AMBITIONS FOR EUROPE 2024

RETHINKING DIGITAL, ENERGY AND MOBILITY REGULATION

CERRE WHITE PAPER

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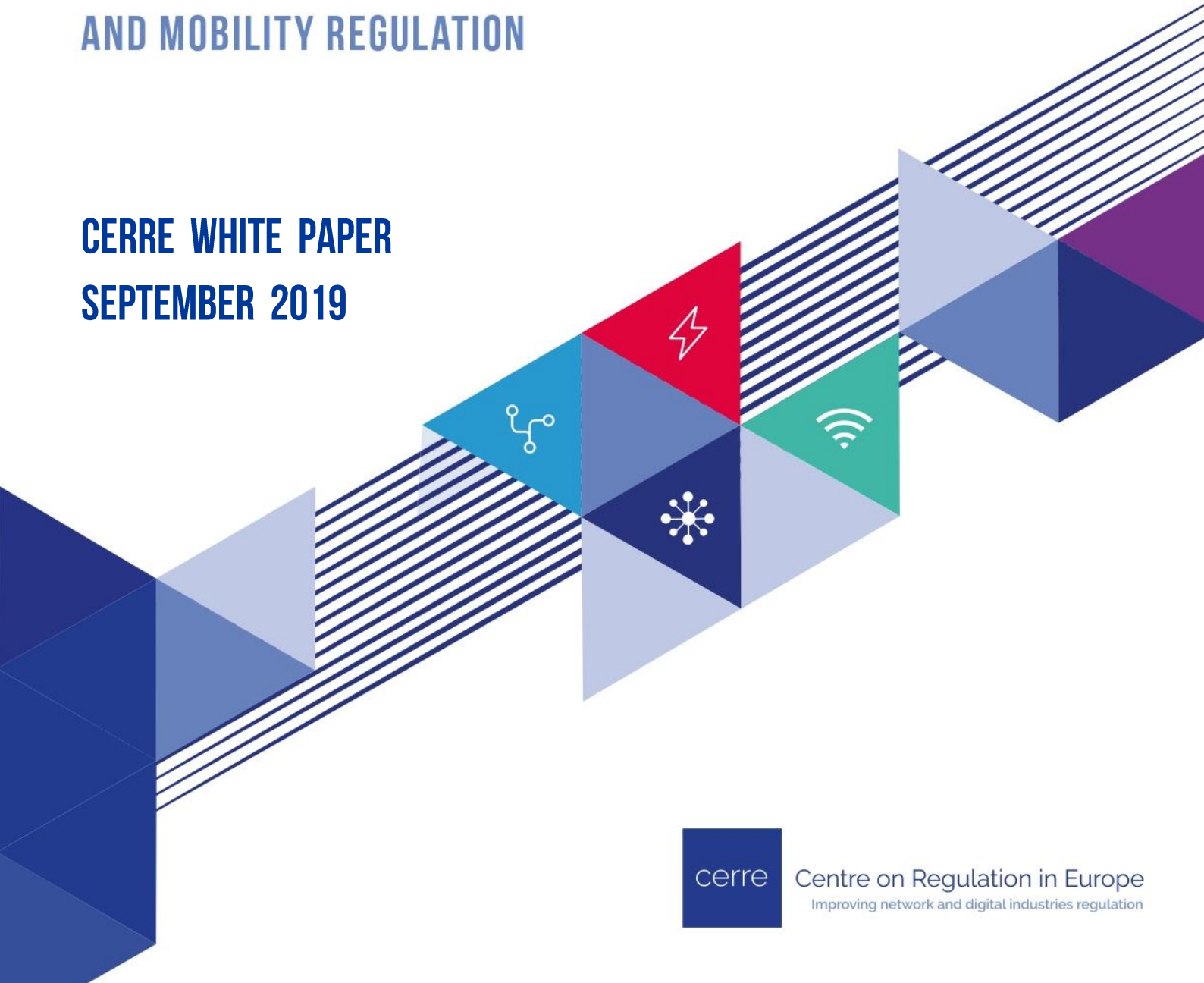


cerre Centre on Regulation in Europe
Improving network and digital industries regulation

CONTENTS

FOREWORD FROM THE DIRECTOR GENERAL

Smarter regulation to bring Europe closer to its citizens

The European project is going through a profound crisis. Rising inequalities, rapid digitalisation and the increasing impact of climate change are having unprecedented effects on our lives and our societies. The perceived lack of action around those issues is fuelling a deep distrust in traditional political forces and institutions. Regaining European citizens' trust is now a fundamental responsibility for the new EU leadership. Smarter regulation, which puts innovation, sustainability and fairness at its core, is crucial to empower EU citizens and restore trust in suffering democracies.

Delivering on Europe's climate, digital and mobility ambitions, as well as strongly defending European values of democracy, solidarity and the rule of law are challenging tasks. Yet they are achievable if European institutions act together in these critical sectors for the European economy and society. With the CERRE White Paper 2019- 2024, CERRE's academic team has conducted an independent policy analysis and makes concrete recommendations for smarter regulation for the digital, energy and mobility sectors.

The ongoing digital revolution offers countless opportunities to improve Europe's economy and society. Much digital innovation comes from European start-ups. It is essential therefore that the EU secures the main ingredients for their take-up and scale-up, such as access to data, skills and computing power, as well as to risky capital. But the digital shift comes with its own challenges and threats. The economic power of some digital companies exceeds that of many EU Member States. To guarantee its digital sovereignty, Europe needs to replace national rules by common EU regulation that promotes innovation and fairness. To be effective, this regulation should possibly be enforced by a common EU regulator.

Waves of grassroots movements across Europe have clearly shown that urgent climate action and greater social justice go hand in hand. The energy transition indeed has a cost, which must be borne in a fair way, taking account of the European value of solidarity. European policies must from now on directly address citizens' concerns about the distribution of the cost of climate policies. This involves taking distributional effects into account in new policy design but also incorporating them into current legislation and regulation.

Europe's promotion of mobility of goods and people without properly pricing external costs, such as pollution, is one example of some of the fundamental incompatibilities of the Union's own decarbonisation ambitions. Restraining mobility is economically, socially and politically unacceptable, yet European policies must fairly and efficiently encompass those external costs.

Finally, with technologies and business models changing quickly and unpredictably, Europe will need to move from the detailed, micro regulation of yesterday to new, principle-based regulation. Regulatory authorities should test and experiment with new regulatory solutions in partnership with all stakeholders. Regulators, like all of us, should learn by doing, to the mutual benefit of service providers and customers.

In tune with today's reality, smarter regulation should be the hallmark of a European Union dedicated to working for its citizens. This will contribute to the much-needed consolidation of our democracy and to a stronger Europe.

Bruno Liebhaberg

SMART RULES AND INSTITUTIONS

INTRODUCTION

The modern economy has several characteristics that should shape current and future regulatory design. It is dynamic, with rapid changes in technologies and business models fuelled by the increasing impact of innovation. It is unpredictable, with innovation which is often disruptive and difficult to anticipate. It is global, with many firms, in particular in the digital sector, offering their services all over the world.

To remain effective in delivering their core objectives, such as innovation, sustainability and fairness, our rules and institutions should adapt to this dynamism, unpredictability and global dimension.

They should also seize the opportunities of digital technologies such as big data and Artificial Intelligence (AI) to improve their effectiveness and efficiency. We propose three ambitions to adapt EU rules and institutions to the economy and society of the 21st century.

Ambition #1: Adaptive and principles-based regulation

Principles-based rules

Given the increasingly rapid and uncertain evolution of markets, **regulation should be principles-based** to adapt more easily as technologies and markets change.[1] This is the case of the e-Commerce Directive which is short and has remained robust while digital technologies have dramatically changed since the Directive was enacted nearly 20 years ago.[2] Those **principles should then be clarified through their implementation** by administrative and independent regulatory authorities, and if needed by the legal system, which are the best placed to apply the rules taking into account all the characteristics of the case submitted to them.

To be actionable and effective, the **principles of the rules need to be sufficiently clear** but this does not mean that the rules need to be detailed. In fact, detailed rules quickly become outdated because legislation moves more slowly than technology and markets, and this time lag has increased with the recent technological acceleration. When outdated, detailed rules often miss their objectives and, possibly, even backfire and stifle innovation.

Principles-based rules are also more easily **applicable in a horizontal manner** to all sectors of the economy and to all technologies. In general, this is preferable as it minimises distortions across or within economic sectors. Of course, rules which are sectoral or perhaps not technology-neutral may be justified when a sector or a technology raises particular challenges. However, their risks of economic or technology distortions are much higher.

Co-regulatory enforcement

Principles-based rules may lead to less legal certainty that, in turn, may increase regulatory costs and reduce regulatory effectiveness. In this case, **rules need to be complemented with soft-law instruments** such as recommendations, guidelines, or codes of conduct. On the one hand, these instruments could clarify the application of the principles to cases presenting some specific characteristics. On the other hand, they are more flexible and easily adaptable than a legislative instrument, thereby reducing the costs of the time lag between technology and regulatory change.

Those soft-law instruments may be **adopted by enforcement authorities on the basis of their past experience in applying the principles-based rules to a series of past cases**. This is, for instance, the case of the numerous Guidelines adopted by the European Commission under the principles-based competition rules of the Treaty on the functioning on the European Union and the Merger Regulation[3], or the Guidance adopted by the European Commission Services to clarify the application of consumer protection law.[4]

Soft-law instruments may also be **adopted by the stakeholders themselves,** either on their own initiative or at the request, or under the gentle pressure, of authorities. This is the case of **self- or co-regulatory Codes of Conduct**. In some cases, they are adopted to clarify the implementation of principles-based rules to new settings. In most of the cases, they are creating new obligations that are in line with, but go further than, existing principles-based legislation. In the EU, there is an

[1] As already proposed in several CERRE Reports such as in A. de Streel and P. Larouche, *An Integrated Regulatory Framework for Digital Networks and Service*, January 2016, available at: https://www.cerre.eu/publications/integrated-regulatory-framework-digital-networks-and-services-0

[2] Directive 2000/31 of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce), OJ [2000] L 178/1.

[3] http://ec.europa.eu/competition/antitrust/legislation/legislation.html and http://ec.europa.eu/competition/mergers/legislation/legislation.html

[4] DG Justice Guidance document of June 2014 on the Consumer Rights Directive, Commission Staff Working Document of 25 May 2016 on Guidance on the implementation/application of the Directive 2005/29 on Unfair commercial practices, SWD(2016) 163.

extensive use of such self- and co-regulation. For instance, several Codes of Conduct that have been adopted to reduce illegal or harmful content online.[5]

Self- and co-regulation can be very useful when the asymmetry of information between the regulators and the regulated groups is high, and/or when the regulatory issues are new and the authorities are unsure about the best regulatory remedies. However**, to be effective and legitimate, self- and co-regulatory rules need to reflect the views and the interests of all stakeholders** and not only that of the most powerful ones (i.e. self-regulation should not be self-serving) and the **implementation of the rules needs to be closely and regularly monitored** by the stakeholders involved and public authorities.

Experimental enforcement

The asymmetry of information and the novelty of some regulatory issues should also lead **authorities and judges to be more experimental when implementing the rules and designing regulatory remedies**. NESTA, a UK innovation foundation, calls for 'anticipatory regulation' stating that: "When regulators have to take on new functions for which they lack an established playbook, or need to deal with uncertain market developments, a flexible, iterative learning approach is needed rather than a 'solve-and-leave' mentality. Where regulations are being developed for a new area or introduce substantial changes, it is difficult to know exactly what the impacts will be. Utilising a more experimental, trial and error approach, at least at the beginning, rather than immediately creating definitive rules can help build evidence on what works to achieve the desired outcomes. Standards, testbeds/sandboxes or exhorting best practice are different ways in which regulators can provide more flexible interventions."[6]

Similarly, Nobel Prize winner Jean Tirole has called for "more agile policies, such as business review letters (giving limited legal certainty to firms for a practice, subject to conditions set by the authorities) or regulatory sandboxes where new business models can be tested in a "safe" environment".[7] **Regulatory sandboxes** are now used, for instance, by the Financial Conduct Authority in the UK and allow financial businesses that need an authorisation to test innovative propositions in the market, with real consumers and with the help of the regulatory authority.[8]

Of course, experimental regulation raises a number of challenges, in particular in terms of feasibility, costs for the firms or information collection for the authorities. One of the main challenges is the inherent **tension between regulatory experimentation and legal predictability**. During the experimentation phase, legal predictability may be low but this is the transient price to pay to find the most effective and efficient rules and remedies. In an environment that is changing rapidly and frequently, the determination of the best remedy may be more difficult, and hence more costly, but its benefit may also be higher.

Issues for policymakers

- *Ensure that future rules are **principles-based**, to adapt easily to technology and market evolutions and **sufficiently clear** to be actionable and effective.*
- *Encourage the development of more experimental enforcement of regulation*

[5] As explained in A. de Streel, M. Buiten and M. Peitz, *The Liability of Online Platforms: Should exceptionalism end?* CERRE Policy Report, September 2018, available at: https://www.cerre.eu/publications/liability-online-hosting-platforms-should-exceptionalism-end

[6] Armstrong et al (2019) 'Renewing regulation 'Anticipatory regulation' in an age of disruption', NESTA, March 2019, p.27, available at: https://www.nesta.org.uk/report/renewing-regulation-anticipatory-regulation-in-an-age-of-disruption/

[7] https://www.livemint.com/Technology/XsgWUgy9tR4uaoME7xtITI/Regulating-the-disrupters-Jean-Tirole.html

[8] https://www.fca.org.uk/firms/regulatory-sandbox

Ambition #2: Digitally-based regulation and RegTech

Digital technologies such as big data and AI offer important opportunities to improve the performance and the operations of regulatory authorities. This is often described as the concept of *RegTech*.

Although there is no single definition, RegTech includes, on the one hand, the use of technology by regulatory agencies for operations such as market surveillance as well as risk identification and monitoring (also known as 'SupTech') and, on the other hand, the use of technology by regulated entities to meet their regulatory and compliance requirements more effectively and efficiently.[9]

The use of digital technologies by regulatory agencies ranges from (i) data reporting and using big data analysis technologies, (ii) to the use of Artificial Intelligence, machine learning and natural language processing, (iii) to regulatory codification.

Data-driven regulation

As data can be collected and processed at much lower costs than before, the use of big data techniques by regulatory authorities can improve the performance of their existing tasks and can facilitate new tasks that can help consumers and stakeholders to make the market work better. In July 2019, a group of French regulatory agencies adopted a Memo on **data-driven regulation,** defined as "using the power of information to understand the market and shed light on how it operates in a factual fashion, to then steer it more effectively in the right direction and better protect consumers and their rights in these different markets".[10]

According to the French authorities, better and more intensive use of data can, on the one hand, **amplify the regulator's capacity to act in its core area of responsibility, notably through better supervision** of market players and, on the other hand, **enable users to make better informed choices, thereby steering the market in the right direction**. This requires the scaling up of the human skills and technical capacities of regulators in collecting, storing and processing data.

AI-driven regulation

The rapid progress of **different Artificial Intelligence techniques** (in particular deep learning and natural language processing techniques) **as well as visualisation techniques enables regulatory authorities to improve their operations**. As a side-effect, the use of AI tools by regulatory agencies will also improve their understanding of new technologies that they may need to regulate.

Currently, several financial regulators are exploring the potential of AI and visualisation techniques in a number of areas: to facilitate and improve reporting requirements by regulated firms and ease the compliance control of the regulator; to facilitate the understanding of complex regulation by regulated firms, protected consumers and users; or to enable more efficient detection of violations of the law.[11]

[9] *G20/OECD Policy Guidance on Financial Consumer Protection Approaches in the Digital Age*, 2018, p.16, available at: https://www.oecd.org/finance/G20-OECD-Policy-Guidance-Financial-Consumer-Protection-Digital-Age-2018.pdf. On the topic, see also the Conference organised by the Club of Regulators in cooperation with the OECD Network of Economic Regulators, *RegTechs: Feedback from the First Experiments*, available at: http://chairgovreg.fondation-dauphine.fr/node/708.
[10] Autorité de la concurrence, AMF, Arafer, Arcep, Arjel, CNIL, CRE, CSA, *Data-driven regulation*, July 2019, p.3, available at : https://en.arcep.fr/news/press-releases/p/n/cooperation-between-regulators.html
[11] The UK Financial Conduct Authority is very active on the topic : https://www.fca.org.uk/firms/regtech

Compliance by design

Going one step further, in some cases, the **regulator could be replaced by computer code, when regulatory compliance is enshrined in the design of digital technologies**.[12] For instance, an obligation of privacy-by-design is now imposed by the GDPR.[13] Another, more obvious example, are the smart contracts based on blockchain and distributed ledger technologies that are automatically executed if some conditions, enshrined in the code, are met.[14] In those cases, compliance is automated and the role of the regulator is therefore by-passed or at least reduced.

The development of RegTech presents many opportunities that should be seized by European regulators. However, at the same time, RegTech raises a series of ethical and legal issues that need to be addressed by the next European Commission.

Issues for policymakers

- *Enable regulators to **seize the opportunities of digital technologies** to improve their operations.*
- *Consider whether future regulation can be transferred to the computer code, with **compliance by design.***

Ambition #3: EU rules and enforcement

It is **not enough to have good rules; they should ideally be adopted and enforced at the optimal level of governance**. There is an extensive literature on the optimal level of governance in the EU which should be determined on the basis of numerous criteria.[15] Some of those criteria, like heterogeneity of political preferences or the asymmetry of information, point towards the national or even local level while others, like the benefits of the single market or cross-border externalities point towards the European level.[16]

One rule

When the benefits of the single market can be significant because of the opportunities for freedom of movement, rules should at least be unique (with the country of origin principle) **and ideally decided at the EU level** (with a harmonisation of the national rules). This has been the main rationale of EU legislation in the network and digital industries over the last 30 years. This **approach is even more valid today as the digitisation of the economy** and of society makes more services borderless (just one click away) and, in turn, increases the benefits of

[12] As famously proposed by the Harvard Professor Lawrence Lessig in *Code and Other Laws of the Cyberspace – Version 2.0*, 2006, Basic Book.
[13] Regulation 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46 (General Data Protection Regulation), OJ [2016] L 199/1, art. 25(1): "Taking into account the state of the art, the cost of implementation and the nature, scope, context and purposes of processing as well as the risks of varying likelihood and severity for rights and freedoms of natural persons posed by the processing, the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, *implement appropriate technical and organisational measures*, such as pseudonymisation, *which are designed to implement data-protection principles*, such as data minimisation, in an effective manner and to integrate the necessary safeguards into the processing in order to meet the requirements of this Regulation and protect the rights of data subjects" (our underlining)
[14] According to Wikipedia, a smart contract is: "a computer protocol intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract. Smart contracts allow the performance of credible transactions without third parties. These transactions are trackable and irreversible".
[15] W. Oates, "An essay on fiscal federalism", *Journal of Economic Literature* 37(3), 1999, 1120-11149 and "Towards a Second-generation Theory of Fiscal Federalism", *International Tax and Public Finance* 12, 2005, 349-373. For an application on this theory to the EU: A. Alesina, A. Angeloni and I Schunnecht, "What Does the European Union Do?", *Public Choice* 123, 2005, 275-319.
[16] See also EPRS, *Mapping the Cost of Non-Europe: 2014-19*, 4th edition, December 2017, available at: http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_STU(2017)603239

the single market. In addition, more firms, in particular in the digital sector, are global players, and may have an annual turnover which is higher than the GDP of some EU Member States. In this case, the regulation of these firms needs to be decided and enforced at the EU level to be credible and effective.

One enforcement

While more and more rules in the network and digital industries are decided at the EU level, they are in principle enforced at the national level by national administrative or regulatory authorities and judges. Only exceptionally are the rules enforced at the EU level, for instance, in the case of competition law or the financial regulation and supervision of significant banks. With the development of EU integration and the recognition of the increased need for harmonisation of rules and enforcement, **several EU networks of national regulators** – such as the Body of European Regulators for Electronic Communications (BEREC), the European Regulators Group for Audio-visual Media Services (ERGA), the Agency for the Cooperation of Energy Regulators (ACER), the European Data Protection Board (EDPB) and the Consumer Protection Cooperation Network (CPC) - **have been created and strengthened** in recent years.

Many reforms are just being implemented, and one of the first tasks of the next European Commission will be to **assess the effectiveness of these reforms. The assessments should consider whether the strengthened EU networks of national regulators** contribute enough to the harmonisation of the enforcement of EU rules, in particular when the benefits of the single market are important.

In the digital sector, where services are inherently borderless and several firms have a global presence and offer their services in all the Member States, **an EU regulator, akin to the Federal Trade Commission in the US, may be appropriate**. This has already been done in the financial and banking sector with the recent establishment of an EU regulator (the Single Supervisory Mechanism within the European Central Bank) for significant banks in Europe.[17]

Issues for policymakers

- *Create a truly single market, governed by unique rules, with a common enforcement across Europe.*
- *Consider whether pan-European regulator(s) are required for sectors that are inherently borderless.*

[17] https://www.bankingsupervision.europa.eu/about/thessm/html/index.en.html

AN INNOVATIVE DIGITAL EUROPE

INTRODUCTION

Europe is in the midst of a digital revolution. It offers opportunities for people and for business, but also brings about challenges at an individual and societal level. To enable Europe to deliver both innovation and fairness, and to support this digital revolution while empowering citizens, policymakers must address some critical issues. However, in order to see the challenges that lie ahead, it is worth highlighting what has been achieved in the past five years

The Digital Single Market (DSM) strategy adopted in May 2015 has remained one of the Commission's key priorities throughout its mandate and was centred on three broad objectives. First, delivering better access to digital good and services, in particular by removing barriers to cross-border e-commerce and online content. Second, fostering an environment for digital networks and services to grow through the provision of high quality infrastructure and appropriate regulation. Third, using digital technologies to drive economic growth.

The European institutions have had some notable achievements in the past five years. At a broad level, a mix of hard law (Regulations and Directives) and soft law (recommendations and guidelines) have helped the move towards the harmonisation of rules across the EU. Significant effort has also been made to harmonise national-level enforcement, through the improved operation of regulatory agencies and by enhancing their cooperation at a European level. Alongside these regulatory actions, non-regulatory tools have also been used to further develop the DSM, such as the use of benchmarking to help the sharing of best practice among Member States, the targeted use of EU funds for digital initiatives and the implementation of policy action plans to better coordinate EU and national digital policies.

In facilitating e-commerce, the emergence of online platforms and the provision of online services, European policy has removed some barriers with the DSM: allowing for cross-border portability of some content, a prohibition on unjustified geo-blocking, new copyright rules and a simplification of VAT procedures. Several national rules governing the operation of online platforms have been harmonised, particularly for platforms offering audio-visual media services and for platforms hosting illegal or harmful content. While e-government and the online provision of public services remains a national competence, European policymakers have at least attempted to facilitate the sharing of best practice.

Access to, processing and the control of data have emerged as critical issues in recent years and are vital both to protect European values and fundamental rights, but also to enable a new wave of technological developments including Artificial Intelligence. The Juncker Commission eased data location requirements and harmonised several national rules to facilitate cross-border data business and the movement of data, and EU funding has been made available to stimulate the development of Artificial Intelligence research and development. At the same time, the General Data Protection Regulation and the Open Data & Public Sector Information Directive have secured privacy protection for citizens. In addition, the establishment of the European Data Protection Board will help harmonise enforcement of these regulations throughout the Union. However, questions are already emerging as to whether such regulations are sufficiently future-proof, in light of developments in Artificial Intelligence and data processing.

