolation. For example, data centres are considered to be extremely energy-intensive, while the evidence shows that they are significantly more energy efficient than the combined footprint of the on-premise infrastructure they replaced.<sup>43</sup>

## Why is this important?

- Technologies such as caches, CDNs, and cloud solutions help reduce greenhouse gas emissions and contribute to reaching Europe's climate objectives.

## What to do?

- ✓ Promote the deployment of more energy-efficient technologies (e.g. CDNs, cloud technologies), the reuse of existing physical infrastructure, and network sharing when appropriate.
- ✓ Incentivise the use of renewable energy to power connectivity infrastructure.

## What to avoid?

- ✗ Any burdensome regulation of specific technologies – such as cloud, caching and CDNs – which will limit or disincentive their widespread adoption.

## Conclusion

CCIA Europe believes that a more open approach to all technology solutions available, as well as an inclusive dialogue with all relevant partners, are key to ensuring that Europe reaches its 2030 goals.

The proposals that this paper puts forward show that there are many potential ways to reach the 2030 connectivity targets. However, this requires a paradigm change, taking into consideration all partners that together can help deliver on Europe's ambitions. CCIA Europe's Members have shown great support to Europe's digital goals and are committed to continue playing their complementary role in connectivity, in a continuous effort to give Europe's digital transition a boost.

## About CCIA Europe

The Computer & Communications Industry Association (CCIA) is an international, not-for-profit association representing a broad cross section of computer, communications, and internet industry firms.

<sup>42</sup> NEC, "NTT DOCOMO and NEC Reduce Power Consumption for 5G", September 2022, available [here](#).

<sup>43</sup> IEA, "Data Centres and Data Transmission Networks", July 2023, available [here](#).

As an advocate for a thriving European digital economy, CCIA Europe has been actively contributing to EU policy making since 2009. CCIA's Brussels-based team seeks to improve understanding of our industry and share the tech sector's collective expertise, with a view to fostering balanced and well-informed policy making in Europe.

Visit [ccianet.org/hub/europe/](https://ccianet.org/hub/europe/) or [x.com/CCIAEurope](https://x.com/CCIAEurope) to learn more.

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