At a broader level, more general consumer protection provisions have been updated to account for the particular characteristics of the digital economy, including the lack of monetary prices for some services or the difficulties in understanding the functioning of algorithms. At a systemic level, greater attention is being paid to cybersecurity threats, with improved cooperation between national agencies, the emergence of ENISA as an EU-level cybersecurity agency and the establishment of a new EU Competency Centre.

The benefits of the digital economy cannot be delivered without reliable, modern infrastructure. The Commission's strategy on Connectivity for a European Gigabit Society, adopted in September

2016, called for 5G coverage for all urban areas and connectivity offering at least 100 Mbps for all European households, by 2025. While the ambition of such targets is commendable, their achievement cannot be taken for granted.

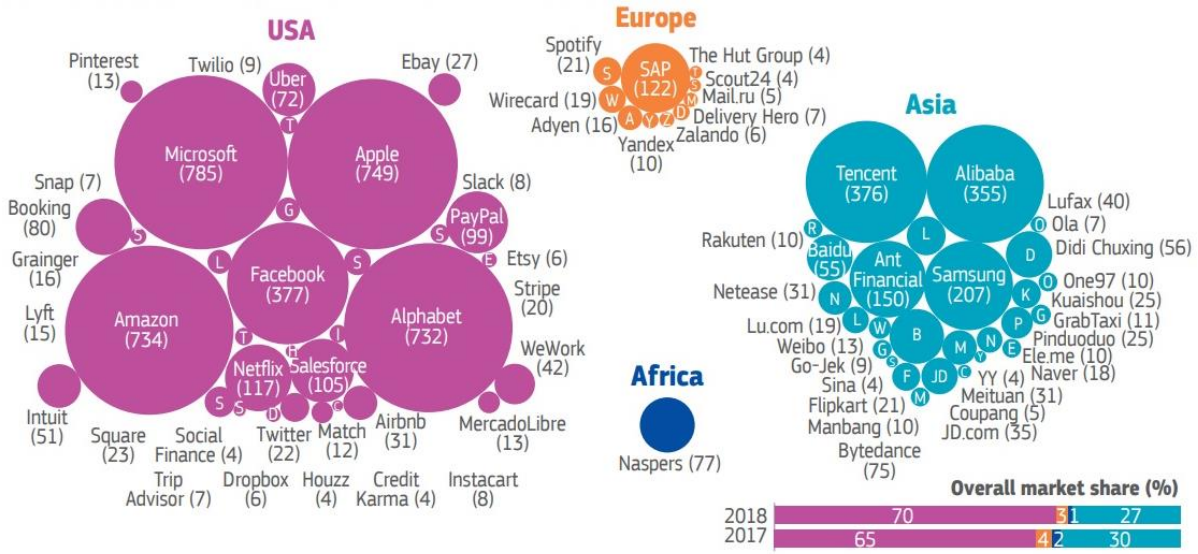
The regulatory framework was substantially revised and adopted as the new European Electronic Communications Code (EECC) to better align with the connectivity objectives. Rules have been further harmonised to ease market entry and promote more efficient use of spectrum, while cross-border issues like roaming have also been successfully tackled.

Despite the achievements of the past five years, much work remains to be done.

Effective implementation of the many regulatory & non-regulatory actions that have been taken is far from guaranteed. Implementation will need to be harmonised across the Union and the efficiency and effectiveness of the enforcement will have to be evaluated. In addition, the rapid evolution of technology and markets, and their importance to the European economy and society, mean that the pace of reform will have to be sustained. However, at the same time, policymakers must do more to assess the impact of regulation - legislative or regulatory action in itself should not become the objective in itself.

In the platform economy, Europe is certainly able to produce promising technology companies and world class computer scientists, mathematicians, and software developers. Yet European-based platforms continue to lag behind their North American and Asian competitors when it comes to global market share.

Figure 1: Market valuations of online platforms by continent, in $bn (December 2018)



Source: Dr Holger Schmidt (TU Darmstadt/Netzoekonom.de)[18]

[18] *EU Industrial Policy After Siemens-Alstom: Finding a new balance between openness and protection*, European Political Strategy Centre , 2019

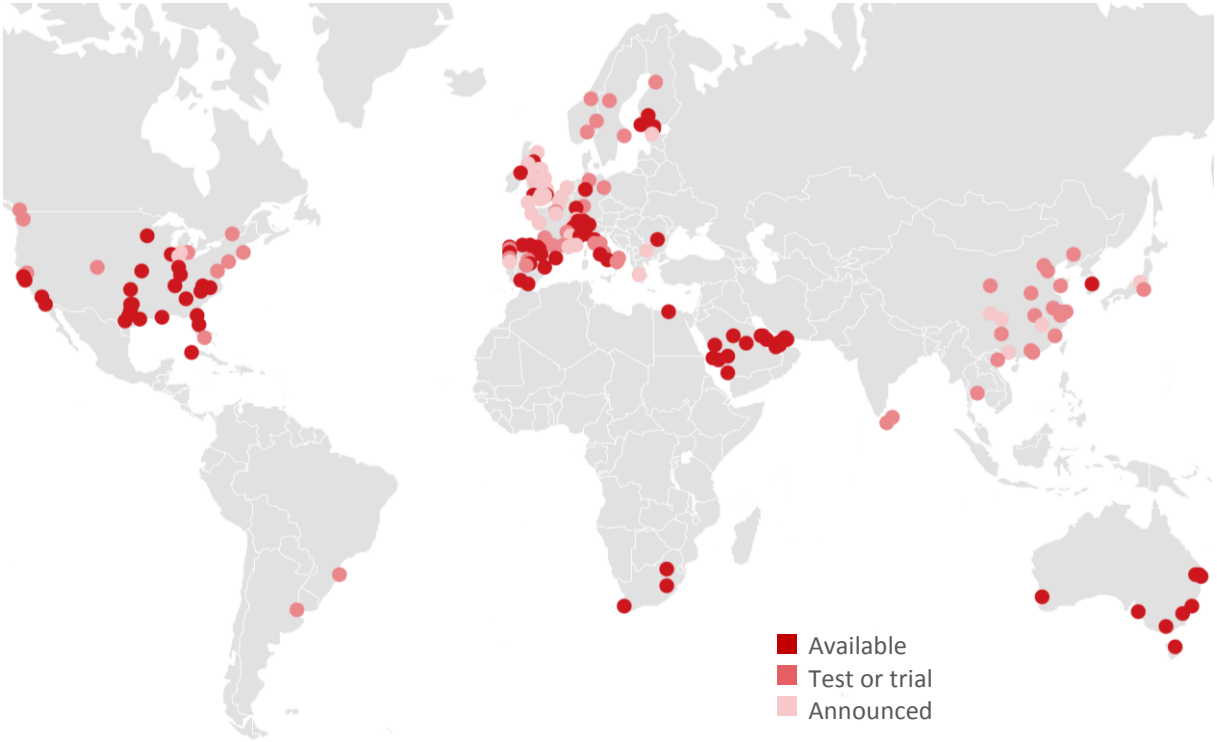
European policymakers will need to do more to stimulate the start-up and scale up of platforms within Europe, particularly by enabling access to larger funding rounds.

Data portability will become an ever more pressing issue, while data protection law will need further revision to make it compatible with emerging AI technology. The entire field of Artificial Intelligence will raise numerous ethical and legal concerns – fostering trust in, and the adoption of, such new technology will be a significant challenge.

The media sector has been fundamentally transformed in the past decade and European policy has been slow to keep up. Challenges to fundamental rights and the well-being of European citizens are emerging from many sides: on the one hand, the ability of harmful and illegal content to spread rapidly will need to be checked, while on the other, governmental overreach and threats to freedom of expression will be defining challenges in the coming years. The structure of the media landscape, including issues of ownership structures, media pluralism and the balance of power between those investing in content production and those aggregating and distributing it, will also require careful monitoring.

Finally, if Europe is to achieve its ambitious connectivity targets, some significant obstacles must be overcome. In the 5G race, despite some early success in setting up test programs in Europe, other regions are racing ahead in making the technology available to businesses and consumers. In the US, operators have been rolling out 5G connections in major cities since 2018 and are expected to move toward nationwide coverage in 2020. China is the world's largest 5G market and has been gradually rolling out pilot projects; it is expected to extend coverage to 40 cities over the summer of 2019. On the other hand, 5G is relatively unevenly distributed throughout Europe and most European countries won't see deployment of 5G until 2021.

Figure 2: Global 5G roll-out



Source: 5G Observatory up to March 2019 and POLITICO research

The development of 5G along with very high capacity fixed networks, such as fibre, will require substantial levels of investment, including from public sources. Policymakers will have to grapple with how to organise this efficiently, and consider to what extent the connectivity targets should be universal. However, maintaining a competitive marketplace through effective implementation of the Electronic Communications Code will also be vital to unlocking the levels of private investment required, particularly in the case of 5G infrastructure.

The incoming European Commission and Parliament therefore inherit both significant achievements and fundamental challenges. To help address those, we deliver ambitions and recommendations across four key areas: digital platforms, data governance and AI, media and content, and digital infrastructure.

01

DIGITAL PLATFORMS

AMBITIONS

1 **Ensure an innovation level playing-field and market contestability**

2 **Empower digital users**

3 **Give the appropriate incentives for a safe Internet to all players**

4 **Rely on smarter rules**

State of play and issues

In the digital age, **consumers' attention** is an important resource and all online content and service providers (CSPs) are competing for this resource in one way or another. This is also why platforms have taken on a special role in the Internet economy. The very purpose of platforms is to aggregate the attention of many consumers by organising products, services, content or other commercial or non-commercial offers in an effort to facilitate the search process (for products, services or information) of consumers' and to enable better matches or allocations. Examples of this are search engines, booking platforms, social media platforms, ride-sharing and accommodation-sharing platforms or shopping platforms.

In this manner, **online platforms are powerful engines for growth and innovation**. They allow small professional users to reach out to millions of customers at very low cost, they increase customers and traders' information and, in the end, they allow the development of new and disruptive business models.

In order to aggregate enough attention, a platform must offer something that is considered to be sufficiently 'useful' by a large number of consumers. Then, it can **monetise this attention by selling third-parties access to it**. Those third-parties can be advertisers, which are allowed to place advertisements while consumers are using the platform, but those third-parties can also be any other commercial entity, whose products or services can be discovered and bought by consumers via the platform. In the following, we will denote these third-parties simply as *the other market side* or as *business users.*

Digital platforms have been at the centre of the policy debate regarding digital markets as they exhibit a number of economic **characteristics** that may challenge traditional approaches and raise several policy concerns. [19]

1) Digital platforms are online **intermediaries** that bring together two distinct user groups (e.g. buyers and sellers) between whom indirect **network effects** exist. This means that at least one of the two user groups values participation on the platform more, the more users of the other group are present on the same platform. These network effects may lead to a winner-takes-all phenomenon, whereby the market 'tips' to the largest platform in a given market, defying the traditional notion of competition *in* the market. Therefore, one of the challenges in platform markets is to keep markets contestable, i.e. to foster the possibility of entry by new competitors, leading to competition *for* the market.

[19] See Jacques Cremer, Yves-Alexandre de Montjoye, & Heike Schweitzer, Euro. Comm'n, Directorate General for Competition, Competition Policy for the Digital Era (Apr. 4, 2019), Http://Ec.Europa.Eu/Competition/Publications/Reports/Kd0419345enn.Pdf; Jason Furman Et Al., H.M. Treasury (U.K.), Unlocking Digital Competition: Report of the Digital Competition Expert Panel (March 13, 2019), Https://Assets.Publishing.Service.Gov.Uk/Government/Uploads/System/Uploads/Attachment_Data/File/785547/Unlocking_Digital_Competition_Furman_Review_Web.Pdf; Austl. Competition & Consumer Comm'n, Digital Platforms Inquiry: Preliminary Report (Dec. 2018), https://www.accc.gov.au/system/files/ACCC%20Digital%20Platforms%20Inquiry%20%20Preliminary%20Report.pdf; Japanese Ministry of Economy, Trade, & Industry, Fundamental Principles for Rule Making to Address the Rise of Platform Businesses Formulated, (Dec. 18, 2018), https://www.meti.go.jp/english/press/2018/1218_002.html; Heike Schweitzer et Al., German Bundesministerium Wirschaft und Energie, Modernising the Law on Abuse of Market Power: Report for the Federal Ministry for Economic Affairs and Energy (Apr. 9, 2018), https://www.bmwi.de/Redaktion/DE/Downloads/Studien/modernisierung-der-missbrauchsaufsicht-fuermarktmaechtige-unternehmen-zusammenfassung-englisch.pdf; L'Autorité de la Concurrence [French Competition Authority], Portant sur l'exploitation des données dans le secteur de la publicité sur Internet [On the Exploitation of Data in the Internet Advertising Sector] (Mar. 6, 2018), http://www.autoritedelaconcurrence.fr/pdf/avis/18a03.pdf.

2) The **multi-sidedness** of platforms allows them to pursue a special business model, where one user group (typically the end consumers) does not pay a monetary price for using the platform. Revenues are then made from the other market side, i.e. the business users. On the one hand, this allows platforms to disrupt traditional business models, where users are charged a positive price for the service they are using. On the other hand, this business model provides the platforms with incentives to collect personal and usage data (instead of a price) from end users, because this information can enhance the monetisation on the other market side (e.g. through targeted advertisements). The collection of those personal data may also improve the quality of the services offered, especially when the quality increases with personalisation.

3) Digital platforms may be **vertically integrated**, operating both as intermediary and as business user on the same platform. This means that their role as intermediary allows them to steer consumer's attention towards their own upstream or downstream service, product or content rather than to independent content and service providers. This raises concerns around leveraging market power into upstream or downstream markets, which would in turn lower competition in these markets, and provide the dominant platform with additional bargaining power vis-à-vis the business users.

4) A digital platform's power may be further enshrined by the inflow of **data**, stemming from the transactions mediated on the platform (e.g. search queries, purchase history, location data), which may provide the platform with a comparative advantage when pursuing data-driven innovations. Lack of access to up-to-date market data can in some circumstances be a hindrance to contestability, especially when there are positive feedback loops between data collection, data analysing and the improvement and personalisation of offers, products and advertisements.

5) Digital platforms evolve in very dynamic and global ecosystems where **innovation** is important, rapid and often unpredictable. Therefore, the position of a platform is never secure as they can be rapidly displaced by new disruptive platforms in a Schumpeterian creative destruction competition. The next 'innovators in a garage' in the US, in China, in Europe or elsewhere incentivise even the biggest digital platforms to continue to innovate and offer new and better products. Public authorities should protect this process of competition.

However, **'online platform' is a catch-all concept that covers very different business models** with different economic characteristics and private incentives. In designing public intervention for digital platforms, it is of the utmost importance to keep those differences in mind and avoid one-size-fits-all solutions. In the following, we propose and discuss four policy ambitions to accompany the development of online platforms in Europe.

Ambition #1: Ensure an innovation level playing-field and market contestability

EU policies should ensure that digital platform markets remain contestable and contested. To do that, EU policies and regulation should stimulate the emergence and the take-up of new platforms and then the scale-up of those platforms.

Stimulating digital start-ups

As competition in the digital sector often takes place *for* the market and happens thanks to new innovative firms, EU policies and regulation should stimulate the innovative digital start-up. This requires mainly **smart and comprehensive innovation policies** going from financing fundamental research which may be exploited by small and big firms, to improving education and digital skills, to improving the functioning of capital markets, and to improving the capacity and willingness to take risks.

Those policies and regulation should also ensure an **'innovation level playing-field'** ensuring that small start-ups have access to indispensable **capabilities for digital innovation such as data, computing power, data analytics and AI skills and risky and patient capital**[20]. In general, those capabilities are available on the market and start-ups may access them to develop innovative products and services. The state may help the market by increasing the quantities of those innovation capabilities through the appropriate mix of policies such as opening more public data, reforming public education to improve data analytics and AI skills, improving the functioning of capital markets and stimulating the development of computing power capacity, potentially with co-financing.

When some digital innovation capabilities are controlled by dominant platforms and are truly indispensable for new start-ups, the state may impose the **sharing of such innovation capabilities as it does for other indispensable facilities**. This may be the case of **data** when the concentration of consumer's attention to some online platforms provides them with indispensable access to timely raw usage data (e.g. search queries, purchase histories). Such usage data, even if provided in anonymised form, can be very valuable to start-ups in order to train and test potentially competing data-intensive services, enabling start-ups to compete with existing platforms.[21] The indispensability of a dataset depends on the type of data and the type of algorithms to be developed and therefore always requires a case-by-case analysis.[22] If data is found to be indispensable, then authorities may impose the sharing of those data provided they take into account, on the one hand, the **economic incentives of the data owners to collect and store** that data and, on the other hand, the **privacy** of the data subject when data are personal and also the **security** and integrity of the data and the sharing process (see below, the section on data).

Sometimes it may not be the lack of data, but the lack of **computing resources** that prevents market entry for new platforms with innovative ideas as the existence of economies of scale in data

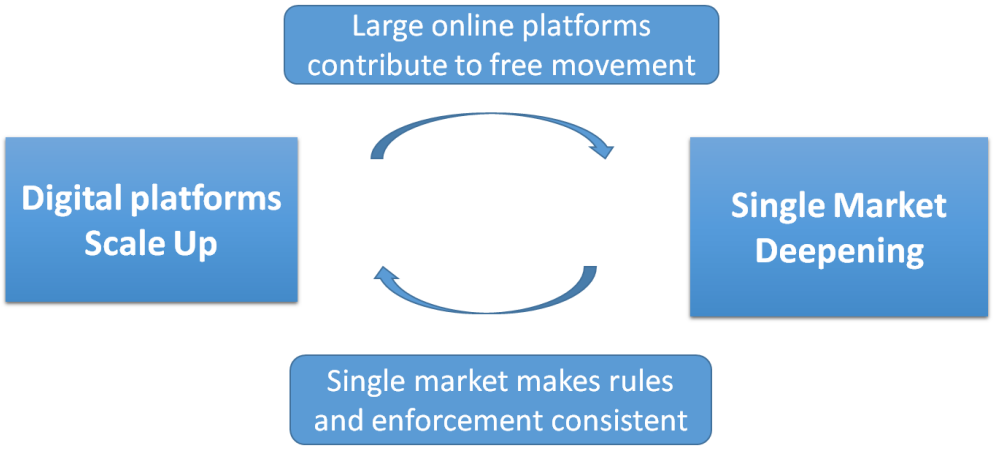
[20] A. Lambrecht and C. Tucker (2015), "Can Big Data Protect a Firm from Competition?", available on SSRN.
[21] For example, prediction accuracy increases for larger data sets of fine-grained user behaviour data: Junqué de Fortuny, E., Martens, D., & Provost, F. (2013). Predictive modeling with big data: is bigger really better?. *Big Data* 1(4), 215-226; Martens, D., Provost, F., Clark, J., & de Fortuny, E. J. (2016). Mining Massive Fine-Grained Behavior Data to Improve Predictive Analytics. *MIS Quarterly*, 40(4), 869-888. Whereas benefits decrease marginally as prediction accuracy approaches the theoretical benchmark, some studies show this convergence is not yet reached in many popular application settings: Li, X., Ling, C. X., & Wang, H. (2016). The convergence behavior of naive Bayes on large sparse datasets. ACM Transactions on Knowledge Discovery from Data (TKDD), 11(1), 1-24. For the online advertising industry, some studies find that only very large amounts of data allow firms to measure whether advertising campaigns are indeed successful: Lewis, R. A., & Rao, J. M. (2015). The unfavorable economics of measuring the returns to advertising. *The Quarterly Journal of Economics*, 130(4), 1941-1973.
[22] See M. Bourreau, A. de Streel and I. Graef, *Big data and competition policy*, CERRE Report, February 2017: https://www.cerre.eu/publications/big-data-and-competition-policy

is not only driven by the marginal benefit of additional data but also by the marginal costs to analyse large amounts of data. A related problem lies in the fact that some commercially available computing resources for big data applications ('cloud computing') are offered by some of the largest platforms. This may not only create potential conflicts of interest and reinforce the position of dominant platforms, but it may also limit the possibilities to differentiate the service of new entrants, for example, in regards to privacy of data storage. Again, the indispensability of computing power is a case-by-case analysis.

Stimulating digital scale-up

EU policies should also stimulate the scale-up of digital platforms, which is one of the main weaknesses of Europe compared to the US or China. Again, this require a **comprehensive set of macro and micro economic policies, but one of the key ingredients to stimulate digital scale-up is the development of the single market**. Indeed, there is a positive feedback loop between the single market and platform scale up as (i) the scale-up allows business and consumers to more easily reach their counterparts all over Europe, thereby contributing to the single market while (ii) the single market rules facilitate business operation and consumer trust all over Europe.

Figure 3: Feedback loops between platform scale-up and the Digital Single Market



For this feedback loop to work, online platforms should be subject to **one set of rules**. This can be achieved with either the **mutual recognition of national rules** (country of origin or EU passport principle) as is now the case for information society or audio-visual media services, or with the **full harmonisation of national rules** as is increasingly the case for consumer protection rules. Although the digital single market has been deepened during the period 2014-2019, the process is not yet complete. Policymakers should extend the scope of the mutual recognition principle and strengthen the full harmonisation of the remaining national rules.[23]

However, a single set of national or EU rules is not sufficient for a true single market. A **single enforcement** of those rules is also necessary. When rules are national and recognised over the whole EU on the basis of the principle of mutual recognition, the enforcement is carried out solely

[23] A. de Streel and Ch. Hocepied, *Contribution to Growth: European Digital Single Market – Delivering improved rights for European citizens and businesses*, May 2019, Study for the European Parliament, http://www.europarl.europa.eu/thinktank/sv/document.html?reference=IPOL_STU%282019%29638395

by the national authorities of the country of establishment. However, the authorities of the country of destination where the digital services are consumed often maintain the right to intervene in exceptional circumstances. When rules have been harmonised at the EU level, they are enforced by national authorities that may have different interpretations of EU legislation leading in practice to different legal regimes across the Member States. To reduce the risk of divergent interpretations and contribute to common interpretation of EU law**, several networks of cooperation between national regulatory authorities have been set up and then strengthened** during the period 2014-2019.[24] It remains to be seen what the practical effects of those recent changes are. If they are not sufficient to ensure common enforcement across the EU, the **cooperation networks should be strengthened again or ultimately transformed into a fully-fledged EU regulator,** as is now the case for the main banks active in Europe.[25]

Issues for policymakers

- Maintain market contestability and fostering digital start-ups by ensuring access to competitive bottlenecks such as data, computing resources, digital skills and capital.

- Further harmonisation of rules and strengthening of enforcement to facilitate European-wide digital scale-up?

[24] For instance, BEREC for the electronic communication regulators, ERGA for the audio-visual media service regulator, ECN for the competition agencies, EDBP for the data protection authorities, CPC for the consumer protection agencies.
[25] https://www.bankingsupervision.europa.eu/about/thessm/html/index.en.html

Ambition #2: Empower digital users

Next to supply-side measures ensuring market contestability and facilitating Schumpeterian competition, EU policies and regulation should also empower the consumers, and more generally the users, of online platforms to guarantee trust and the possibility that users can 'vote with their feet' when they are not satisfied by the services provided.

Informing users and authorities

Empowered users are first and foremost **informed users who know and understand the characteristics of the services as well as the conditions of the contract**, including the counter-performance which may be paid with a monetary price or with personal data. Online platforms reduce users' asymmetry of information as they allow users to get access to more offers and to compare more easily the prices and the quality of those offers. However, given the complexity of some digital offers and products, in particular when they are based on self-learning algorithms, information asymmetry may also increase in some cases.[26]

Transparency rules may also serve as a means of 'coercive regulation' in the sense that the requirement to be transparent about one's operations may prevent unjustified discriminatory conduct in the first place.[27] Transparency may also be a means to expedite ex-post competition cases.

The **recent reform of EU consumer protection rules and the new Regulation on Platform to Business[28] have increased transparency and users' information**. Those new rules should now be enforced effectively in the Member States. Given the complexity and the novelty of those issues, **implementation should be designed in close cooperation with industry and with consumer associations.** Moreover, **the digital expertise of the authorities in charge should be strengthened**. After some years of implementation, an evaluation of the rules should be carried out and, when necessary, rules should be adapted.

Facilitating switching

Empowering digital users also means that they should vote with their feet. This means that **consumer lock-in at any given platform should be avoided and switching costs should be lowered**, such that consumers can freely move and allocate their attention to the platform that best suits their needs. Two possible sources of consumer lock-in are particularly noteworthy in this context.

First, lock-in may be due to **network effects**. That is, consumers cannot switch, because they could no longer participate in the same network as the other users, either on the same side, or on the other market side. This source of lock-in may happen in the context of social media and other communications platforms. In the context of telecommunications networks, the same type of lock-in has existed and, in consequence, triggered regulation imposing the interoperability of networks.

[26] See A. de Streel and A.L. Sibony, *Towards smarter consumer protection rules for digital society*, CERRE Report, October 2017: https://www.cerre.eu/publications/towards-smarter-consumer-protection-rules-digital-society
[27] J. Kraemer, D. Schnurr, A. de Streel, *Internet Platforms and Non-Discrimination*, CERRE Policy Report, December 2017, https://www.cerre.eu/publications/internet-platforms-non-discrimination
[28] Directive 2019/… of the European Parliament and of the Council as regards better enforcement and modernisation of EU consumer protection rules; Regulation 2019/1150 of the European Parliament and of the Council of 20 June 2019 on promoting fairness and transparency for business users of online intermediation services.

A similar approach could be necessary in some circumstances in the context of online platforms, where simple messages could be exchanged based on **agreed-upon standards and interfaces**. While such standards may limit the 'richness' of messages (e.g. with respect to format, appearance, size) that can be exchanged across platforms, and the appearance of the message may differ from platform to platform, it would at least allow for some interoperability between platforms[29]. This would enable consumers to choose more freely which platform to join, or with which platforms to share messages, based on the individual merits of a given platform, and less based on the existing size of the network effect of a given platform.

Such a standard would have **to strike a balance between interoperability, to avoid consumer lock-in, and flexibility, so that platforms can continue to compete on the basis of differentiation and innovation**. The development of interoperability standards are therefore best left to industry participants, but would require independent oversight, such that the agreed-upon standards can indeed deliver a meaningful interoperability. Moreover, the standards would need to be open, so that they can be freely adopted by all industry participants.

The second source of lock-in may be due to a lack of **data portability**. Even in the absence of network effects, consumers may find it burdensome to switch, or to multi-home between several platforms because over time they have established an elaborate user profile at a given platform, which allows that platform to deliver a better content or service. For example, a music streaming platform could offer better music recommendations because the user has explicitly (by means of feedback buttons) or implicitly (by means of skipping songs) expressed her or his musical preferences. Possibilities of data portability may therefore be necessary and are already imposed by the GDPR for personal data and by the regulation on the free flow of non-personal data (see the following section on data).

Issues for policymakers

- Strengthening and enforcement of transparency rules concerning the characteristics and implied costs of digital services.

- Facilitate switching of digital services by improving data portability and give due consideration to interoperability through standards and interfaces between related digital services.

[29] The new Art. 61(2c) EECC allows the national authorities to impose proportionate interoperability obligations on providers of number independent interpersonal communications services which have reached a significant level of coverage and user uptake.

Ambition #3: Give the appropriate incentives for a safe Internet to all players

Illegal and harmful content (such as terrorist content, hate speech, online disinformation) and products (counterfeit products) should be restricted on the Internet. The EU regulatory framework, in particular its liability rules, should **share among all the private and public actors involved in the digital eco-system the burden of minimising illegal and harmful material and policing the Internet**. The rules should give the appropriate incentives to all private actors, including users, sellers and the platforms themselves, to detect and remove illegal and harmful content or products online while respecting fundamental rights.[30]

During the period 2014-2019, some elements of hard law have been adapted with the reform of the Audio-visual Media Services Directive[31] and the adoption of the new DSM Copyright Directive[32]. Different self- and co-regulation approaches have also been adopted to fight against terrorist content,[33] hate speech[34] or online disinformation[35]. The **effects of these reforms should now be closely monitored and assessed. The coherence of these reforms with the general liability regime in the e-Commerce Directive[36] should also be assessed**. Given the complexity of this issue for the States as well as for the platforms, **close cooperation with online platforms to design and implement rules is indispensable**.

Issues for policymakers

- Create incentives for digital platforms to detect and remove illegal and harmful content?

– Assessment to adapt the horizontal liability regime of the e-Commerce Directive.

[30] A. de Streel, M. Buiten and M. Peitz, *Liability of online hosting platforms*, CERRE Report, September 2018 https://www.cerre.eu/publications/liability-online-hosting-platforms-should-exceptionalism-end
[31] Directive 2018/1808 of the European Parliament and of the Council of 14 November 2018 amending Directive 2010/13 on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audio-visual media services (Audio-visual Media Services Directive) in view of changing market realities, OJ [2018] L 303/69.
[32] Directive 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9 and 2001/29, OJ [2019] L 130/92.
[33] An EU Internet Forum was established in 2015: Commission Press release of 3 December 2015, IP/15/6243: http://europa.eu/rapid/press-release_IP-15-6243_en.htm
[34] Code of Conduct of 31 May 2016 of countering illegal hate speech online: https://ec.europa.eu/newsroom/just/item-detail.cfm?item_id=54300
[35] EU Code of Practice of 26 September 2018 on Disinformation: https://ec.europa.eu/digital-single-market/en/news/code-practice-disinformation
[36] Directive 2000/31 of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce).

Ambition #4: Rely on smarter rules

Proportionate regulation

According to the general principle of EU law, regulation should also be proportionate. This implies that regulation should always be **based on clearly identified market failures and, when justified, be the least burdensome possible to remedy the market failures**. Some recent policy reports recommend intervention, either under competition rules and/or wider regulation, against those digital platforms which have important market power or significant market status. [37] However, both the necessity and the means of defining **an appropriate threshold for 'significance'** is particularly complex in digital industries which evolve very quickly and are not well understood. The next Commission should stimulate a political and academic process on this issue.

The regulation applicable to online platforms should **not increase the burden for start-ups** and small platforms, allowing them to enter, to reach scale and to experiment.

Principles-based and non-discriminatory rules

The rules applicable to online platforms should be **principles-based** in order to be flexible enough to adapt to the various business models that exist among platforms today and those that may arise in the future. This means the regulation should lay out a **set of general principles that safeguard fair competition and democratic values** on the platform. These principles should be developed in a political process, together with the relevant stakeholders. In the following, we offer some guidance for this process:

- The regulation should be **applied across industries in a horizontal fashion**. As platforms tend to break traditional sector boundaries, sector-specific regulation would likely result in an incoherent patchwork. Conversely, this also means that existing sector-specific regulations should be revisited to assess if they are still warranted (for example, in the context of the GDPR and the proposed ePrivacy Regulation).
- The **same principles should apply to all layers of consumers' access** to content and services, that is, not just platforms run *over* the Internet (e.g. search engines, social networking sites), but also platforms that facilitate access *to* the Internet (e.g. operating systems, app stores, browsers).

Coherent rules

In markets where consumer prices are zero, competition often takes place in non-price dimensions, such as consumers' privacy and data protection. In this regard, some view the lack of privacy as a competition problem (see, for example, the case of the German Federal Cartel Office vs. Facebook), while others view the lack of competition as a privacy problem.

Evidently, **privacy, data protection law and competition law are inherently intertwined** in the context of digital platforms[38]. In fact, the goals of data protection law and competition law may often be in conflict with each other, as more access to personal data would facilitate competition, but possibly undermine consumers' privacy. Eventually, in a digital market, neither competition law, nor privacy protection may be effective without the other. For example, everything else being equal, a dominant platform is more likely to receive a user's consent on its privacy statement than if that platform were in competition.

[37] S. Soriano, Big Tech Regulation: Empowering the Many by Regulating a Few, https://medium.com/@sorianotech/big-tech-regulation-d12430d7fc1b

[38] F. Costa-Cabral and O. Lynskey, "Family ties: the intersection between data protection and competition in EU Law", *Common Market Law Review* 54 (1), 2017, 11-50; N. Helberger, F. Zuiderveen Borgesius and A. Reyna., "The Perfect Match? A Closer Look at the Relationship between EU Consumer Law and Data Protection Law", *Common Market Law Review* 54(5), 2017, available at https://ssrn.com/abstract=3048844

However, the legal system treats data protection regulation, consumer protection and competition law largely separately from each other, including from an institutional perspective. The approaches of competition law, data protection and consumer protection need to be better aligned and intertwined to achieve a coherent regulation of platform markets[39].

Here, ambitions should strive towards a **coherent horizontal legal framework**. The boundaries between sectors, especially in the digital economy, are increasingly hard to draw. This is not only with respect to different types of platforms, but also with respect to the digital versus physical sphere. For example, several large digital platforms are currently expanding and entering into physical markets, for example, in the context of transportation, farming or shopping. Therefore, as a coherent and integrative legal framework is developed between competition law, data protection and consumer protection law, duplicative sector-specific legal approaches should be phased out.

Issues for policymakers

- Assess proportionate principles-based and non-discrimination rules to correct clearly defined market failures for 'significant' platforms.

– Strive towards a cross-sector horizontal legal framework where possible and re-consider sector-specific vertical regulation in this process.

[39] This was the case in Decisoon of the German Bundeskaterlambt against Facebook of 7 February 2019. See also the Digital clearinghouse project: https://www.digitalclearinghouse.org/

02

DATA GOVERNANCE

AMBITIONS

1 **Stimulate data portability**

2 **Encourage the creation of privacy-preserving data marketplaces**

State of play and issues

Four interconnected factors have led to a new wave of economic innovation, which is now commonly referred to as the **data-driven economy**: (i) the continuous increase in available data points; (ii) the sophistication of machine learning and data analytics techniques harnessing natural language processing (NLP), deep learning and neural networks; (iii) the accessibility of cheap and often third-party computing power; (iv) and finally the increased digitalisation of all areas of life that in turn provides opportunities to generate new data and apply the outputs of data analysis.

In the words of the European Commission, there is currently an ongoing 'data revolution' as '[d]ata has become an essential resource for economic growth, job creation and societal progress'.[40] Nonetheless, it remains a resource that is relatively little understood and conceptualised from both an economic and regulatory perspective.

Importantly, data is both an enabler and an output of the computational learning processes conventionally referred to as 'Artificial Intelligence' or 'AI' – in essence algorithms that improve with data. Machine learning algorithms are trained with (often large amounts of) data and the resulting model is subsequently applied to new data to make predictions. This is a particular reason why **public and private players in the data market often need access to large and diverse datasets alongside skills, computing power and risky and patient capital** in order to generate new innovations and value.[41]

Ambition #1: Stimulate data portability

Data availability is key in light of the centrality of data for Artificial Intelligence

Given that data is non-rivalrous in nature, its use by one party does not necessarily lead to exhaustion or decrease its value for another party. The resulting increase in the fluidity of data in the internal market could increase consumer welfare (though increased choice and decreased lock-in effects), stimulate new business models and render markets more competitive (through a reduction in network effects and lower switching costs) and ultimately also contribute to more innovation in AI (in making data available to a broader pool of players).

Personal data and the GDPR's limits

In terms of personal data, the **GDPR has introduced a new personal data portability right** that seeks to increase the fluidity of personal data between various actors. [42] This novel right is an important mechanism to create more dynamic data markets. This links to the GDPR's main objective of giving data subjects more control over personal data that relates to them, a notion often referred to as 'data sovereignty'. Whereas the right to data portability is explicitly fashioned as a fundamental right, it has analogies to a competition law tool which may unlock data's competitive potential.[43] It is in line with some initiatives adopted by some online platforms to allow and facilitate data mobility and portability.

[40] European Commission Staff Working Document', A Digital Single Market Strategy for Europe – Analysis and Evidence, SWD (2015) 100, 59.
[41] European Commission, 'Building a European Data Economy' (Communication) COM(2017) 9, 4.
[42] Pursuant to Article 20 GDPR a data subject has a qualified right to 'receive the personal data concerning him or her, which he or she has provided to a controller, in a structured, commonly used and machine-readable format'.
[43] The European Data Protection Supervisor considers that portability could release synergies in data protection and competition law in preventing exclusionary or exploitative abuses of dominance and consumer lock-in in addition to empowering consumers 'to take advantage of value-added services from third parties while facilitating greater access to the market by competitors': Preliminary Opinion of the European Data Protection Supervisor, 'Privacy and Competitiveness in the Age of Big Data: The Interplay between Data Protection, Competition Law and Consumer Protection in the Digital Economy' (2014) 36 https://edps.europa.eu/sites/edp/files/publication/14-03-26_competitition_law_big_data_en.pdf.

Yet, the right to data portability in the GDPR has **some limits**. It applies only (i) to personal data, which (ii) has been provided by the data subject to the data controller (thus excluding, for example, users from porting reviews regarding their services from one platform to another); (iii) processing is carried out by automated means; and (iv) processing is based on consent or contract (leaving out any personal data processing based on other grounds such as legitimate interests). There exists a right to export, but not a right to import data. The data handler has one month to provide the data, rendering immediate possibilities to switch moot. Moreover, to make personal data effective, the Article 29 Working Party has called on **industry stakeholders and trade associations to define 'a common set of interoperable standards and formats** to deliver the requirements of the right to data portability'.[44]

Non-personal data mobility

Regarding non-personal data, there is no overarching EU legal framework. Rather, non-personal data is subject to a **mosaic of distinct regulatory frameworks which impose some forms of non-personal data mobility under some circumstances**. Some are horizontal and apply to all sectors of the economy such as the Free Flow of non-personal data Regulation[45] or competition law[46].

In particular, the Free Flow of Data Regulation encourages the development of **self-regulatory codes of conduct at the EU level to facilitate the porting of non-personal data** in a structured, commonly used and machine-readable format.[47] Other legal instruments are sectoral and apply to specific sectors such as automotive,[48] mobility,[49] finance,[50] geo-spatial information[51], satellite data[52] and chemicals.[53] Moreover, to encourage the voluntary sharing of private sector data, the Commission has adopted some guidance and set up an expert centre.[54]

The EU institutions should **ensure an effective implementation of the recently adopted personal and non-personal data mobility provisions and monitor industry led initiatives** in different sectors of the economy[55]. Given the complexity and the novelty of the issue, authorities should **encourage industry-led data mobility schemes** such as the data transfer project and closely cooperate with the stakeholders to ensure effective implementation.

[44] A29WP 'Guidelines on Data Portability 3.
[45] Regulation 2018/1807 of the European Parliament and of the Council of 14 November 2018 on a framework for the free flow of non-personal data in the European Union, OJ [2018] L 303/59.
[46] Data sharing may be imposed under (i) the Merger Regulation, in particular when data are an important input whose access could be foreclosed after a vertical merger; (ii) Article 101 TFEU in some cases of data pooling;[46] (iii) Article 102 TFEU when the refusal a dominant firm to give access to data amounts to an exclusionary or an exploitative abuse.
[47] As in Article 6(1) of the Free Flow on non-personal data Regulation and Commission Guidance of 29 May 2019 on the Regulation on a framework for the free flow of non-personal data in the European Union, COM (2019) 250, pp. 16-19.
[48] Regulation 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information, as lastly amended by Regulation 2018/858.
[49] Directive 2010/40 of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport.
[50] Directive 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market.
[51] Directive 2007/2 of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE).
[52] Regulation 377/2014 of the European Parliament and of the Council of 3 April 2014 establishing the Copernicus Programme.
[53] See further Article 17 and 30 of the Council Regulation 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
[54] Commission Staff Working Document of 25 April 2018, Guidance on sharing private sector data in the European data economy, SWD(2018) 125.
[55] See the Data Transfer Project which was formed in 2017 between Facebook, Google, Microsoft and Twitter in order to create an open-source, service-to-service data portability platform so that all individuals across the web could easily move their data between online service providers: https://datatransferproject.dev/. In the financial sector, see the Open Banking Initiative which is a secure way to give financial providers access to the financial information of the customers who accept such access: https://www.openbanking.org.uk/

If the EU institutions determine that additional obligations would be necessary to incentivise even further data mobility, some relevant safeguards should be put in place:

- the **incentives to collect and store data should be preserved** and any intellectual property right should be respected, which implies that data sharing should only be imposed when data are indispensable and with fair remuneration[56]. This also implies that any data access should be limited to raw input data (such as search queries, user feedback or purchase histories) and not for refined or recombined data and data-derived insights (analytics);
- the **security** and the integrity of the shared data should be ensured;
- and in case of personal data, the **privacy** of the data subject should be guaranteed.

Issues for policymakers

- *Strengthen consumers' rights for data portability beyond GDPR, e.g. through common standards and interoperability, including for non-personal data.*
- *Ensure effective implementation and enforcement of recently adopted data mobility provisions.*

Ambition #2: Encourage the creation of privacy-preserving data marketplaces

Various options have already been considered to stimulate the circulation of data within the Digital Single Market, particularly regarding non-personal data. An early proposal included the creation of property rights in such data, an option that was criticised[57] and subsequently abandoned by the Commission. Indeed, the focus now lies on access to data rather than ownership.

Data-sharing is encouraged in the form of voluntary data trading in business-to-business contexts. Non-regulatory measures adopted to this end at supranational level include a decision to rely on the freedom of contract principle.[58] So-called data marketplaces designed to facilitate data sharing could contribute to this objective. These marketplaces can take a variety of forms. First, the use of Application Programming Interfaces ('APIs') could overcome some of the technical and operational barriers that include a lack of interoperability between datasets, and the high costs of data curation necessary to adapt it for sharing.[59]

Second, data marketplaces can make it easier for parties to share data and to promote innovation in the Digital Single Market. A **data marketplace is an electronic marketplace where data is traded as a commodity**.[60] The concentration and sharing of data is, of course, likely to generate concerns from a data protection perspective. It is for this reason that such mechanisms should be **designed in accordance with the data protection by design and data protection by default** requirements, such as using secure computational methods where there is no need to reveal the underlying data.

[56] Some authors have proposed that data should be shared on a FRAND (fair, reasonable and non-discriminatory) basis: D.L. Rubinfeld and M.S. Gal (2017), "Access Barriers to Big Data", *Arizona Law Review* 59, 339-381.
[57] Josef Drexl et al, 'Data Ownership and Access to Data - Position Statement of the Max Planck Institute for Innovation and Competition of 16 August 2016 on the Current European Debate' (2016) Max Planck Institute for Innovation & Competition Research Paper No. 16-10.
[58] European Commission Staff Working Document on the free flow of data and emerging issues of the European data economy, SWD (2017)2, 12.
[59] Commission, 'Towards a common European data space' COM (2018) 232.
[60] Lara Vomfell et al, 'A classification framework for data marketplaces' (2015) ERCIS – European Research Center for Information Systems, No. 23 https://www.econstor.eu/handle/10419/118643.

These could include techniques such as secure multi-party computation, homomorphic encryption or zero knowledge proofs. The Commission has recently also announced that computational learning where the algorithm is brought to the data, rather than the data to the algorithm is a promising avenue in this regard.[61] The next Commission should build on these ideas and efforts in order to ensure that the innovative potential of data is unlocked while data protection is safeguarded.

Issues for policymakers

- *Encourage the emergence of data marketplaces and incentivise the public and private sharing of data, while preserving European values with respect to data protection.*

[61] European Commission Staff Working Document, 'Guidance on sharing private sector data in the European data economy', SWD (2018) 125 final, 17.

03

ARTIFICIAL INTELLIGENCE

AMBITIONS

1 **Make Data Protection Law Fit for AI**

2 **Support algorithmic explainability**

Ambition #1: Make Data Protection Law Fit for AI

Although the GDPR only became binding in May 2018, its main components go back to the 1995 Data Protection Directive, which itself drew inspiration from national data protection laws with origins in the 1970s and 1980s. It is too early to pass judgment on its success but **some elements of the GDPR** no longer correspond, and are **hard to match, to some of the most recent forms of personal data processing such as machine- and deep-learning**. There is indeed a tension between core GDPR principles and computational intelligence.

- Data protection is firmly based on **individual rights, whereas the harms associated with AI can take a collective form**, such as where they stigmatise groups based on a particular characteristic. Thus, there is a need to reflect upon how group rights can be operationalised in this framework and the focus should also lie on how systems can be designed from the beginning to respect data protection principles as opposed to a main focus on individual remedies.
- The principle of **data minimisation**[62] requires that personal data be 'adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed'. At least at this stage, AI however needs to rely on large quantities of data to realise its potential.
- The principle of **purpose limitation**[63] requires that personal data only be collected 'for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes'. Yet innovations in AI often come from the (re-) use of data that was initially collected for other purposes. This raises the question of how the principle of purpose limitation can be applied in such circumstances.
- The GDPR has created a particularly protective regime for so-called **special categories of data**, often referred to as 'sensitive data' such as data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, health data, or data pertaining to a person's sex life or sexual orientation.[64] The same is true of the ePrivacy Directive, which applies additional protections to communications metadata. With big data analysis, the distinction between various categories however becomes increasingly arduous to draw as data may not be sensitive data at the starting point but become sensitive data once it has been processed (such as, for instance, where a machine learning algorithm processes ostensibly non-sensitive personal data to determine a persons' health status).

More fundamentally, **the definition of personal data and the difference between personal and non-personal data can be very hard to discern in practice**:

- First, there are currently some uncertainties on the implementation of the legal test to determine whether data is personal or not[65].
- Second, as methods of data analytics become more sophisticated and as more data is generated that could be matched with other data to relate the latter to an identified or identifiable natural person, much data that does not seem to be personal data at first glance may nonetheless qualify as personal data under the GDPR. Moreover, as machine learning algorithms self-learn and upgrade, their operation and usage of data might move beyond human comprehension, as does the ability of human observers to determine whether this data is personal data or not.[66]
- Third, the qualification of a given data item is dynamic as a single data point might be non-personal at some stage of its lifecycle while becoming personal at other. Conversely, data

[62] Article 5(1c) GDPR.
[63] Article 5(1b) GDPR.
[64] Article 9 GDPR.
[65] Some clarifications are provided in the Commission Guidance of 29 May 2019 on a framework for the free flow of non-personal data in the European Union, COM (2019) 250, pp. 4-11.
[66] Nadezhda Purtova, 'The law of everything. Broad concept of personal data and future of EU data protection law' (2018) 10/1 Law, Innovation and Technology <https://www.tandfonline.com/doi/abs/10.1080/17579961.2018.1452176>.

that is personally identifiable to begin with can be subjected to pseudonymisation or anonymisation techniques. Given that the current EU legal framework is, however, based on the creation of disparate legal frameworks for personal and non-personal data (as illustrated by the Regulation on the Free Flow of Non-Personal Data in the European Union) it is important to further clarify the appropriate legal test to legally classify data.

Thus, technological progress challenges some the GDPR's fundamentals, even though it was designed as a technology-neutral, principles-based regulatory framework that should stand the test of time. It furthermore provides co-regulatory mechanisms such as codes of conduct and certification mechanisms able to adapt its principles to new forms of data processing. It may thus be appropriate to **revisit,** at the next review of the GDPR foreseen for May 2020, **the fundamentals of the data protection regime in light of the advances in AI technologies**.

In addition, the **very innovations that enable AI may also contribute to the respect of data protection**. Through careful analysis and collaborations, it should thus be determined how Europe can innovate while securing respect for data protection principles.

Issues for policymakers

- *Critically re-assess GDPR with a view to paving the way for European leadership in privacy-preserving AI, especially with respect to data minimisation, purpose limitation and the distinction between sensitive vs. non-sensitive data as well as personal vs. non-personal data.*

Ambition #2: Support algorithmic explainability

Machine- and deep-learning algorithms improve with data. Yet, it may also be difficult to understand how exactly this happens. As a consequence, when these algorithms are used in circumstances such as decision-making processes, it may be difficult to trace how a given decision was reached, thereby raising ethical and legal issues (for instance, to control whether an algorithm decision is based on illegal grounds). Moreover, explainability is an important element to generate trust in such algorithms and thus an important factor determining their eventual adoption.

It is for this reason that the need for **AI algorithms to be explainable** has been stressed, including in the Ethics Guidelines of the EU High Level Expert Group on AI.[67] Explainable AI ('XAI') is a field of active research as many different avenues towards explainability are currently being explored.[68] EU law contains several recently adopted provisions which aim to increase the transparency and explainability of algorithmic decisions.

When **personal data are involved, the GDPR** provides that the data subject has a right to obtain information, within the limits of the trade secrets and intellectual property of the data processors, **about 'the logic involved'** in the data processing.[69] In addition, in the case of fully automated algorithmic decisions (i.e. when a human is not involved in the decision making), the data subject has the right to obtain 'human intervention' and 'other suitable measures to safeguard her rights' which may imply a right to an explanation.[70]

In the field of algorithmic decisions related to **online ranking of results or offers**, the recent reform of **EU consumer protection law** imposes an obligation on online marketplaces to provide the main parameters determining ranking of offers presented to the consumer as result of his

[67] https://ec.europa.eu/digital-single-market/en/high-level-expert-group-artificial-intelligence
[68] See, by way of example, the various initiatives of DARPA: https://www.darpa.mil/program/explainable-artificial-intelligence.
[69] Article 15 and Recital 63 of the GDPR.
[70] Article 22 and Recital 71 of the GDPR.

search query.[71] Similar obligations for online intermediation services and search engines with regard to their business users (B2B) have been imposed by the recently adopted **Platform-to-Business Regulation**. Online intermediation services have to set out, in their terms and conditions, the main parameters determining ranking and the reasons for the relative importance of those main parameters. Search engines have to set out, for corporate website users, the main parameters determining ranking, by providing an easily and publicly available description, drafted in clear and unambiguous language on the online search engines of those providers.[72]

To date, discussions around explainable AI have focused mostly on the explanation of the underlying algorithm as a means of 'opening up the black box'. This approach has limitations. Indeed, unveiling the mathematical details of the algorithm will have very little explanatory value to most actors. As such, **alternatives should be explored such as the provision of a 'model-of-model', subject-centric explanations that focus on particular regions of a model around a query or counterfactual explanations** which can themselves be simple ways of explaining the key factors by which the user can understand and influence the result.[73]

Issues for policymakers

- *Strive for European leadership in Explainable AI, harnessing the existing leadership role in data protection and platform-to-business regulation.*

[71] Article 6(a) of the amended Consumer Rights Directive and Recital 19 of the better enforcement and modernisation Directive.
[72] Article 5 of Regulation 2019/XXX of the European Parliament and of the Council on promoting fairness and transparency for business users of online intermediation services
[73] Lilian Edwards & Michael Veale, 'Slave to the Algorithm? Why a 'Right to an Explanation is Probably not the Remedy you are Looking for' (2017) 16 Duke Law & Technology Review 18; Sandra Wachter et al, 'Counterfactual Explanations without Opening the Black Box: Automated Decisions and the GDPR' (2018) Harvard Journal of Law and Technology.

04

MEDIA & CONTENT

AMBITIONS

1 **Actively protect freedom of expression in Europe**

2 **Safeguard the production & dissemination of high quality, European content**

3 **Discourage the economic or political profitability of harmful and illegal content**

4 **Enforce transparency of ownership structures beyond media content businesses**

State of play and issues

There are many diverging commercial and political interests at play in the media content sector in Europe. While some claim content is abundant, diversity has never been greater and pluralism is all around, others argue quantity of content should not be equalled with quality and that phenomenons such as filter bubbles, echo chambers (even if nuanced on the basis of scientific research), and fake news put immense pressure on the diversity, pluralism and accuracy of content. There is probably value in both perspectives. This section on media content regulation cannot be situated within one of these perspectives, but acknowledges that European policies might play an instrumental role in dealing with both threats and opportunities that an internationalised and converged digital market offers for content creation and consumption.

The **EU regulatory basis for intervention in the media sector is limited** to internal market and competition policies. Policy relating to the cultural aspects of media content regulation is still situated at the level of Member States. Admittedly, elaborate actions have been taken in spite of both these constraints and the sensitivities surrounding competence divisions in the media content domain. These actions include the application of anti-trust and merger regulation, the guidelines developed for state aid to film or public service broadcasting, the Audiovisual Media Services Directive (AVMSD), the Copyright Directive, the (Online)Satcab Directive(s), the Portability Regulation, the emerging regulatory framework on online platforms and the emerging policies on fake news and disinformation.

The thin line between the competencies of the European Union and Member States remains a difficult one to walk when faced with some of the problems related to freedom of expression and the sustainability of European content production that we discuss below, and is further complicated by the global nature of some of the newer players in the media industries.

Media content is being produced, aggregated, distributed and consumed in a market that is vastly different from the sector we observed two decades ago. We have **moved from a predominantly nationally organised two-sided market model in print and broadcasting to an internationalising and increasingly platform-based economy**. We speak of ecosystems rather than value chains. Limited supply and assured, adequate demand have been replaced by a seemingly unlimited or abundant offer of content and limited, contested audience attention, for which nationally-based media content providers compete with global players.

Against this background there are three economic trends that impact content production. First, there is an increased supply of professionally made content and user-generated-content. That means more competition, but also fragmentation of resources for content production. Second, there is pressure on some of the mainstream business models that fund media content production: subsidies and advertising. Pay-TV, subscription video on demand (SVOD) and other pay-models are on the rise. Third, companies producing or heavily investing in media content partly depend for business (development) on some so-called multi-layered platforms. These function as mediators who set the terms and access conditions between them and audiences, and/or them and advertisers. In addition, those that depend on advertising revenue now compete for advertising budgets with platforms that are not primarily content producers and have nearly unlimited advertising inventory on offer.[74]

At the same time, those mainly engaged in content acquisition, production and distribution through linear TV and accompanying on-demand catalogues are taking advantage of new online opportunities to directly adress viewers and users. Due to vertical integration in many forms, fair and equal access to content and advertising markets cannot be taken for granted. This is not *per se* a story of media businesses against platforms, as the boundary between the two is also blurring.

[74] For further elaboration of these dynamics see: Evans, T. and Donders, K. 2018 *Platform Power and Policy in Transforming Television Markets*, Palgrave Macmillan

It is a story of media content industries reshaping in an unprecedented way. The challenge for the sector is to find ways to sustain investments in journalism (particularly local and investigative), domestic children's content, news and current affairs programming, and other types of content important to social and political life in the EU. There are already signs of larger newspaper groups successfully transforming and some broadcasters acquiring adtech companies. This is a dynamic situation where EU-level rules such as the new Copyright Directive and the expected ePrivacy Regulation can have significant consequences.

There are legitimate concerns that media pluralism may be reduced if the larger players benefit, while smaller ones such as local or minority media face greater obstacles to reaching audiences and/or advertisers.[75]

In Europe, there has been a long-standing consensus on the **importance of independent and commercially viable media to democracy and society**. There is a need for journalism across a variety of media that functions as a fourth estate, as well as content that reflects our cultural identities and diversity, contributes to social cohesion and inspires people to engage in society, participate in politics and nurture Europe's cultures. While the economics of media have for a long time, in spite of commercialisation, sensationalism, format TV, etc., ensured media could play this role in society, the recent trends mentioned above are eroding this role. Given the increasingly harsh division within European societies, it has become perhaps more important than ever to ensure that media content that plays these important social and political roles is available and attractive to audiences in the context of changing viewer habits.

Ambition #1: Actively protect freedom of expression in Europe

Freedom of expression is protected by Article 10 of the European Convention on Human Rights, Article 11 of the European Charter of Fundamental Rights, other international treaties and covenants, and by the national constitutions of EU Member States. Essentially, all emphasise the right of all human beings and public or economic entities to hold opinions and express those opinions freely, without any intervention, and across borders. People and other entities should be able to access information, again without any intervention. While there are some limitations to this right (for example, one cannot incite hatred or violence) and it carries responsibilities, the right to freedom of expression is nearly absolute. Freedom of expression is a positive right, the protection of which entails not just avoiding undue constraints on expression, but also enabling expression.

We notice that governments in some Member States are jeopardising freedom of expression themselves, for example by facilitating state capture of public media as in Hungary and Poland, failing to protest journalists as in Malta, or threatening ISP blocking as a way of dealing with legal yet potentially harmful content as is being suggested in the UK. Efforts to deal with harmful content online such as the German NetzDG law need to be carefully monitored as there is potential that they will incentivise the overremoval of content with negative consequences for expression. **States overly restricting freedom of expression is unacceptable** as it is the basis for media content production, aggregation, distribution and consumption in Europe, and is crucial for democratic processes that citizens are able to receive and impart information freely and be exposed to a diversity of opinions, positions and world views.

The **European Commission should become more active in protecting freedom of expression and hold to account Member States who do not respect it or fail to protect it**. The procedure in case of infringement of Article 7, concerning the respect for the rule of law, has

[75] Several of these trends are also reported on in the Media Sovereignty Report drafted by Guillaume Klossa in Spring 2019 https://ec.europa.eu/commission/publications/towards-european-media-sovereignty_en

been strengthened. However, that procedure has not been used to deal with freedom of expression in the Member States and it is not appropriate for adressing systemic issues such as the precarious situation of several public broadcasters in Europe, both in financial terms and in political independence, or deficiencies in media plurality. The new rule of law framework can provide a vehicle for revealing challenges to freedom of expression and a mechanism for working with Member States to adress them.[76] A more active stance by the European Commission, and a process, in collaboration with the European Parliament, should be instigated to use the variety of early warning mechanisms at its disposal[77] to trigger the use of this framework, and to establish what kind of behavior is expected from Member States for respecting and protecting freedom of expression. Best practices should be identified related to the legal safeguards for editorial independence of journalism; the appointment of management and funding systems of public broadcasters; media ownership rules including transparency obligations; political advertising; the use of filtering or blocking online; and other relevant issues. In the transposition of the AVMSD some of these issues will indeed be addressed at the Member State level and the Commission's role will need to be handled delicately as most aspects of cultural policy and several elements of media policy are not among its competencies.

Issues for policymakers

- *Identify the standards and best practices expected of Member States and actively monitor results using the early warning mechanisms that exist.*
- *Bearing in mind Member State competencies, take a more active stance in protecting freedom of expression from both deliberate and unintended infringements.*

Ambition #2: Safeguard the production and dissemination of high quality, European content

The European Union has emphasised the importantce of our cultural identity and diversity since the 1980s, when its policy initiatives in the media sector expressed the ambition to create a single market, while also protecting and stimulating the cultural identity and diversity of Europe. That resulted, for example, in the adoption of the 'country of origin' principle (ensuring free circulation and legal predictability for companies), as well as quotas for European and independent production in the 1989 Television Without Frontiers Directive.

All of Europe's subsequent initiatives in the sector have attempted to strike a balance between economic and cultural goals. Today, we face a situation where **content has become more popular but its valorisation on the basis of advertising or direct pay-models has become more challenging (e.g. due to ad-blockers or ad-skipping in case of time shifted viewing)** for some content providers. This trend that has been accelerated by competition from platforms that largely deal in user-generated content and content made for US or global markets. At the same time, the increase of distribution means is also an opportunity for audiovisual content creators. While the AVMSD might allow Member States to impose an investment obligation on providers of on-demand audiovisual media services and this will likely generate some additional funds for domestic production in several EU Member States, the current economic environment requires more holistic and coordinated European policy action. We recommend several concrete measures.

[76] https://ec.europa.eu/info/policies/justice-and-fundamental-rights/effective-justice/rule-law/rule-law-framework_en
[77] Such as the media plurality monitor http://cmpf.eui.eu/media-pluralism-monitor/, the reporting requirements in the AVMSD, the progress reports on the implementation of the Code of conduct on Countering Illegal Hate Speech and the Code of Practice against Disinformation, among others.

First, the **introduction of the levies for production foreseen in the Audiovisual Media Services directive should be implemented carefully, adequately and in a well-targeted manner, and European Commission guidance** should facilitate this. The current wording of the Directive allows it to be applied to any media service, which could result in the levy being applied by Member States inefficently or even in a manner detrimental to their domestic audiovisual media services.[78]

The Commission should monitor how this levy is being applied and the impact it has on national markets. It should also suggest to Member States that income from such a levy should go into funds for domestic content production that not only focus on drama, film and documentary, but also on journalism, (info)entertainment with social value, new media projects with public interest ambitions, and other formats.

The variety of funding destinations is important as drama, film and documentary already benefit from funding today, and consumers demonstrate a willingness-to-pay for such content. It is genres such as journalism and (info)tainment that contribute to informed citizenship, social cohesion, empathy, and other benefits. that will suffer in the coming years. They have been shown to be socially beneficial, but are comparatively expensive and audience's willingness-to-pay is often fairly low. The guidance could further suggest Member States allow for such levies to be offset by direct investments in the production of content by on demand services in order to encourage co-production with domestic content producers.

Second, **Member States should be encouraged to invest a certain percentage of their GDP in public interest driven media content initiatives**, including independent public service media. High quality production requires a critical mass, so overly fragmented distribution of public funds for production can be counter productive. There is a need to preserve centralised institutions that contribute to the achievement of public interest objectives. That, of course, requires adequate funding and subsidies that can act as a lever for growth in the media content industries.

Third, with the aim of a single market for distribution and production in mind, the **European Commission should facilitate discussions on findability and due prominence with industry and civil society stakeholders** across the Union. Media content policies have historically focused heavily on the supply of valuable content from a quality, creativity, diversity, and pluralism point of view. The expansion of satellite and cable services in 1980s and 90s raised concerns about audiences access and exposure to certain categories of content, such as that from public service media. As a result, Member States were allowed to establish 'must carry' rules to ensure their public and other important national audiovisual media were available and prominent in multi-channel services.[79]

Now that content is consumed across a much greater variety of platforms and devices, the key question is how we can ensure that consumers find their way to content that has positive externalities, to content that adds to informed citizenship, and to content that reflects local culture? For example, is it an appropriate 'must carry' equivilant to ask smart television producers to ensure standard apps are not only Netflix, Spotify and YouTube, but also domestic providers of journalism and other media content services? Findability and prominence rules can be applied to various kinds of catalogue-based services, but there may also be ways that these can be addressed in peer-based recommending systems as well, that focus more on how content is presented, tagged and classified. The Commission could focus on facilitating the open exchange of empirical insights on industry practices and user experiences to identify any potential shortcomings and/or best practices amidst the numerous means of navigation and user guidance.

[78] For further explanation see: Broughton Micova, S., Hempel, F. and Jacques, S., 2018. Protecting Europe's content production from US giants. *Journal of Media Law*, *10*(2), pp.219-243.
[79] This was part of the Telecoms Package's Universal Service Directive 2002.

Finally, the **European Commission should take a holistic approach to assess the balance of power between those investing in content production and those aggregating and distributing it, and the extent to which EU law is contributing to ensuring balance**. Concerns have been raised by some industry players that there is a lack of fair competition between broadcasters and press publishers on the one hand and telecommunications companies, social media, search and other online companies on the other hand.

However, boundaries are increasingly blurred by mergers and acquisitions within the ecosystem. Multi-faceted companies are competing for audiences, and advertising budgets. In addition, the ability to own, access and utilise the vast amounts of data being generated is increasingly becoming a strategic asset in this competition. In order to allow nationally-based media companies to compete, the European Commission should lead discussions on revising media pluralism measures and adjusting the approach in the application of anti-trust rules in relation to media and online platforms. This could allow for more collaboration among European media and distribution or platform operators where greater scale is needed, such as in the supply side of programmatic systems or data utilisation, while maintaining diversity of content and ownership.[80]

The European Commission could also offer guidance as to data 'ownership' or 'rights of use' in situations of partnerships between content producers and telecommunications services (such as in addressable TV, flagging and presenting European works). It should also consider establishing an element within the Creative Europe programme aimed at the effective capture and use of data similar to its existing activities to support distribution.

As a final point, there is a need for a thorough discussion on the practice of zero-rating, especially in relation to important 'must have' content and services such as premium sport or social media, and whether or not it overly erodes net neutrality as a principle and can further aggrevate market imbalances.[81]

Issues for policymakers

- *Support and guide a holistic, coordinated policy approach across Member States making use of the policy tools available in the AVMS Directive.*
- *How to ensure that wider EU rules on topics including competition, mergers and data allow media organisations to compete on a level playing-field?*

[80] For further evidence on this issue see the CERRE Report: Broughton Micova, S. and Jacques, S. *The Playing Field in Audiovisual Advertising: What does it look like and who's playing?* April 2019. https://cerre.eu/sites/cerre/files/cerre_playingfieldaudiovisualadvertising_2019april.pdf

[81] See also the CERRE Report on zero-rating: https://www.cerre.eu/publications/fresh-look-zero-rating

Ambition #3: Discourage the economic or political profitability of harmful and illegal content

The spread of harmful and illegal content has become a problematic issue in an era of abundance and the rapid spreading of content via online platforms. In many legislative instruments at EU, international and national levels, stipulations are made against the dissemination of illegal content. In addition, there are a number of statutory rules and initiatives of a self- or co-regulatory nature that deal with potentially harmful content that may not be illegal. Here it is necessary to have in mind the first ambition of protecting freedom of expression, as rules and mechanisms aimed at combatting harmful and illegal content can have serious repercussions on other expressions.

The focus should be on transparent and accountable *ex post* measures against such content, and on intervening in the revenue streams, rather than on filtering content, which can be a very blunt tool, and should be reserved for clearly illegal content. Online platforms are already taking measures that aim to keep harmful content from being profitable such as tools for advertisers to ensure brand safety and demonetising and/or limiting the dissemination of flagged extremist or harmful disinformation. As many of the efforts being undertaken aim to address global services, and place much of the responsibility on those private companies, the European Commission can lead the way in ensuring that proper transparency and appeal measures are in place.

Member states have been taking individual action against a whole range of services with differing geographic origin and core business activity in relation to harmful and illegal content, resulting in a regulatory field that can be considered patchy and inconsistent.

The **Commission should take a close look at these existing regulations and evaluate the effectiveness and consequences for freedom of expression of policies in the following areas with the aim of coordinating a more coherent and freedom of expression-grounded approach**: (i) harmfull content, including incitement to hatred and content that goes against the protection of minors; (ii) disinformation, including fake news for geopolitical or economic gain; (iii) illegal content and copright enforcement.

Issues for policymakers

- *Ensure policies to combat illegal material are transparent, that appeal measures are in place and that freedom of expression is not threatened.*

Ambition #4: Enforce transparency of ownership structures beyond media content businesses

Ownership concentration has always been a central concern in media content policies. Several Member States still have cross-ownership regulation in place. However, most Member States have relaxed these rules over time or have no such rules in place (on top of the existing European merger regulation). The main concern is that overly concentrated ownership also has, besides detrimental economic effects, a negative impact on the plurality of voices in society. For example, the Commission-supported Media Pluralism Monitor identified high levels of risks to media pluralism related to concentration of ownership and ownership influence over content in both the Czech Republic and Poland. In both cases this was combined with problems with political independence of editors and of public media, as well as access to media by regional and other minorities and by women.[82]

However, small markets have difficulties in sustaining varied ownership. There is a need to **carefully monitor the evolution towards increasing concentration. Alongside this, transparency of ownership should be an equally important concern**. Consumers have a right to know who owns the media. That right should apply not only to traditional outlets such as newspaper publishers and broadcasters, but should be extended to all telecommunications, such as cable providers or ISPs offering IPTV and catalogue services, as well as over-the-top content service providers and content sharing platforms. It should also extend to those in the advertising ecosystem upon which so much content production is dependent.[83] Some of large intermediaries have become important channels for people's access to content or in content producers' access to funds.

We recommend the European **Commission takes the initiative in ensuring the mapping of ownership structures that impact media content, and not only those structures of media content production and aggregation**. The Media Plurality Monitor, which draws attention to potential threats to media pluralism in Member States[84] is a useful tool that can be combined with the databases of the Audiovisual Observatory and other information held by national regulators to present clearer pictures of ownership and financing streams.

Issues for policymakers

- *Proactively monitor concentration in media markets along with mapping corresponding ownership structures.*

[82] For details see the Štetka, V. and Hájek, R. *Country Report: Czech Republic* 2017 http://cadmus.eui.eu/bitstream/handle/1814/61135/2018_Czech_Republic_EN.pdf?sequence=1&isAllowed=y and Klimkiewicz, B. *Country Report: Poland* 2017 http://cadmus.eui.eu/bitstream/handle/1814/61151/2018_Poland_EN.pdf?sequence=1&isAllowed=y

[83] The French Sapin Law is a useful example here. It was enacted in 1993 to require transparency in the agency margins and prices in the advertising markets and was amended in 2014 and 2018 to encompass the new programmatic intermediaries. For further explanation see: Broughton Micova, S .and Jacques, S.

[84] http://cmpf.eui.eu/media-pluralism-monitor/

05

DIGITAL INFRASTRUCTURE

AMBITIONS

1 **Realise the 2025 targets**

2 **Provide the conditions for 5G market momentum to build and be maintained**

3 **Realise the Next Generation Internet, fixing the old and accommodating the new**

Ambition #1: Realise the 2025 targets

A key objective for the 2014-19 Commission was to ensure that Europe continues to benefit from advances in digital broadband technologies through the extension of very high capacity (fibre) networks to households, businesses and public institutions, and through the widespread deployment of the current generation of mobile technologies, while providing the conditions for a successful roll-out of the next generation – 5G. A set of 'Gigabit Society' targets for digital broadband deployment in Europe by 2025 have been adopted and the regulatory framework has now been substantially revised and adopted as the new European Electronic Communications Code (EECC) so as to better align with these objectives.

Achieving ultra-fast broadband investment while maintaining a competitive marketplace

The focus of the 2019-24 Commission will have to shift towards ensuring the **effective implementation of the EECC in order to mobilise the level of private sector investment in broadband infrastructure necessary to realise the 2025 targets**. The new framework introduces a number of new and unfamiliar policy concepts which the Commission, working with BEREC, the national regulatory authorities and the telecommunications industry, will now need to operationalise and implement to achieve harmonised and effective implementation across the Member States. These concepts include the application of the new SMP Guidelines to oligopolistic markets, the application of 'symmetric' access remedies, the conditions under which 'co-investment' projects and/or 'wholesale only' networks attract regulatory relief and the use of 'mapping' to identify areas in which only operators offering firm pre-commitments to build will be expected to deploy.[85]

In realising the Gigabit Society, broadband infrastructure is the enabler. However, adoption hinges increasingly on the end-user acceptance of the products and services offered, and where the issues of security and privacy have increased in importance. Hence, the **focus of the 2019-24 Commission is expected to be a more holistic** one – from infrastructure through services to applications.

Resolving the misalignment between broadband ambitions and public funding commitments

We believe there will be a **need to significantly increase the level of public sector investment in broadband infrastructure if the 2025 targets are to be met**. A recent CERRE Report[86] on the role of state aid in broadband policy over the period 2003-2018 shows that less than 4% of the European Regional Development and Agricultural Funds are applied to support the extension or improvement of broadband infrastructure, far less than other Commission strategic priorities. The report contains recommendations on how to increase the flow of public funds that will be required to accelerate the adoption of the latest fibre technology, including a **revision of the current Broadband State Aid Guidelines** so as to better align them with the Commission's broader Gigabit Society objectives and with the new Code.[87]

The CERRE Report is consistent with, but goes some way beyond, the recommendations which appear in the Court of Auditors' recent review of the broadband state aid regime.[88] The recommendations include: proposals for stimulating the use of State Aid and the use of European funds; the removal of non-financial constraints; a more holistic view of financing; as well as recommendations on the collection and publication of data to measure State Aid performance on the basis of funds deployed rather than the time to approve notifications.

[85] See 'New European Electronic Communications Code: Interpretation & Implementation' available here.
[86] See 'State Aid for Broadband Infrastructure in Europe: Assessment and policy recommendations' available here.
[87] https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:025:0001:0026:EN:PDF
[88] https://www.eca.europa.eu/Lists/ECADocuments/SR18_12/SR_BROADBAND_EN.pdf

Increasing the role of demand-side policies

Although the 2019-2024 Commission should retain a strong focus on the supply side challenge of facilitating investment in new broadband technologies, it should also start to **redress the lack of focus on demand-side measures which would ensure the greater and more rapid adoption and use of digital technologies by households and businesses** in Europe. With this in mind, a CERRE Report on demand side policies to accelerate the adoption of ultrafast broadband services recommends that the Gigabit Society targets should **include a target for the adoption of new technologies** alongside the targets for their deployment.[89]

In addition, we recommend that the Commission promote the use of **'collective purchasing' schemes** to encourage mass migration onto new networks, as well as a range of other **measures to reduce switching costs and encourage individual households to adopt new broadband technologies earlier** than they might otherwise. **E-government** can play a role as anchor tenant, in bundling and in backbone development in rural areas. We also suggest that the State Aid rules for broadband, which we discuss above, incorporate conditions to ensure both the deployment of infrastructure and the adoption of new broadband services that are enabled by it.

In addition, some households will be unable to access new broadband services due to budgetary constraints. The need for **'social tariffs' to avoid digital exclusion** is a legitimate concern for an updated 'universal service' policy regime. It is anticipated by the EECC, but the new Commission will need to consider how it should be operationalised. Overall, the lack of focus on 'demand side' measures was a significant omission from the EECC, and one which the 2019-24 Commission ought to take steps to rectify.

Providing leadership and coordination across policy and regulatory areas

While in the past infrastructure developments, such as telecommunications, electricity and transport, have largely been treated separately, in the 2019-2024 period the **interdependencies of sectors are expected to increase significantly and the need for alignment of policies and regulations across infrastructural sectors will grow**, to ensure sector-specific progress.

Moreover, interdependencies are increasing around critical infrastructure, for example, with the energy and transport sector increasingly relying on ICTs for their proper functioning. Moreover, coordination across sectors will stimulate uptake of ultra-fast broadband and allow for cost reduction in terms of deployment or renewal, for example through coordinated civil works. In this context, harmonisation of the implementation of the Broadband Cost Reduction Directive and amendment, to include the full scope of deployment costs and barriers is important.

Furthermore, **coordination is considered essential to maximise the benefits from limited funding, both private and public**. A salient example of the need for alignment is the development of smart mobility, which links road infrastructure works with the roll-out of 5G and the future of autonomous driving. This calls for coordination between the private sector mobile operators and the public sector, at multiple levels of government. Another example is smart cities, which links the deployment of all kinds of IoT applications to the availability of communications infrastructure. Here again optimal outcomes will require coordination between private and public actors.

Another example is smart electricity grids. Increasingly, the benefits of a ubiquitous broadband communication infrastructure are reflected in the cross-sector developments it enables, including cost savings and efficiencies in the maintenance of other infrastructure and improvements in the delivery of public services. **While much of the work will have to be done at the local level, European Union policy – and where appropriate regulation – on the future of smart industries and sectors is essential to ensure uncertainties in the market are reduced in order to stimulate investments**. This relates in particular to the increasing interdependence

[89] See 'Demand-side Policies to Accelerate the Transition to Ultrafast Broadband' available here.

between infrastructural developments, sector related policies, the realisation of sustainable development goals and the economic and social benefits that a harmonised approach may provide to the Union.

In the next 5 years, policy and regulatory attention will also have to include the higher application layers, which are essential to assure a smooth Union-wide product and application flow. This applies to areas such as safety requirements and liability in the (autonomous) transport sector. A harmonised approach across the Union will avoid the need for 're-programming' at the border of Member States. It will reduce market uncertainty, lower risks and hence stimulate investments in electronic communications infrastructure.

Leveraging virtualisation to counter consolidation

On the access side of broadband electronic communications infrastructure, the goal remains very high capacity (VHC) networks. The pace at which this goal is achieved will receive a **boost from the fibre backhaul needs** resulting from the deployment of 5G, in particular the network densification with small cells. This development **favours the integrated fixed and mobile operators and drives the mobile-only players to collaborate closer or merge with fixed players**.

This structural change in the industry, with **fewer infrastructure players, increases the need for wholesale solutions to retain vibrant competition on the retail level. Such a shift is enabled by increasing virtualisation of mobile and fixed networks**, through software defined networking and network function virtualisation.[90]

In the interim, the enhancements of twisted pair copper solutions from the distribution point into the premises remain a cost-effective solution in the short term; as are coax-based solutions from the last amplifier. To avoid legacy creep, fibre deployments could be recommended for green field situations, such as new housing developments and city renovations. The current review of the Guide to High-speed Broadband Investment will provide an opportunity to reflect the latest industry developments.

Issues for policymakers

- *Confront the funding gap in meeting connectivity targets: unlocking private investment through effective implementation of the EECC and facing up to the levels of public funding required.*
- *Deliver holistic policies that foster demand for this connectivity and ensure cross-sector coordination with areas such as energy and mobility which will increasingly rely on telecoms infrastructure.*

[90] Virtualisation refers to running multiple software applications, possibly on different operating systems, on a single hardware platform. Software Defined Networking (SDN) and Network Function Virtualisation (NFV) provide adaptability and scalability in communications networking in response to increasing traffic needs from cloud computing, mobility, social networking and video use. In SDN packet routing and forwarding are separated into a control plane and a data plane. Through NFV the virtualisation as applied in the IT-world is applied to network devices, such as routers, firewalls, switches, etc. NFV decouples the network functions from proprietary hardware platforms and implements these functions in software, allowing standard high-performance hardware to be used.

Ambition #2: Provide the conditions for 5G market momentum to build and be maintained

The worldwide success of 2G-GSM can be traced back to a set of coordinated actions by a broad range of stakeholders within the European Union to provide the conditions for GSM market momentum to build and be maintained.[91] The ambition for the 2019-2024 period should be providing the **appropriate set of conditions for 5G market momentum to build and be maintained**, that is, reducing market uncertainty to stimulate investment. Compared to the existing 4th generation, 5G offers improvements along virtually all important dimensions: in peak data rate, in user data rate, in latency, in support of mobility, in spectrum efficiency, in network energy efficiency, in connection density and in area traffic capacity. However, it appears that the transition from 4G to 5G lacks the stepwise improvement that has led to the success of 2G-GSM.[5]

The major change between 4G and 5G is within the 'black box': the fully virtualised architecture of 5G. As such, the transition from 4G to 5G could mirror the success of IT services moving into the cloud. To repeat this success, the **providers of mobile services will have to change their business approach from a focus on the consumer mass market to enabling business users across all industries and sectors**, from start-ups to established conglomerates.

In providing the conditions for 5G market momentum to build, the overall industry perspective should be considered, including market structure, investment obligations or expectations, and radio spectrum access fees, against the overall macro-economic benefits that an ultrafast and ubiquitous wireless electronic communications infrastructure provides.

Achieving investment in 5G infrastructure while maintaining a competitive marketplace

The transition to 5G does raise issues in terms of competition that European policymakers need to consider. First of all, the **pressure for infrastructure sharing is expected to increase** in order to reduce capital expenditure needs. Moreover, sharing will be required to reduce local community concerns around the increasing numbers of antenna sites as a result of densification. Informing the local actors involved on the objectives with 5G will reduce undue delays and hence market uncertainty. An update of the planning rules will be required, as well as harmonisation of the electro-magnetic field strength limits.

A totally different type of impact concerns the role of MVNOs. In the past and current mobile generations, so-called deep-MVNOs typically own a part of the signalling and routing control infrastructure, while using traffic capacity from the MNOs.[92] In the fully virtualised infrastructure of 5G, such an arrangement may no longer be possible. MVNOs will have to become so-called Virtual MNOs (VMNOs), and **MNOs will have to collaborate with VMNOs to manage a virtual network slice or multiple slices** if service differentiation is required. Operationally this means that MNOs and VMNOs will have to reach an agreement to provide access to the APIs as integral parts of the 5G architecture.[5]

A current competition concern that 5G may help to resolve is related to the consolidation of the sector. A returning pattern has emerged, whereby consolidation takes place in between auctions for radio spectrum access for each new generation of mobile technology. This triggers regulators to aim at introducing at least one new player as part of each auction, though this has been increasingly difficult and has shown diminishing success. This consolidation reflects the deep investments that the sector requires. The **opportunity that 5G provides is to open up the APIs to create a virtual wholesale-retail model. A small(er) number of MNOs can be offset by a much larger number of VMNOs, with a more differentiated services scope** than it is

[91] See 'Towards the successful deployment of 5G in Europe' available here.
[92] Light MVNOs typically do not own infrastructure as their business model is based on pure retail of minutes of service.

generally the case with the current generation of MVNOs. VMNOs may therefore specialise in serving the mass consumer market or the specialised needs of vertical industries.

This new industry structure has the potential to deliver a vibrant level of competition on the retail level thereby serving the diverse end-user interests, business and consumer alike. The need for dedicated spectrum assignment, such as for GSM Rail and TETRA, may fall away if and when virtualisation has become a reality, further improving the efficient use of a scarce resource.

The introduction of 5G presents incumbent operators with new business opportunities and new business models. It also constrains current forms of competition, while opening up new ones. Hence, regulators and competition authorities will need to appreciate the new rules of the game and will have to be vigilant to assure competition is promoted and investment stimulated. This applies at the Member State level, as well as the EU level.

Achieving economically efficient allocation of radio spectrum access rights

While the Member States are the custodians of radio spectrum use, the European Commission and the Radio Spectrum Policy Group (RSPG) have an important coordination and harmonisation role. However, in the past it has failed to take an active role here or taken the opportunity to challenge bad decisions. A key issue will be ensuring the economically efficient allocation of radio spectrum access rights.

Over the years auctions have become the dominant instrument in this allocation and much has been learned to allow the design of auctions that avoid excessive fees. Nonetheless, the prospect of high fees attracts the interest of national governments. In providing the conditions for 5G market momentum to build and be maintained, Member States should **design spectrum auctions that allocate efficiently, but refrain from designs that unduly tax or otherwise constrain the developments in the sector**. This will optimise investments in the roll-out of 5G.

Balancing exclusive and non-exclusive rights to access the radio spectrum

The anticipated growth in data rate requirements, in the number of end-users, connected devices and applications requires additional mobile communications system capacity to be realised through (1) the allocation of additional radio frequency bands; (2) densification of the radio access network; (3) and more efficient use of the spectrum, as one of the 5G design objectives.

Alongside the nation-wide exclusive licensed allocation of frequencies for mobile use, there is a **growing need for non-exclusive unlicensed frequency bands for localised use cases**, ranging from remote door openers, through Wi-Fi to micro-wave ovens. With 5G being targeted to vertical industries, exclusive localised and specialised enterprise use is also expected to grow. The next Commission should therefore seek to significantly expand the opportunities for those actors who wish to exploit spectrum on an expanded and innovative basis. **To assure optimal flexibility in the unlicensed frequency bands, regulators should refrain from creating specific assignments for dedicated use cases**.[93]

In the past, to meet specific needs spectrum allocations have been granted on an exclusive basis to non-telecom actors, such as railway operators (GSM-R) and the public protection and disaster relief sector (TETRA). The current debate on upgrades to broadband suggests that the common use of the 4G and 5G standard would allow for economies of scale in terms of equipment. No consensus has been reached yet whether public protection and disaster relief (PPDR) should be provided using dedicated spectrum or should be provided as a service.[94]

[93] See the analysis in Kruys & Anker (2018) Technology agnostic regulatory criteria for licence-exempt spectrum. *Digital Policy, Regulation and Governance* 20(1) 1-13. https://doi.org/10.1108/DPRG-05-2017-0022

[94] Full integration implies that the QoS required by the PPDR sector, such as longer uptime during power outages, will need to be provided across the whole network.

The **virtualised architecture of 5G using APIs will allow PPDR and other dedicated sectors to become virtual mobile network operators**. This combines the common use of the infrastructure with full control over the service functionality. Such a development would provide a major boost to 5G deployment and would facilitate similar use by a wide range of vertical applications, such as in autonomous driving and in variants of smart cities. In this scenario it would provide an alternative to current exclusive use of spectrum on a local basis, such as Private-GSM and Private-LTE.[95]

However, 5G also allows the development of dedicated enterprise solutions, for example, as part of Industry 4.0, for which local exclusive spectrum in a higher frequency range would be the natural solution.[96] Note that allocations in the 3.5 GHz band are now considered by a number of regulators across the EU to enable the evolution towards Private-5G.

Involving non-telecoms actors

Much of the debate during the 2014-2019 period has related to the role and incentives of the existing telecommunications operators and, in particular, their capacity to finance investments in new broadband technologies.

However, we consider that **the successful deployment of 5G mobile technologies and the 'Internet of Things' over the 2019-2024 period will depend upon the effective participation of a wide range of other industrial sectors or 'verticals'**, such as the automotive industry, transport sector, health, those providing public emergency or security services and other industries who are best placed to adopt these technologies within existing processes and activities or to use them to develop new ones, either on a national or on a pan-European scale.

This produces two new and important challenges for the 2019-24 Commission. First, we believe that the **Commission may have an important role to play in facilitating co-operation between different participants – public and private – in the evolving '5G value chain'** (as well as between the relevant services within the Commission itself). It already does this in relation to collaborative working in pre-commercial stage R&D, but this may now need to extend into commercial activities as well. This was recognised by the Commission in its first 5G Action Plan.[97]

In contrast, policymakers in the United States take the view that: 'Turning innovators loose is far preferable to expecting committees and regulators to define the future. We won't wait for the standards to be first developed in the sometimes arduous standards-setting process or in a government-led activity.'[98]

We think the next Commission should consider carefully the circumstances under which the Commission might intervene and when it would be better to leave market participants in different 'verticals' to resolve issues amongst themselves, what institutional arrangements might best facilitate such co-ordination, how the task should be approached and resourced, and the circumstances under which it should be undertaken at a European level. The Commission should also be prepared to adapt quickly if it becomes clear that particular initiatives will fail to deliver on their objectives or are inhibiting the development of the market. The result of this work should be incorporated into a second '5G Action Plan' in which the focus moves from enabling measures in spectrum and technical standards to detailed implementation by market participants, while allowing for fast-learning.

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[95] Note that the deployment experience of SDN and NFV in fixed networks suggests a more modest pace than anticipated when virtualisation was launched around 2013. Mainly due to the complexity that virtualisation entails.
[96] This development can be compared with the pabx in the days of circuit-switched telephony. A pabx provided a much wider range of features to end-users than the public network provided.
[97] 5G for Europe: An Action Plan. COM(2016) 588 final and SWD(2016) 306 final. https://ec.europa.eu/digital-single-market/en/5g-europe-action-plan?utm_source=twitter&utm_medium=social&utm_campaign=5G
[98] FCC Chairman Tom Wheeler, 20 June 2016 'The Future Of Wireless: A Vision for US Leadership in a 5G world' https://www.fcc.gov/news-events/events/2016/06/future-wireless-vision-us-leadership-5g-world

Second, it will be important to recognise that **relations between the telecommunications and other sectors may be competitive or adversarial, as well as co-operative**. The role of different commercial actors in different parts of the 5G value chain remains unclear today and is likely to be contested as different actors seek to control different activities, as we explained in a recent CERRE Report on 5G.[99] The Commission should encourage the emergence of innovative solutions of this kind but should not intervene unless it is clear that there is harm, given the need to achieve the 2025 targets highlighted above.[100] Such conflicts are otherwise likely to raise costs and uncertainty, as well as lead to delays in the deployment and adoption of new 5G technologies in Europe.

Balancing 'open internet' and differentiated services for verticals

In addition, the next Commission will need to ensure that the **Open Internet Regulation**[101] that was adopted in 2015 and which has been in force since April 2016 **does not adversely or unintentionally impact the adoption of new digital broadband technologies in Europe**, and should be prepared to act quickly if it does. These concerns were first articulated in a 2014 CERRE Report[102] - before the Open Internet regulation was adopted - and more recently in a CERRE Report on 'zero rating' practices.[103]

Although the general aims of the current regulation are clear, its application to new services and the management of new networks are not. New technologies such as 5G envisage that networks will be configured to better match the different needs of different users and services, but it is unclear whether this aligns with principles of 'neutrality'. The United States has recently withdrawn its 'net neutrality' regulation, and so any adverse impact may place Europe at a comparative disadvantage to other regions. The upcoming review (after four years of being in force) provides the opportunity for a re-assessment and adaptation to accommodate evolved needs.

Issues for policymakers

- *Ensure wider policy issues do not hamper 5G deployment: that competition policy does not impede necessary infrastructure sharing; that Open Internet Regulation does not prevent configuring networks to match user needs.*
- *How to encourage spectrum allocations that are fit for purpose in 5G: efficient, and effectively balancing exclusive and non-exclusive rights?*
- *Determine where to intervene to ensure coordination between telecoms and wider industrial players, and where to leave it for market participants to determine.*

[99] See 'Towards the successful deployment of 5G in Europe' available here. See also the discussion of the relationship between MNOs and MVNOs above.
[100] Which is not to say that a strict application of Europe's existing 'net neutrality' rules is required, as explained earlier.
[101] Regulation 2015/2120 of the European Parliament and of the Council of 25 November 2015 laying down measures concerning open internet access and retail charges for regulated intra-EU communications**,** as amended by Regulation 2018/1971.
[102] See 'Market Definition, Market Power and Regulatory Interaction in Electronic Communications Markets' available here.
[103] See 'A Fresh Look at Zero-Rating' available here.

Ambition #3: Realise the Next Generation Internet, fixing the old and accommodating the new

The Next Generation Internet (NGI) initiative launched by the Commission to "re-imagine and re-engineer the Internet for the third millennium and beyond" is very timely. The NGI initiative aims at "developing a more human-centric Internet supporting values of openness, cooperation across borders, decentralisation, inclusiveness and protection of privacy; giving the control back to the users in order to increase trust in the Internet. It should provide **more transparent services, more intelligence, greater involvement and participation, leading towards an Internet that is more open, robust and dependable, more interoperable and more supportive of social innovation**." [104]

In imagining the future needs of the Internet, due account should also be given to the increasing use of the Internet by machines as part of the Internet-of-Things and Industry 4.0 developments. Moreover, lessons from the past should be taken into account as well. Despite its success, the Internet does have some serious flaws, which must be resolved as society and the economy become more dependent on this critical infrastructure.

Some authors argue that the Internet has become too successful, too quick. The original ARPANET and the NSFnet, from which the Internet evolved, were prototypes for a limited group of research organisations for a limited set of tasks. However, the TCP/IP code became freely available and was used in networks everywhere. These networks evolved into the global Internet, now used for many things for which it was not designed.

The flaws of the current Internet can be summarised as: wrong addressing model; wrong congestion control; no security mechanisms; difficulty in supporting mobility, multi-homing and quality of service; difficulty in supporting real-time and low latency applications.[105] As a consequence, our cybersecurity efforts are largely aimed at fighting symptoms rather than resolving the issues at the root cause. Fixing the flaws will be necessary before a successful transition to the tactile Internet can be considered.

Deciding on a next generation Internet and its implementation is not a trivial affair. Since the Internet transitioned in use from a US government supported research community to private business in the late 1980s and to the wider public in the mid-1990s, the Internet has seen only one major upgrade. This was the transition from IPv4 to IPv6 to provide an extended IP address range, to which a number of other enhancements were added.[106]

If one wants to retain one global Internet, global alignment of the stakeholders will be required. Meanwhile, improved versions of the Internet have been developed, such as RINA (led by Boston University) and SCION (led by ETH Zürich), and running code is available and is being tested by multiple organisations at various locations.[107]

Assuming the 2019-24 Commission intends to take the NGI initiative forward, which would be in line with the goals and norms that are core to the European Union project, it calls for a leadership role that will transcend the Union and will require more than one Commission term.

The notion of a more open Internet has also obtained a new dimension as nation states feel an increasing threat to national security. Open economies and open networks have enabled the mala fide use of the Internet to grow.

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[104] Sources: https://www.ngi.eu/news/2018/05/22/interview-with-the-new-deputy-and-acting-head-of-the-ngi-unit; http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-24-2018-2019.html

[105] Sources: "Reflections on the history and future of the Internet" by K. Neggers, former IAB member, presented at the DigitalOcean Meetup February 22, 2018.

[106] Given the large installed base of IPv4 the transition is a long process, which started around 2008 and 10 years later- approx. 23% of the requests for Google search use IPv6.

[107] Sources: https://www.scion-architecture.net/; http://csr.bu.edu/rina/index.html.

The **increasing dependence of the economy and society on the ICTs has made them vulnerable to cyberattacks**, which may be economically or politically motivated. The concerns include so-called 'backdoors' in infrastructure equipment, which may be used by governments for surveillance, espionage, the spread of malware or – in the extreme – taking control over the infrastructure to shut it down. This has raised the question as to whether national governments are valuable data.

However, **assuring or regaining digital sovereignty** is not a trivial affair. It implies governmental intervention in the market. This may range from prescribing certain technical functionality to be made available, to intervening in the procurement of equipment and services, which will violate European regulations regarding (public) procurement and will lead to fragmentation of the EU market. The current political discussion on the role of equipment from Huawei in enabling espionage by the Chinese government is a case in point. This case represents a major trade-off, between lower equipment costs and lower security risks. How should this trade-off be resolved? Who should decide? This is at the core of the question of how open Europe wants to be.

Issues for policymakers

- *How open should Europe be in facilitating the Next Generation Internet? How to balance the need for an "open, robust and dependable" Internet, with cybersecurity and digital sovereignty?*

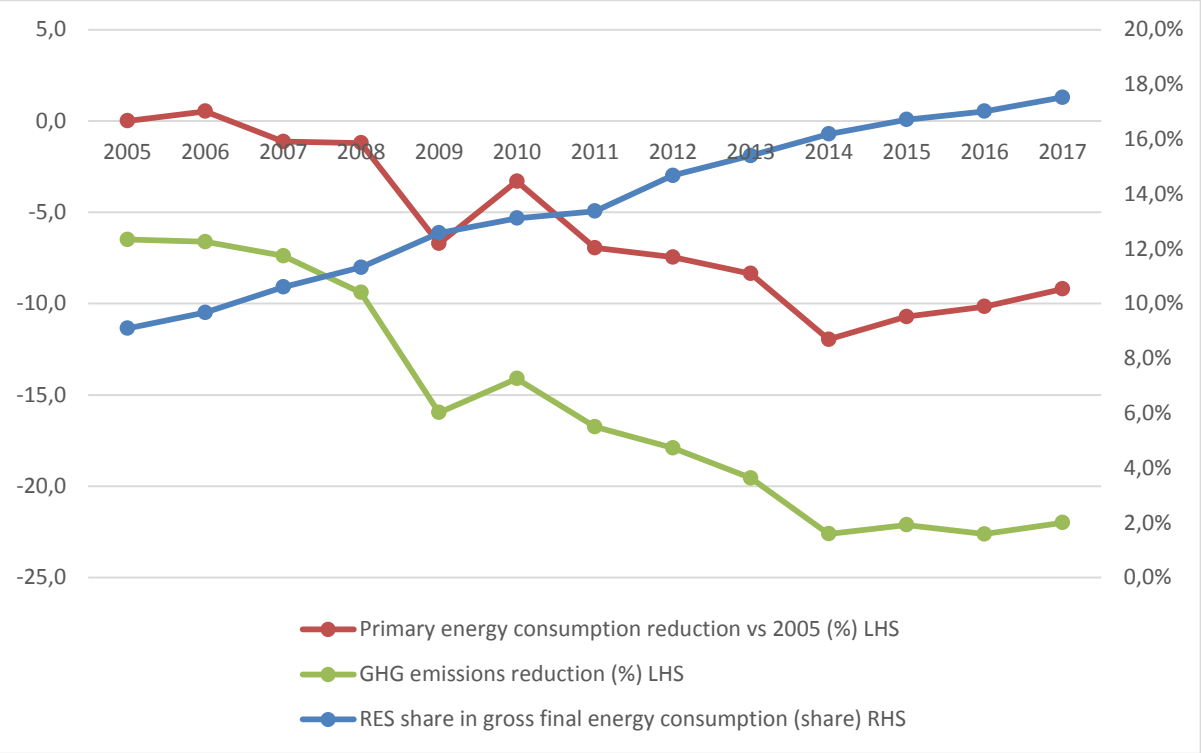
A FAIR, EFFICIENT AND SUSTAINABLE ENERGY UNION

INTRODUCTION

In the last five years, EU energy and climate policy has been largely on track to meet its ambitious 20-20-20 energy and climate goals. There has also been considerable progress towards completing the internal markets in electricity and gas.

As Figure 1 shows, as a bloc the EU has met its 2020 target for CO_2 reduction (a reduction of 20% on 1990 levels) and is on track to meet its 2020 Renewable Energy Sources (RES) target of 20%. At a European level, the energy efficiency target is also likely to be met. There is, however, a small but significant probability that it will be missed, as it requires a 13% reduction in primary consumption on 2005 levels by 2020.

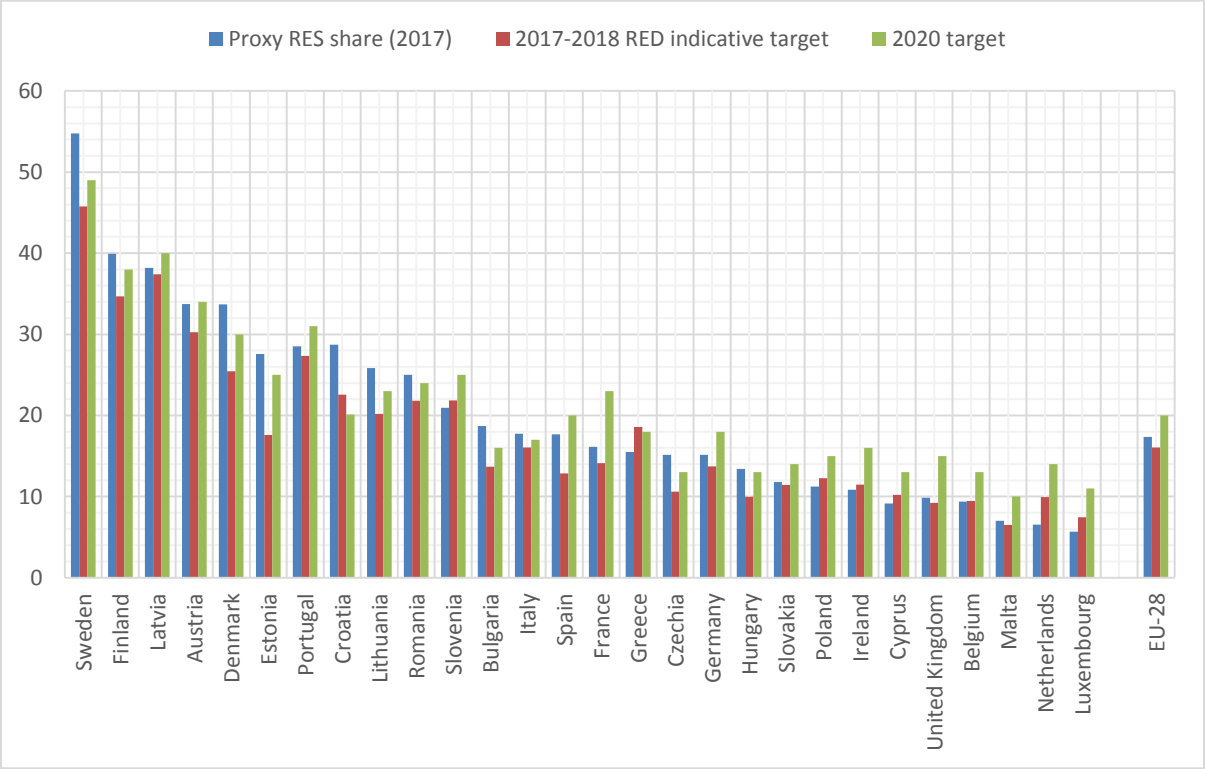
Figure 1: Progress towards EU Energy and Climate Targets



Source: European Environment Agency and Eurostat

Moreover, the progress made by individual Member States towards the 2020 goals has a much more mixed picture. The contribution varies from country to country with leaders and laggards (see Figure 2). Twelve countries met their 2020 target by 2017, while eight were not on track to meet their 2020 target. This national disparity may persist - to a lesser extent - during the coming decade (2020-2030), in part due to the implementation of Integrated National Energy and Climate Plans (NECPs), in line with the Governance of the Energy Union and Climate Action Regulation.

Figure 2: Progress of individual countries on Renewable Energy Targets



Source: European Environment Agency (https://www.eea.europa.eu/data-and-maps/daviz/countries-breakdown-actual-res-progress-5#tab-googlechartid_chart_11)

EU industrial policy on energy – coordinated via national RES targets – is showing signs of paying off via both onshore and offshore wind as well as solar (largely justifying earlier subsidies, at least in the aggregate).[108] Fossil fuel prices have remained weak, partly in response to the realisation that backstop technology prices are falling and that extraction rates need to rise for fossil fuel producers.[109] The result has been a reduction in Europe's overall direct exposure to the international geopolitics of energy.[110]

Since 2008, demand for electricity in the EU-28 has fallen by 3.5% and by 10.5% for gas[111] since 2010, due to moderate GDP growth and the impact of energy efficiency measures and rising product standards, particularly in lighting and gas boilers. Exchanges on the European Network of Transmission System Operators for Electricity (ENTSO-E) system peaked in 2015.[112] The growth in distributed generation has reduced demand on the electricity transmission system.

The ongoing improvements in battery storage capacities and the progress in electric vehicles at scale will accelerate the electrification of transport modes and a renewables-based electricity generation system.

[108] Newbery, D. (2017), *How to judge whether supporting solar PV is justified*, EPRG Working Paper, No.1706.
[109] Oil price (Brent) was $103 on 2 April 2014, and was $70 on 3 April 2019.
[110] Measures of the diversity of the EU's energy supplies have substantially improved since 1990. Chalvatzis, K.J. and Ioannidis, A. (20176), Energy Supply Security in the EU: Benchmarking Diversity and Dependence of Primary Energy, Working paper Energy supply security in the EU: Benchmarking diversity and dependence of primary energy," Applied Energy, Elsevier, vol. 207(C), pages 465-476
[111] Figures from Eurostat.
[112] Latest figures 2017. Source: ENTSO-E Factsheets.

The current Commission can take credit for continuing innovation in RES, which has delivered significant reductions in costs, advances in energy efficiency, a substantial tightening of the EU ETS and improved security of supply in terms of diversity of energy sources and less supply interruptions.[113] In addition, the Commission has been attentive to unfair import competition and thus protective of EU interests. It has been notably active in supporting European industrial interests in the energy sector against anti-dumping and anti-subsidy measures, including adopting trade defence measures on solar panel imports from China.

There has also been genuine progress towards creating single markets in electricity and gas, with increased cross-border trading in electricity and increasingly coupled regional and pan-European wholesale markets.[114] The Agency for the Cooperation of Energy Regulators (ACER) has substantially increased its role in monitoring cross-border trade and has overseen the massive process of network code review that will allow standardised network connection arrangements across Europe. Regional security coordinators (RSOs) have been introduced and have aided coordination between national electricity system operators.

The Clean Energy Package of November 2016 was a significant achievement with eight new directives and regulations in the process of entering into force. Notable developments are the increase in the renewable energy target for 2030 to 32%, a reduction in energy consumption by 32.5% (against baseline), creation of a new European body for DSOs and an emphasis on promoting active consumers and citizen energy communities. This is in addition to the earlier agreement to extend the EU ETS to 2030 and reduce GHG emissions in the EU ETS by 43% compared to 1990 levels (40% for overall emissions).

However substantial issues remain to be addressed. Market integration is still a work in progress, with the single markets in both electricity and gas in particular not yet fully completed. While the optimal use of interconnectors for day-ahead trading of electricity has improved, real-time and continuous trading, as well as the reserve and ancillary services markets, retain room for improvement.

The proliferation of national arrangements, notably in capacity mechanisms, has favoured national generation and has constrained European energy security efforts. The impression remains that national TSOs and NRAs are resisting European integration in order to make their national systems easier to manage and that the available cross-border transmission capacity is not being optimally released to the market.

Moving from 30% to 50% of renewable electricity - as mentioned in the 4th Energy Package - will demand even greater flexibility from the power system, since intermittent renewables will largely contribute to the increase in generation capacity. Network integration, reserve capacity and storage can provide flexibility, as can market participation by active consumers and demand aggregators. The EU single market solutions can enhance this flexibility at a much lower cost than individual Member State markets, but this will require significant co-ordination between Member State ancillary services markets. This places pressure on network companies, which will need to re-think their economic models. It also calls for broader discussions on the network tariff structures that the Commission placed on the agenda in the revised Electricity Directives and Regulations.

There have been significant rulings in the area of State Aid, partly in response to Member State actions focussed on national energy security concerns, for example on support schemes, power purchase arrangements (PPAs), market opening and capacity markets, which seem to have created

[113] On customer minutes lost, see CEER (2018), *CEER benchmarking report 6.1 on the continuity of electricity and gas supply data update 2015/16.* Brussels: CEER.
[114] Pollitt, M. (2019), 'The Single Market in Electricity: An Economic Assessment', *Review of Industrial Organization*. DOI: https://doi.org/10.1007/s11151-019-09682-w

regulatory uncertainty at EU level.[115] These rulings will need to be integrated into the forthcoming review of State Aid guidelines. The recent ruling against the UK, retrospectively cancelling all capacity market contracts five years after the initial capacity market auction, is particularly worrying to investors. This also calls for a review of the procedure concerning the Commission's assessment of notified measures. Energy remains one of the sectors setting the agenda on state aid reform.

Distributional issues around energy remain a significant concern, with the continuation - and in some cases re-introduction - of retail energy price controls in a number of Member States. Climate policy is proving expensive for the EU electricity customer and thus raises energy poverty and energy justice issues. Member States can and do have individual preferences on energy taxes and subsidies and on the extent of consumer protection afforded to residential energy consumers.

The emphasis on facilitating a smart energy transformation based on smart meters and consumer participation in the market is laudable as an industrial/innovation policy; however, it should not be confused with measures to address distributional concerns. Most domestic energy consumers seem unwilling or unable to engage with smart energy, with only better-off consumers benefiting from smart meters and associated prosummage.

There is still much to be done to implement network codes and the appropriate allocation of risk between investors and the government on large-scale energy projects such as nuclear, interconnection, off-shore windfarms and LNG facilities.

There is also the issue of whether carbon taxes require coordination across Member States, where these exist in addition to the EU ETS. The introduction of additional carbon taxes on sectors covered by the EU ETS can be thought of as a reverse state aid issue, where some Member States are deliberately exporting polluting industries to counterparts while still benefiting from the output of those industries via the single market. Carbon taxation may also negatively affect the stability of the EU ETS system and could lead to inefficient abatement efforts at an EU level. This makes action to coordinate carbon reduction ambition upwards important for the new Commission.

Many National Regulatory Agencies (NRAs) remain ineffective and subject to government interference. The Commission still has a role to play in promoting best practice among NRAs and specifying guidelines to ensure sufficient independence from government, although this remains difficult given the levels of subsidies required to deliver climate and energy targets. In addition, ACER remains relatively feeble.

In the coming five years, we can expect further falls in the cost of wind and solar power, energy storage and electric vehicles. This will have significant implications for the energy transition, but the prospects for global fossil fuel prices (and carbon prices), nuclear, hydrogen and CCS remain unclear. We can expect digitisation to increase (as in all sectors). However, the extent of the impact of new actors and new business models in the next five years is difficult to predict and subject to regulatory uncertainty, with some capacity for negative disruption, particularly if new technology brings unwelcome arbitraging of existing energy taxation and network fixed cost recovery mechanisms.

On energy, many open questions remain, particularly over the continued use of gas within the EU. While the European Commission's long-term scenarios predict a decrease in demand for gas, what role will it play in the next five years? Will it continue to decline, and will there be significant moves

[115] See notably: Case T-356/15, *Austria* v *Commission* (Hinkley Point C nuclear power station), ECLI:EU:T:2018:439; Case T-793/14 *Tempus Energy Ltd and Tempus Energy Technology Ltd* v *Commission* (UK capacity market), ECLI:EU:T:2018:790; T-251/11 *Republic of Austria* v *European Commission* (Austrian Green Electricity Act) ECLI:EU:T:2014:1060; Judgment in Case C-405/16 P, Germany v Commission (amended German law concerning renewable energy sources (EEG 2012), ECLI:EU:C:2019:268.

towards the electrification of heating - as has already been the case in the Netherlands, UK and Austria. Will gas be able to transition to become an increasingly green energy source? Will the value of the gas network, as a provider of energy security in terms of back-up gas generation, increase as volumes decline? Is there further work to be done in coupling gas and electricity networks?

Within the electricity sector, questions remain over the appropriate regulation of energy storage, how to promote the required energy infrastructure investments and how to co-ordinate DSOs and TSOs.

Finally, it is important to emphasise that although the EU may have met its 2020 targets, it is not currently on track to meet its 2030 targets on carbon reduction, RES shares or energy efficiency.[116]

In the light of this, we will explore three areas where we think the European Commission and Parliament can make a significant impact in the next five years; markets, infrastructure and regulatory and institutional developments. For each area, we will introduce the main ambitions (priorities) that future policymakers and leaders should consider for their programmes for the next five years.

[116] Source: European Environment Agency (2018), *Trends and Projections in Europe 2018: Tracking Progress Towards Europe's Energy and Climate Targets*, p.9.

01

ELECTRICITY AND GAS MARKETS

AMBITIONS

1. **Expand the scope of the ETS to include more sectors and countries**
2. **Strengthen demand-side policies to improve the flexibility of the electricity system**
3. **Build a coherent and long-term EU regulatory framework for green gases and hydrogen**
4. **Strengthen the consumer agenda and clarify the role of new actors**

Ambition #1: Expand the scope of the current ETS to include more sectors and countries

The EU ETS remains the flagship of EU's energy and climate policy. It is an institutional arrangement with significant capability for driving decarbonisation in the energy sector and in the wider economy. The ETS has proved a robust and resilient mechanism, in part because it has the important effect of ensuring that prices fall during recessions and rise during booms, thus dampening the impact on the business cycle.

Policymakers should prioritise improving the ETS and learn from other schemes around the world. We suggest extending the EU ETS to further sectors, with at least 85% coverage (as in Quebec-California). We would also welcome linkage with similar schemes (e.g. the new ETS in China), where this does not dilute the ambition of the scheme and continues to promote global decarbonisation. The 100% auctioning of permits and a move to border tax adjustment for included sectors, subject to international competition, would be desirable.[117] Wider coverage could see sectors such as agriculture and air and freight transport included.

A key challenge for the Commission is to promote a market design across Europe that leads to an efficient trading arrangement.[118] Any such market design should include an appropriate short-run reserve market, auctions for RES (where learning benefits remain that are in need of support), an appropriate carbon price and ancillary services markets. Getting the short-term signals for capacity correct is an essential element behind building longer-term reserve markets that are fit for purpose, e.g. capacity markets.

As we know, it is challenging to create market solutions that work for the entire EU. For example, the Commission would need to define the extent to which electricity market arrangements can differ between Member States, given the different electrical demands of the system, for example, there will be significant differences between, say, Ireland, the Iberian peninsula or Germany. Another example is to decide, alongside national arrangements, the further development of mutually-beneficial cross-border markets and the extent to which markets should be integrated across Member States.

Ambition #2: Strengthen demand-side policies to improve the flexibility of the electricity system

The European Commission needs to pay significant attention to EU policy on markets for flexibility in electricity supply. This includes promoting demand-side inclusion in ancillary services markets, setting rules for capacity markets and promoting digitisation. Including the demand side requires using market mechanisms for ancillary services procurement that also include the demand side.

This is in line with extending the single market in electricity to intra-day trading, particularly by encouraging the improved use of interconnectors to provide short-term balancing and other ancillary services. This is a critical area where the single market in electricity should be extended and further potential gains seem to exist.[119]

[117] Pollitt, M. (2019), 'A Global Carbon Market?', *Frontiers of Engineering Management*, 6(1): 5-18.
[118] Pollitt, M. and Chyong, K. (2018), *Europe's Electricity Market Design: 2030 and Beyond*, Brussels: CERRE.
[119] See Newbery, D., Strbac, G., & Viehoff, I. (2016), 'The Benefits of integrating European electricity markets', *Energy Policy*, 94, 253–263.

Ambition #3: Build a coherent and long-term EU-wide regulatory framework for green gases and hydrogen

The recent - and significant - stress placed on the natural gas sector by relatively low coal prices and the workings of the ETS may now be relieved by a policy-driven phase-out of coal and (partially) nuclear in Europe. However, important new challenges for the years to come have emerged for both the sector and the policy-makers.

First, electrification of important sectors in the economy, such as construction, implies a direct decline in the demand for gas. However, the large-scale electrification of buildings, transport and industrial processes will not be possible without a substantial increase in power generation capacity. Where and when renewable power becomes insufficient, gas-fired power plants will be needed to keep electricity systems flexible and reliable.[120] Thus it seems likely that, in the medium term, the demand for gas will remain robust, but will decline and become increasingly volatile. Regulators should be open to reviewing infrastructure remuneration mechanisms to account for these developments.

Second, although the narrative that natural gas is the most cost-efficient and clean option for the transition towards a low-carbon economy has been valid up to 2020, it does not easily extend beyond 2030. This is because the ambition is now notably different, namely, a fully-decarbonised economy by 2050. It is therefore essential that the sector and policy-makers work together to develop a feasible strategy that allows the gas sector to realise its potential within these new, significantly more ambitious, aspirations. A crucial step for the industry is to demonstrate the feasibility of gas sector decarbonisation, mainly via increasing production and integration of renewable gases such as biomethane from anaerobic digestion and gasification and synthetic biomethane from green hydrogen produced by water electrolysis using decarbonised electricity.

Another technique that needs to be given an opportunity is carbon capture and storage and/or use, which could be fundamental in upscaling production of 'blue' hydrogen. A critical role for the Commission will be to ensure that these techniques have the opportunity to compete on a level playing-field with decarbonised electricity and are subject to contestability. This requires identifying barriers to development that impede their ability to scale up. Such commitments will reassure investors that the industry is here for the long term, unless clearly proven unsuccessful. This will lower investment risks, stimulate R&D and realise the gains of 'learning by doing' and 'learning by using'.

Following the adoption of the Clean Energy Package, which concentrated mainly on electricity markets, the so-called 'Gas Package' thus becomes a crucial next step for the new Commission. The Commission should assess the scope of the package, taking stock of the lessons learnt from the Clean Energy Package and defining a clear and predictable regulatory framework for the entire gas industry. The 'Gas Package' may therefore become a `System Package', where renewable biomethane and hydrogen are also part of the Regulation. It should also define the basis for future sector coupling and introduce a realistic framework for gas and hydrogen infrastructure.

[120] Moraga, Le Coq, Mulder and Schwenen (2018): '*Gas and the electrification of heating & transport: scenarios for 2050*,' Centre on Regulation in Europe, May 24, 2018.

Ambition #4: Strengthen the consumer agenda and clarify the role of new actors such as energy communities

The European Commission needs to balance the needs of consumer groups with the constraints on producers' technology. Active demand response can only become possible by providing consumers with access to real-time prices to allow them to make informed consumption decisions. In particular, in order to promote local demand response, one would need to facilitate - or even support - technologies that allow devices in households and in small businesses to respond to changing prices. Prices should reflect local conditions, either directly or indirectly,[121] and therefore an average price (or zonal price) is unlikely to allow for smart consumption decision marketing at a retail level.

Promoting smart energy *is* a producer-led agenda, even if it is not what citizens actually want. The interests of consumers lie in cheap, reliable and clean energy. This should lead the Commission to focus on market integration of wholesale energy and ancillary services and level playing-fields within national retail energy markets, rather than being overly-concerned by the nature of retail energy offerings.

There is a need to refine the regulatory framework for market participation, particularly as the industry continues to transform and new players emerge on the consumer side. For example, the development of energy communities raises some issues. By definition, an energy community is a non-profit partnership where self-sufficiency in energy needs is the primary objective, but where the excess energy production will be sold outside the community. There are different benefits associated with this 'common-pool resources', such as sharing investment costs and increasing energy efficiency. However, the concept of an 'energy community' needs to be clarified, in particular on how to maintain non-discriminatory network access and preservation of consumer rights.

Here, the European Commission proposed to introduce two new market players: Citizens Energy Communities and aggregators. Whether those new entities will fundamentally change retail energy markets and develop profitable business models remains largely untested. Independent aggregators may prove better-placed to invest in distributed energy resources, as they are not vertically integrated with centralised generation. A regulatory framework that delineates the responsibilities of retailers and independent aggregators does not yet exist.

Member States may allow Citizens Energy Communities to act as both local retailer and network operator, irrespective of the role communities play as actors in the power system. They might prove a useful organisational entity to facilitate the local integration of different energy sources (heat, electricity, gas), technologies (storage, production, transformation) and market players (industry, residential customers, government etc.).

However, Citizens Energy Communities should face the same duties and responsibilities as traditional entities that perform that function, in particular with respect to balancing responsibility and to obligations related to quality of service as Distribution System Operators (DSOs).

Moreover, regulatory impact assessments should take account of the non-monetary costs for consumers: search costs, additional risk (whether perceived correctly or not) and behavioural adjustment costs.

[121] Locational marginal prices (LMPs) are a direct method. Incentives to reduce local congestion are an indirect method.

Consumers should have right to opt out of dynamic pricing models, but they should not be completely shielded from competition. Creating activated consumers has the potential to create both losers and winners, thus specific public services regulation might be needed to protect vulnerable consumers. Such measures should be at the discretion of Member States, but should be proportional to the objectives and not distort competition.

Information provision and increasing trust in the energy retail market is a public good, vital for the long-term success of the European energy market and for reaching climate goals. Member States and the Commission have an important role to play here.

Issues for policymakers

- *Provided that the current EU ETS scope is extended, how and when ETS Phase IV framework should be reviewed?*
- *How to avoid and manage contradictory or overlapping national policies aimed to strengthen the carbon price either through "carbon floor" mechanisms or via new carbon taxes imposed to non-eligible ETS sectors?*
- *Will renewable gases and hydrogen require a specific regulatory framework or a broader decarbonisation package in line with GHG targets by 2030 and 2050?*
- *Does Europe need a new energy consumer agenda that defines regulatory gaps and priorities by 2030?*

02

ENERGY INFRASTRUCTURE

AMBITIONS

1. **Foster optimal use of monopoly energy networks**
2. **Encourage transmission owners to take greater risks**
3. **Implement fixed cost recovery that is fair to existing network users and encourages the efficient use of the network**
4. **Stimulate joint charging for electricity and gas networks**
5. **Encourage greater energy network interconnection**
6. **Boost coordination between transmission and distribution system operators**

Ambitions #1 & #2:

Encourage optimal use of monopoly energy networks in light of falling/flat overall energy demand

Encourage transmission owners to take greater risks in new projects in light of uncertainty over future demand for energy networks

The Commission must pay particular attention to rising network costs due to a number of factors, including, falling energy demand; network replacement; and growing connection of RES with the associated increased requirements for storage and interconnection at low capacity utilisation.[122] The current regulatory approach is coherent with that required for an established technology and gradual change. It focuses on minimising costs and avoiding unnecessary investments. Network deployment follows demand rather than preceding it.

However, it normally offers little incentive to innovate or to even adopt a proactive stance to modernise assets, to extend the grid to facilitate RES deployment and to contract services instead of investing. Incentive-based regulation approaches must be adopted to:

- Foster deployment of smart grid technologies and digitalisation;
- Extend the network proactively and efficiently to facilitate integration of new RESs and new loads (EV, etc.); and
- Facilitate local flexibility by shifting from remuneration-based approaches based on a separate control of capital investment (CAPEX) and operating expenses (OPEX) to those focusing on a combination of both (the so-called TOTEX).

The latter would allow network operators greater flexibility in organising their business. Remuneration should be based on performance, and not only on physical investment. This change implies that CAPEX will form a larger share of total network expenditures and that regulation needs to focus on providing incentives to lower costs overall, i.e. TOTEX. The Commission could also look into alternative funding opportunities which might lower capital costs.

The following proposals should be considered at a European level:

- Harmonising accounting rules for CAPEX. This will make cross-border benchmarking and comparisons easier.
- Providing regulatory certainty on how new investment projects will be treated. Regulators should be able to commit for variable periods of time. To encourage investment in new networks, regulators could promise higher returns for network firms that commit to invest early and are able to lower network congestion.
- Allowing transmission operators to share risk with market participants. This could be done by introducing long-term financial transmission rights.

Merchant investors should be allowed to build high-voltage transmission capacity, and to bid those transmission rights into the market (and possibly withhold capacity). This would treat merchant investors as generators or storage operators who bid into the wholesale market. Allowing them to make more capacity available over time gives them an incentive to build larger transmission lines. Competition authorities should check whether they obtain market power. This is important because the EU's current rules do not allow for enough risk to be taken by shareholders in conditions where individual interconnectors are marginal and hence interconnector revenue is highly uncertain.

[122] See European Commission (2017), *European Energy Industry Investments*, Report for ITRE Committee, p.31ff.

Ambition #3: Allow network owners to wholly or partially own storage facilities, provided that: a market tender test results in no viable offer from third parties, the owners are required to resell unused capacity to market participants, and all the above operations are conducted under the control of the relevant regulatory authority

The network operators should not be subject to strict prohibition nor offered specific advantages for owning storage capacity. There may be sections of the network where third parties are unwilling to build welfare-enhancing storage facilities. Thus, where a market tender test results in no viable offer, network companies could be investors of last resort for storage. If such an asset is network-operator owned, the operator should be required to resell unused capacity to market participants. This should be done under the control of the relevant regulatory authority, by specifically permitting the incumbent transmission and distribution operators to set up and sell shares in Special Purpose Vehicles (SPVs) aimed at financing assets that save core network costs and provide market-based services (e.g. grid scale batteries). Such SPVs would need to be subject to competition tests as to the network operator's involvement and competitive tendering for the shared ownership and operation.

Regulating the decline of the gas network is likely to be a critical issue, with the recovery of network fixed costs being particularly problematic (particularly where these arise from network charges for entering and exiting the high-pressure grid). The Commission may wish to consider rules on accelerated depreciation of the gas transmission system and who pays for repurposing the network to transport hydrogen or captured CO_2.

Declining average demand, along with potentially increased seasonal and cross-border flows, mean that attention must be paid to the optimal use of existing network capacity and storage. It will be important to address how any large, fixed and increasingly risky (given volatile demand) cost additions might be financed through appropriate risk-sharing between investors and consumers.

The Commission should pay particular attention to infrastructure that falls within the Projects of Common Interest (PCI) list and whether these genuinely increase European welfare and are worthy of funding.

The incentive structures of the System Operators (SOs) should be adjusted to minimise overall system costs, not simply the costs of a particular Member State or region.

Improving cross-border capacity is not the only method for increasing international trade. Often, investments within a Member State can be more effective. Longer-term cost-sharing rules need to be agreed, based on a thorough cost / benefit study.

Ambition #4: Encourage fixed cost recovery that is fair to existing network users and encourages the efficient use of the network

The issue of how to recover existing network costs in the face of increasingly flexible consumers is an important concern, particularly for electricity. The problem of net metering and a lack of local connection signals must be addressed. The appropriate combination of fixed, per unit, capacity and peak charging is not intuitive; it depends on the particular mix of storage, EVs and distributed generation on TSO and DSO systems and a balance between efficiency and distributional arguments. However, it is important that all Member States are aware of arbitrage opportunities for investment, simply based on the existing mix of network charges. The Commission has argued for greater harmonisation between Member States in tariff methodologies in order to mitigate the risk of market fragmentation; the planned ACER best practice report will be the main tool for advancing any concrete proposals within the Commission.

In this context, policymakers should investigate the following issues:

- Is there any scope for extending the use of congestion charges? Some form of congestion pricing might need to be introduced at the distribution level. These could lead to more efficient use of networks, where accurate price signals are sent and where responding to such signals is feasible.
- Net metering is not cost-reflective, is unfair from a distribution perspective and is a form of state aid. It favours better-off customers who can afford their own generation capacity, while simultaneously raising total system costs. Net metering also distorts incentives on the location of distributed energy resources, which can be better-accommodated at grid scale on the medium voltage network.
- Capacity charges are useful in certain circumstances, for example recovering fixed costs, - and do not distort operational decisions. Reducing – or even abolishing – the energy component, except for the congestion charge, might be a way forward in many markets, particularly if implemented soon, before any significant uptake of PV, EVs or battery storage.
- The 'tariff base' is currently shrinking; is there a way to increase this and create a more stable base by bundling sectors? For example, a tariff for electricity, gas and heat networks could be socially acceptable in some countries. This tariff could then be allocated across the three elements in different ways.
- Both natural gas and electricity (for example, via heat pumps) could be used for heating. It would not be appropriate for network tariffs and energy taxes to influence network users into choosing one technology or the other; a combined tariff might be better. The rollout of heat networks and the decommissioning of gas networks is likely to be gradual and coordinated by national governments. During this transition, some form of cross-subsidisation between networks services might be necessary.
- Sector coupling in the energy sector has many similarities with the transport sector. Different transport modes act as substitutes and complements, externalities between modes exist and infrastructure investment needs to be coordinated. When designing tariff structures for one transportation mode, the externalities in the other modes also need to be considered. Funding infrastructure projects could be based on local taxes (such as a local VAT surcharge, as in the United States), usage fees or levies on other modes. In London, as well as other cities around Europe, congestion charges help fund public transportation. Detailed regulatory impact analysis is required to develop the optimal tariff structures.

Ambition #5: Extend the scope of NRAs to include heat networks

The Commission should consider the regulation of heating and how this can be covered by existing electricity and gas NRAs. Heating will increasingly become an issue, given the potential for many gas customers to switch from short-term (competitive) gas markets to long-term (and potentially non-competitive) heating contracts. There could be scope for coordinating investment between electricity, gas and district heating.

There are a number of good reasons for having the NRAs regulate local district heating networks. First, heat regulation is based upon the opportunity costs of a competitive gas contract. Second, effective benchmarking of multiple local district heating networks is best done by an NRA, rather than a local authority. Third, coordinating investments in gas and district heating networks might be required. Fourth, there are competition externalities from the heating market to the energy and gas markets; these can be affected by cross-subsidies from the heating company to electricity company and the bundling of heating and electricity contracts.

However, existing regulatory framework for electricity and gas networks cannot be transferred easily to heating networks. For example, it is not clear that there can be third party access (TPA) to heat networks or whether heat storage is part of the network monopoly or potentially competitive.

In the same way that district heating could be regulated by integrated electricity, gas and heating NRAs, there is a question as to whether electricity and heat network companies should be integrated. District heating and electricity could be organised by the same local energy community.

Ambition #6: Encourage greater energy network interconnection between European countries

EU-wide regulation of cross-border investments in transmission needs to be improved. The European Commission should promote merchant interconnection, rather than force cap and floor arrangements that socialise investments. Interconnectors need to be included within national transmission pricing regimes and not exempted from national zonal charging arrangements, such that there are correct locational price signals for siting new transmission links.

Specific attention needs to be paid to how risk is allocated between transmission operators and network users, depending on the location of the transmission links. In addition, the Commission should assess the potential of smaller market zones, as they could prove more appropriate in the future.

Ambition #7: Encourage greater coordination between transmission and distribution system operators

The allocation of network assets and associated management responsibilities is divided between TSOs and DSOs. The current allocation is a historical artefact, and it is not clear whether the division of responsibilities is close to optimal given the increasing presence of distributed generation, storage and gas production. The Commission should take a view on an effective TSO-DSO interface as well as voltage and nodal levels of responsibility. This is important in helping create a level playing-field for market participation in network services and may improve coordination in procuring ancillary services at low- and high-voltage levels. In addition, there is the ability to fully separate the real-time system operation from the asset ownership and cost recovery mechanisms.

The Commission should encourage each NRA to fully evaluate whether there is scope for reallocations (via mergers or asset swaps) of assets between transmission and distribution in order to make better use of existing infrastructure. There should also be strong incentives for co-ordinating investments and for facilitating joint working between TSOs and DSOs. It should be possible to establish, and earn revenue from, joint SPVs to finance assets. NRAs should also be encouraged to examine whether joint TSO-DSO tariffs currently provide optimal pricing signals.

Issues for policymakers

- *Is the Clean Energy Package and the wide range of EU funding sufficient to foster TSOs and DSOs investments and, therefore achieve a smooth decarbonisation transition by 2050?*
- *How to secure greater energy network interconnection between EU national markets?*
- *What are the main drivers to better structure and reinforce TSOs and DSOs cooperation in the short run?*
- *How to better regulate and optimise heating in the next five years?*

03

REGULATORY & INSTITUTIONAL DEVELOPMENTS

AMBITIONS

1. **Review energy governance structures & responsibilities to secure the implementation of the Clean Energy Package**
2. **Systematically monitor the distributional effects of energy transition policies by creating the European Energy Transition Observatory**
3. **Set a framework for energy data governance that promotes energy policy goals through data transparency**
4. **Promote sharing of good practice in regulation and innovation by NRAs in energy**
5. **Promote innovation by NRAs to stimulate regulatory innovation and align better with citizen preferences**

Ambition #1: Review the current EU energy governance structures and responsibilities in order to secure a smooth implementation of the Clean Energy Package

Much has changed within the governance structure of the European energy sector in recent years, with the creation of a European regulator (ACER) and European cooperative institutions such as CEER, ENTSO-E, ENTSO-G and - in the near future (2021) – a new EU DSO entity. However, much remains to be done to be able to effectively govern a truly integrated European energy industry and to ensure delivery of EU policy goals. The responsibilities of the various institutions should be developed, drawing on best practices at Member State level. Creating independent system operators at the Member State level should be supported; these could potentially develop into regional level ISOs and, in time, perhaps even at European level. This is because ISOs can be tasked with undertaking real-time, whole system operation in a way that SOs linked to TOs cannot.[123] To ensure that consumer interests – including distributional concerns – are properly taken into account, there needs to be better representation for consumer interests at both Member State and European levels.

The division of responsibilities between the Commission and Member State bodies is complicated for many reasons, including subsidiarity concerns. In many areas, there is little reason to harmonise regulation between Member States (although the Commission has, nevertheless, done so on occasion). In fact, in order to encourage development of the regulatory tools needed to meet future challenges, it may be beneficial to test different models. However, some areas – notably the integration of physical infrastructure and markets – cannot be left to Member States alone; these will require appropriate regulatory powers at a European level. This could be achieved by strengthening the various European institutions – including ACER – and by continuing those developments that started with the creation of electricity regions.[124]

Ambition #2: Systematically monitor the distributional effects of energy transition policies by creating the European Energy Transition Observatory

The 'Yellow Vests' movement has triggered new debates on the impacts and social acceptance of energy and climate change policies, not only in France but also in other EU countries. Meanwhile, the 'Extinction Rebellion' movement in the UK is seeking to accelerate the low-carbon transition in the face of increasingly disconcerting scientific evidence on the impact of global warming. This clearly illustrates the 'popular' tension between the need to accelerate decarbonisation of the economy and the fact that some sectors will be severely adversely impacted while the less well-off energy consumers will pay disproportionately higher bills.

The concept of a 'fair transition to low-carbon energy' for citizens has been ever-present in the climate debate at the annual COP summits and in the EU's 2050 low carbon strategy. However, the issue of how best to spread the cost burden of this transition among end-consumers remains unclear. Clear guidelines on designing energy transition policies that avoid adverse effects on low-income households are still needed.

[123] Recently Ofgem moved to force the creation of National Grid Electricity System Operator as the (I)SO for the whole of GB, a wholly independently business of National Grid. This was to address the perceived conflict of interest between National Grid's roles as both a transmission operator and a system operator. (See Ofgem (2017), Future Arrangements for the Electricity System Operator: Response to Consultation on SO Separation, London: Ofgem)
[124] Von der Fehr, N-H. (2017), *'Regions – the future for the European Internal Electricity Market?',* Brussels: CERRE.

In order to understand and address this particular challenge, the European Commission should create a European Observatory for Energy Transition and Distributional Effects. This would significantly expand the scope of the existing EU Energy Poverty Observatory. This new body would focus its efforts in assessing European initiatives, national trends and collecting evidence (i.e. data and research) capable of guiding decision-making in the EU institutions and national governments. This Observatory would make annual recommendations to the European Commission, the European Parliament and the Council.

Another recommendation is to add new criteria for European Commission impact assessments. In addition to proportionality and subsidiarity, the short- and long-term "social fairness" of measures should also be considered.

Ambition #3: Develop a framework for energy data governance that promotes broader energy policy goals through data transparency

The European Commission needs to work on data governance in energy, as it has in other network sectors. Currently, there is considerable diversity in data ownership approaches between TSOs, DSOs, retailers and third parties. Who should own and operate data hubs in the energy sector – what third party access rights should be standard? This would include the potential governance of blockchain data and digital platforms.

The Commission should encourage exploitation of energy data and competition in processing this data. The presumption in national regulation should be that monopoly network data will be made available publicly and that data provision costs are included in the monopoly network cost. Retail smart meter data should be presumed to be owned by customers and should be made available for research. Presumptions on product standards on electrical device controllability, and hence on data flow and device identifiability, also need to be considered. For example, there should be a general presumption that EVs will be subject to controlled charging by the electricity grid, as this will minimise any grid integration costs associated with EV roll-out. This would reflect a general presumption for integrating data across energy platforms to benefit the system as a whole.

Data does need to be subject to well-defined property rights and energy data protection should be consistent with GDPR, but there should be a presumption that raw energy data – suitably anonymised - exists for the public benefit, having been created across public networks. There should be well-defined property rights for processed data, allowing it to be traded. Data needs to be capable of being integrated between network operation, trading markets and certification processes.

Ambition #4: Promote sharing of good practice in regulation and innovation by NRAs in energy

Building the necessary regulatory capacity in Member States to allow them to handle new developments such as green gases, EVs and the internet of energy is a matter of urgency. Capacity building can be accelerated by cooperation and learning between regulators. The Commission, particularly via ACER, will play an important role here, facilitating cooperation and promoting best practices in innovation and smart regulation. It is important that the Commission monitors the quality and performance of NRAs, the role of national courts and the actions of national ministries of energy (e.g. in setting clear and consistent energy policies). The objective should be to provide

practical help and support to Member States in learning from, and engaging with, the latest regulatory developments that might be relevant to them. However, it is also important to encourage regulatory competition and that ACER leaves headroom for innovation by individual NRAs.

The Commission might wish to consider the role of NRAs and energy ministries in supporting innovation with respect to the low-carbon transition. Innovation funding initiatives have already been successfully trialled in some countries (e.g. the UK). Over the next five years, we could foresee a potential need for significant innovation to prepare for decarbonising the heating sector; this raises substantial issues for current energy market and regulatory arrangements.

In addition, achieving the necessary flexibility on the demand side of the market requires the participation of new agents and the introduction of new business models, including service providers, intermediaries and aggregators. The regulatory framework should encourage such innovation and market entry, particularly the interactions between new agents and TSOs / DSOs. While it is possible to envisage considerable variations between Member States, creating a level playing-field for pan-European businesses may spur innovation and support overall flexibility in the single energy market.

Ambition #5: Promote innovation by NRAs within national energy policy in order to stimulate regulatory innovation and align better with citizen preferences

There are considerable variations across Europe in how energy market outcomes are perceived, particularly in terms of final consumer prices. These variations not only need to be taken seriously, but may well need to be accommodated within a well-functioning single electricity market. In determining its approach, the Commission needs to develop a regulatory framework that accommodates national preferences on consumer prices while simultaneously ensuring competitive and efficient wholesale energy markets.

Issues for policymakers

- *Is the EU Energy Union Governance an adequate and viable framework to promote convergence of national policies and targets?*
- *Will distributional effects of energy and climate policies and regulation create unintended societal resistance and social polarisation? How should policy makers manage upcoming distributional effects? Is it national or European responsibility to deal with them?*
- *How to boost regulatory innovation by National Regulators in line with climate targets?*
- *Does Europe have an appropriate energy and data strategy to deal with the challenges ahead?*

A DECARBONISED, DEPENDABLE MOBILITY SYSTEM FOR ALL

INTRODUCTION

Decarbonising the European economy requires a sustainable mobility sector. The European Commission published several White Papers, notably in 2001 and 2011 with ambitious objectives to reduce the environmental impacts of mobility without curbing the mobility of citizens or goods.

Both papers focused on ways to reduce the external costs of transport: impacts on climate and biodiversity, accidents, pollution and noise. They identified the reduction of Greenhouse Gas (GHG) emissions as a key priority.

For each mode of transport, total emissions depends on that mode's volume of traffic in passenger- or tonne-kilometres (pkm or tkm), multiplied by unit emissions per pkm or tkm. These unit emissions are calculated by considering the unit emissions of the relevant vehicles and the occupancy rate.[125]

$$\text{GHG emissions} = \frac{\text{Traffic x Unit vehicle emissions}}{\text{Occupancy rate}}$$

The resulting formula shows that, for each mode of transport, reducing GHG emissions is possible via four policy options: **a) reduce traffic, b) lower vehicle emissions, c) increase occupancy rates and/or d) a modal shift**, reducing traffic from modes producing most emissions, to those producing the least.

The European Commission's 2011 White Paper sought to pursue these policy options and deliver a path towards a decarbonised European transport sector. The objectives set out in the Paper can be grouped under three broad headings.

Firstly, the Commission aimed to encourage **a modal shift**, particularly to rail. By 2030, 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport, with the figure rising to 50% by 2050. In passenger transport, the length of the existing high-speed rail network should triple by 2030, and by 2050 the majority of medium-distance passenger transport should be by rail.

These ambitions were a central part of plans for an EU-wide multimodal TEN-T 'core network' by 2030 with a high-quality and high-capacity network by 2050 which would also see all core airports and seaports sufficiently connected to rail.

Secondly, the White Paper set ambitious objectives to **lower emissions through technological advances**. The use of 'conventionally-fuelled' cars in urban transport should be halved by 2030, with a complete phase out in cities by 2050. City logistics in major urban centres should be essentially CO_2-free by 2030. In terms of long-distance transport, the Paper called for low-carbon sustainable fuels in aviation to reach 40% by 2050, with a 40% reduction in EU CO_2 emissions from maritime bunker fuels in the same period.

Finally, objectives were set to move towards the **full application of 'user pays' and 'polluter pays' principles**, which would also contribute to revenue generation to fund future transport investments. This move to market-based incentives and increasing the efficiency of transport would be supported by the deployment of modernised air traffic management infrastructure, including the completion of the European Common Aviation Area, and the deployment of equivalent land and waterborne transport management systems. This would include the European Global Navigation Satellite System (Galileo) and a framework for a multimodal transport information, management and payment system.

[125] Crozet Y., 2019, Reconciling transport and the environment - a dilemma that is here to stay, *European Court of Auditors Journal*, N° 1, 2019, pp. 6-14 https://www.eca.europa.eu/lists/ecadocuments/journal19_01/journal19_01.pdf

01

REGULATION TO ACHIEVE A DECARBONISED TRANSPORT SYSTEM

AMBITIONS

1 **Achieve a successful modal shift**

2 **Develop mobility policies that adequately, fairly and efficiently internalise external costs**

3 **Provide a regulatory framework that allows for technological advances**

The challenge

The results of Europe's mobility policy to date are mixed. However, the objectives of the 2011 European Commission White Paper were correctly grounded in an understanding of how a decarbonised transport sector can be created.

Therefore, European mobility policy in the period 2019-2024 should continue to focus on achieving greater modal shift, making use of market-based incentives and pricing (to reduce traffic and/or increase occupancy rates), as well as technological change (to lower vehicle emissions).

A principle challenge in this will be convincing Member States to support such policies and to design incentives and support mechanisms that can ease this transition.

Ambition #1: Achieve a successful modal shift

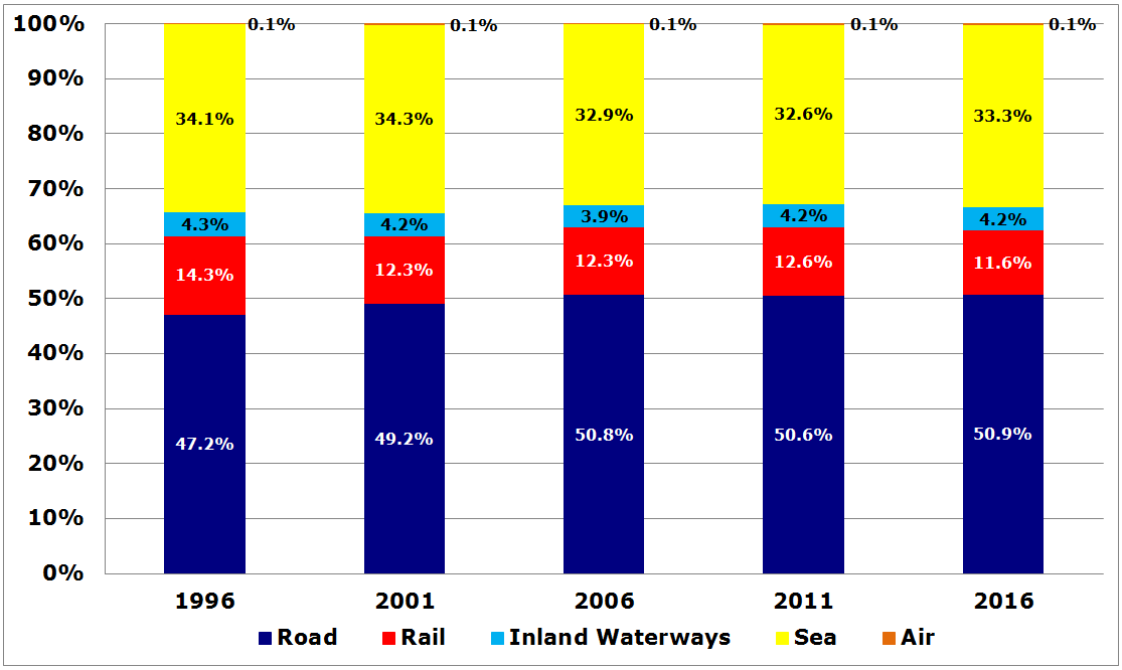
A modal shift was central to the EU's objectives of reducing emissions in the transport sector. This was particularly the case for goods, which were supposed to switch from road to rail and water on a large scale. To this end, the European Union identified corridors along which transport infrastructure – mainly rail – needed to be built or improved, to create a genuine trans-European transport network (TEN-T). For passengers, high-speed rail projects had the same objective: to offer an alternative to intra-European air travel. In terms of passengers in urban areas, modal shift meant an emphasis on the development of public transport.

However, results have fallen short of the original objectives, as a report recently submitted to the European Parliament makes clear: *"The **modal share** of road, rail and inland waterway transport remained **substantially unchanged** between 1996 and 2016, both for passenger and freight transport, with road transport showing a slight increase."*[126]

Perhaps the most disappointing results are observed in the modal share of rail transport, for goods and for passengers.

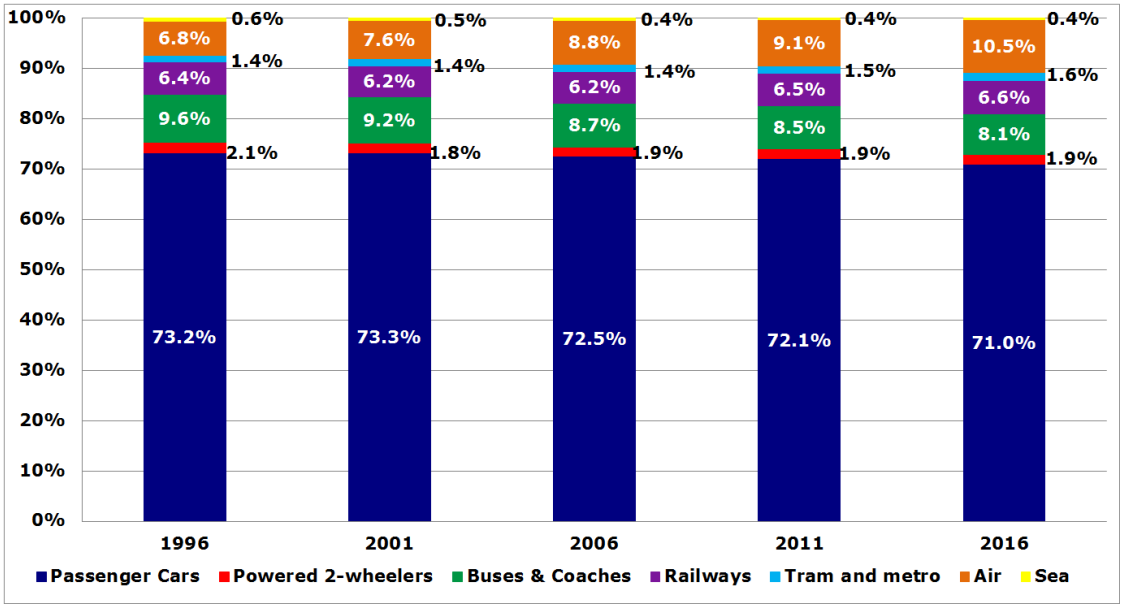
[126] Research for the TRAN Committee - *Modal shift in European transport: a way forward*, Study requested by the TRAN Committee, Policy Department for Structural and Cohesion Policies, Directorate-General for Internal Policies, PE 629.182 - November 2018, 174 p.

Figure 1: Modal share of freight transport in the EU, between 1996 and 2016 (based on t-km)



Source: 'Modal shift in European transport: a way forward', European Parliament

Figure 2: Evolution of modal share for passenger transport in the EU, 1996 - 2016 (based on p-km)



Source: 'Modal shift in European transport: a way forward', European Parliament

However, it should be noted that the Commission's target related specifically to freight traffic travelling over 300km, where rail may be competitive with road as part of a multimodal chain. This is provided that rail offers sufficient advantages in terms of quality of service and cost on the trunk haul, to offset the disadvantages of the need for transfer between modes. It does hold a substantial share of the market at this distance, although smaller than road.

When looking at long distance passenger traffic, we observe the same disappointing results, even if some countries such as the UK, Austria and Sweden have seen a sharp increase in rail passenger traffic. The limited progression of traffic on HSR lines[127] stands in contrast with the success of air transport. Low-cost airlines have limited the growth of high speed rail traffic, not because of direct point-to-point competition – which is relatively infrequent – but because of the incredibly wide range of destinations offered to customers. These days, when Europeans are deciding where to spend their holidays, they no longer start by choosing their destination, but consult airline websites first to see what is on offer. Increasingly, they also choose a mode of transport before deciding on their destination. This trend is clear in France, where high speed rail traffic increased by only 12% between 2008 and 2017, while air passenger numbers between mainland France and Europe rose by 39%. The fact that more and more airports are connected to a high-speed rail line means that high speed rail now serves as a complement to, rather than as a substitute for, air transport, as the 2011 European Commission White Paper stated.

In its own review of progress with the White Paper of 2016,[128] the Commission notes that little progress has been made to date and attributes this largely to slow adoption of the measures advocated in the White Paper. It also noted that technical change (particularly digitalisation and automation) has been faster than foreseen in the White Paper, and that some adaptation of the initial measures may be necessary.

Issues for policymakers

- *Given that no 'one size fits all' solution exists, policymakers must continue to work with Member States to implement tailored policies that can deliver the modal shift required in European mobility.*
- *What incentives and supports can be offered to Member States to adopt the measures already outlined in European policy?*

[127] https://www.eca.europa.eu/Lists/ECADocuments/SR18_19/SR_HIGH_SPEED_RAIL_FR.pdf
[128] http://ec.europa.eu/transparency/regdoc/rep/10102/2016/EN/10102-2016-226-EN-F1-1.PDF

Ambition #2: Develop mobility policies that adequately, fairly and efficiently internalise external costs

The objectives of European mobility policy are beset by an internal contradiction. For decades, transport policies have been based on the idea that 'curbing mobility is not an option'. Indeed, an EU objective is that the external benefits of mobility should be extended to the entire population.

At the same time, the EU is promoting competition as a key factor in reducing costs and increasing demand, as has been seen in air transport. Deregulation of the sector has led to a significant drop in ticket prices. For intra-EU travel, air passengers pay around 5 cents per kilometre. This is half as much as for high speed trains (10 to 15 cents) and five times less than for cars (25 to 30 cents). It is hardly surprising that the number of passengers in airports is increasing much faster than rail and road traffic.

Alongside cost reductions, the general increase in purchasing power has led to greater passenger mobility. In France, recipients of the minimum wage in 1972 needed to work for one hour to be able to purchase three litres of petrol. 47 years later, they can buy six litres with an hour's work, and as their cars consume almost half as much fuel, they can drive four times further per hour worked.

On top of this income effect, there is a substitution effect caused by the variation in relative prices. Cheaper plane tickets have stimulated demand for air travel, whose economic speed is now five times that of the automobile. For one hour of work, a recipient of the minimum wage can now travel 200 km by air, but only 40 km by car.[129]

In the freight market, there has been a major decline in bulk commodities such as coal and iron ore, which were predominantly carried by rail, and a growth in small consignments of high-value products which require a high quality of service. These are much more likely to use road transport, which has achieved substantial improvements on cost and quality of service through the early growth of competition and through infrastructure investment.

European mobility policy must now, eventually, confront the contradiction at its core: the promotion of mobility of both goods and people without properly pricing external costs such as pollution is fundamentally incompatible with Europe's decarbonisation ambitions. Better pricing of goods and passenger mobility is essential.

A recent European study shows that all modes of transport other than rail are, on average, priced at levels well below marginal social cost.[130] This reinforces the fact that, despite internalisation of externalities having been a goal of European policy for 20 years, little progress has been made.

Issues for policymakers

- *Policymakers will need to consider what incentives can be designed to overcome Member State opposition to policies that adequately, fairly and efficiently internalise external costs.*
- *Should EU support mechanisms be transformed from the support of individual infrastructure/'flagship' projects to the support of a better pricing regime?*

[129] Crozet Y., 2019, Travel speed, Dictionary, http://en.forumviesmobiles.org/marks/travel-speed-12977
[130] https://ec.europa.eu/transport/themes/sustainable-transport/internalisation-transport-external-costs_en

Ambition #3: Provide a regulatory framework that allows for technological advances

If road and air traffic continue to grow, then in order to reduce unit vehicle emissions, their source of energy needs to change, which is why the emphasis is now on electrifying cars and – to a certain extent – lorries. In order to achieve this, the European Union envisages tighter standards for car manufacturers so that all new vehicles sold emit less and less CO_2 per kilometre. Several countries, including France, Germany, Spain and the United Kingdom are considering banning the sale of vehicles powered by internal combustion engines from 2040, the aim being that all cars should be electric by 2050.

However, what are the chances of such an objective being achieved and – even if it can be – what will be the actual impact on CO_2 emissions?

On the first point, **sustained policies will be needed to achieve such a dramatic change in the vehicle fleet. Ambitious and consistent policies to support the roll-out of electric and hybrid vehicles will be needed.**

At the same time, electrification based on fossil fuels is not a solution. **The decarbonisation of European mobility must go hand-in-hand with efforts to decarbonise the energy sector.**

Issues for policymakers

- *Provide coherent, cross-sector guidance to deliver the changes required in the vehicle fleet, electricity generation, charging stations and the electricity grid.*

02

LONG DISTANCE MOBILITY

AMBITIONS

1. **Complete the introduction of competition in all modes of transport, including rail**
2. **Support smarter, economically viable investment**
3. **Fully internalise the external costs of mobility**

The challenge

The progress towards a common transport market and policy is one of the success stories of European integration. The opening up of road and air transport markets to competition and the resulting drop in transport prices have seen ever increasing volumes of goods and numbers of passengers transported.

However, challenges remain. The internal market for transport has not been fully completed, particularly in rail, and the benefits of competition remain unevenly spread. A lot of work remains to be done to make the long distance transport sector sustainable and to address its contribution to carbon emissions. At the same time, the sector is crucial to the European economy and wider society and restrictions on freedom to travel are politically unappealing.

European mobility policy must strike a difficult balance.

Ambition #1: Complete the introduction of competition in all modes of transport, including rail

In 2007, the rail freight market was completely opened up to competition, and in 2010 international passenger services followed. Under the 4th Railway Package, competition for commercial passenger services will follow in 2020 and for services operated under public service contracts in 2023. Thus, with the implementation of this Package in the coming years, the legislative framework for the introduction of competition for all rail services will be in place.

While it is encouraging that a number of countries have opened up their markets ahead of legislative deadlines, the **results so far have been disappointing. A major study conducted in 2012[131] found no evidence of an impact of the reforms on the modal split**. This was repeated in a 2018 report[132] for the European Parliament which concluded that "*The modal share of road, rail and inland waterway transport remained substantially unchanged between 1996 and 2016*".

In addition, while horizontal separation of passenger and freight services had reduced costs, vertical separation of infrastructure and operations had only done so on less densely used systems. On densely used systems it had actually increased costs.

One possible explanation is that the **reforms have yet to introduce substantial amounts of competition**. In the freight market, almost 40% of traffic is handled by new entrants, whereas in the passenger market many countries have yet to introduce any competition. Moreover, the introduction of competition is being postponed in some countries by the direct award of 10-year contracts. Direct award will continue to be permitted if it can be justified to an independent body, such as a regulator.

[131] D. van de Velde, , C. Nash, A. Smith, F. Mizutani, S. Uranishi, M. Lijesen and F. Zschoche (2012), "EVES-Rail - Economic effects of Vertical Separation in the railway sector", Report for CER - Community of European Railway and Infrastructure Companies, by inno-V (Amsterdam) in cooperation with University of Leeds – ITS, Kobe University, VU Amsterdam University and Civity management consultants, Amsterdam/Brussels

[132] Modal shift in European transport: a way forward, p.17.

Vertical separation, whilst being helpful in ensuring non-discriminatory access to the infrastructure for new entrants, has also brought problems in terms of transaction costs and misalignment of incentives.

In a vertically separated system, no-one has responsibility for optimising the system as a whole. To an extent, solutions to these problems may exist in the form of the holding company model or alliances between operators and the infrastructure manager, as is increasingly being used in Britain.

However, these solutions rest on the continued presence of a single dominant operator. As such, they may work better with a franchising system than with a system relying on extensive on-track competition.

A further concern is the perception that the rail industry is slow to innovate and to adopt the results of research. Shift2Rail, a major programme of research currently being undertaken as a public-private partnership, has set ambitious targets with a 50% reduction in system life cycle costs, a 50% improvement in reliability and a 100% improvement in capacity. However, this research will be in vain if the results are not put into practice.

Issues for policymakers

- *While the introduction of competition, including in rail, is almost complete, issues remain. These are best tackled at Member State level. However, the European Commission must play its role in monitoring developments, enforcing legislation and disseminating best practice.*
- *Policymakers should support strong, independent regulators dedicated to improving the efficiency of the rail sector and with adequate powers to implement their conclusions.*

Ambition #2: Support smarter, economically viable investment

An important part of the improvement of the quality of rail services will come from improved infrastructure. Previously, the European Commission had called for a trebling of the length of high speed lines in the EU by 2030, to improve long distance passenger services as well as to release capacity on the existing network for freight. However, a recent report by the European Court of Auditors[133] found that this target will not be reached, that the existing European high speed rail network was an ineffective patchwork, and that some recent lines were not economically justified.

High speed lines are very expensive and difficult to justify unless they carry very dense traffic. Moreover, these lines are generally not competitive for very long distance traffic. Thus, the idea of a network of new high speed lines linking all European cities does not seem to make economic sense.

As a result, new proposals for high speed lines are likely to be increasingly harder to justify, as high speed lines on densely used routes have largely been built and further investments look ever more marginal. The EU definition of high speed lines does include upgrading existing lines to allow speeds up to 200kph, but not all existing lines are suitable for such upgrading.

It will be necessary to examine future proposals very carefully to determine the appropriate mix of upgrading and new build.

Issues for policymakers

- *How to balance the target of creating an integrated, effective high-speed rail network with the economic feasibility of new lines or upgrading?*

[133] European Court of Auditors, 2018. A European high-speed rail network: not a reality but an ineffective patchwork.

Ambition #3: Fully internalise the external costs of mobility

Europe must finally get to grips with internalising the external costs of mobility. In the long distance market, the pricing of road goods vehicles and of air transport are two crucial issues.

In 1999, the Eurovignette Directive was amended to allow the charging of full marginal social costs to heavy goods vehicles. **However, while this is permitted, it is not required**. Moreover, time-based rather than vehicle kilometre-based charges are still permitted, resulting in the charge systematically undercharging operators of long distance freight. Only a small number of Member States have introduced distance-based charges and typically for motorways only. Policymakers should follow through on proposals to **amend this directive to make such charges compulsory and to require them to be based on distance, not time.**

Air transport has long been a problem area for the internalisation of externalities because of its international character and of international agreements. While the United Nations' Corsia scheme is a welcome development, its effectiveness is uncertain – it freezes emissions at 2020 levels, will not become compulsory until 2027 and doubts persist as to how well the offset mechanism will be regulated to ensure a genuine reduction in emissions. In light of this and the urgency of the climate change challenge, European policymakers and Member States should lead the way with their own plans.

So far the European Commission has relied on the Emissions Trading System (ETS) to recover the external costs of aviation, but existing cap levels on carbon prices have been very low and a large portion of the permits used by airlines have been received for free. As a consequence, the total CO_2 emissions of air transport are still growing in Europe, even if the CO_2 emissions per passenger-km are decreasing. **The European institutions must act to make the ETS a more reliable tool through an increased carbon price and/or by reducing the number of free permits available. Alongside this, policymakers should encourage Member States to consider a Union-wide approach to additional levies – either on tickets or as a kerosene fuel tax.**

Issues for policymakers

- *How can Member States be convinced to support a level playing-field in long-distance mobility that adequately prices roads goods vehicles and air transport?*
- *Policies such as the provision of investment funds should be considered for those countries most affected.*

03

URBAN MOBILITY

AMBITIONS

1. **Support the introduction of sustained, ambitious efforts to reduce the external costs of road traffic**

2. **Embrace the opportunities of new mobility services & shared mobility, without being blind to their challenges**

3. **Empower mobility authorities to deliver Mobility 2.0**

The challenge

Air pollution is responsible for the premature death of 400,000 Europeans every year with a further 6.5 million suffering from pollution-induced diseases including strokes, asthma and bronchitis.[134] Despite some progress in recent years, air quality has not improved as quickly as hoped for, and Member States frequently find themselves in breach of air quality standards.

In May 2018, the European Commission applied to the European Court of Justice to bring an action against several Member States including France, Germany, Spain, Italy and the United Kingdom. All are accused of exceeding the maximum thresholds of pollutants, in particular NOx and particulates, in their main conurbations.

Even though air pollution is not exclusively caused by transport, road traffic is responsible for a large part of NOx emissions (e.g. 56% in Ile-de-France), and particulate matter (e.g. 35% in Ile-de-France). In addition to pollution, transport in urban areas is responsible for other external costs, including accidents, noise and congestion.

Ambition #1: Support the introduction of sustained, ambitious efforts to reduce the external costs of road traffic

To reduce the CO_2 emissions of transport, one can choose to organise a modal shift to low-emissions/emission-free modes, reduce traffic, lower vehicle emissions and/or increase the load factor of each vehicle.

At a superficial level, it seems that many European cities and urban areas are successfully mixing these policies. **Modal shift is very often a success in densely populated areas.** In the central part of big cities, it is also easy to adopt traffic calming measures or even to ban diesel vehicles. Policies often combine banning the oldest vehicles from the road and replacing them quickly with the aid of grants for buyers of new vehicles. These policies are in line with European goals to move away from conventionally-fuelled cars and goods vehicles in major urban centres.

However, once we move beyond this superficial level, questions arise as to the effectiveness of such regulatory measures. Indeed, while car traffic has decreased in the centres of large cities, **traffic is still growing outside urban areas**, particularly for journeys from and within the periphery. At the same time, the **rate of change in vehicle fleets is slow** and in most countries electric vehicles still account for a small share of sales.

There is a sizeable gap between the accepted consequences of pollution and climate change and the relatively conservative measures adopted to date. **Regulations have largely been focused on technical issues such as vehicle standards, when it is apparent that economic tools would be much more powerful**. This is illustrated by the experience of Stockholm's urban toll: since urban road pricing was introduced there in 2006, the city of Stockholm has seen a 25% reduction in both traffic and pollutant emissions.

[134] https://ec.europa.eu/environment/air/cleaner_air/

What is clear is that a decarbonised transport system is a cross-sector challenge requiring the energy community, urban planners, transit authorities, digital platforms and governments to work together. Solutions will vary across countries and localities.

Issues for policymakers

- *Coordinate and facilitate the wide range of actors in energy, urban planning, transit, the digital sector and government to work together, including by sharing best practice and expertise.*
- *Policymakers should set more ambitious policy goals and make use of economic tools including tolls.*

Ambition #2: Embrace the opportunities of new mobility services & shared mobility, without being blind to their challenges

The **digitalisation of urban mobility presents many opportunities** for local and national policymakers, public transit authorities, citizens and mobility providers. However, **disruptive innovation is also challenging public policies** which have sometimes existed for decades. The development of connectivity in mobility services is changing the level playing-field for taxis, but also for the management of bicycles or car fleets, and eventually for all actors in urban mobility.

Perhaps **the most radical transformation offered by digital platforms is a more collective use of cars**. Given that increasing the load factor of cars is one approach to reducing the external costs of urban mobility, then the sharing of vehicles via digital platforms is an enticing solution. Studies conducted by the International Transport Forum in Lisbon and Helsinki have shown that **shared mobility can greatly reduce congestion and pollution**, and even travel times, provided this shared mobility primarily replaces individual vehicles.

However, **such services can only be deployed if a new division of labour between new and old mobility providers and a new regulation of mobility services are implemented**.

The **large scale implications of digitally-enabled shared mobility as an organising principle are unclear**. This is because today a large part of mobility still depends on the use of private modes of transport. Even in very large cities, public transit accounts for less than half of the mobility market. The provision of a mobility service is expensive, sometimes for users and more often for the community. **One question is therefore whether digitalisation can change this system by lowering the costs of services, so that commuters abandon private vehicles and turn to new mobility services and shared mobility.** But two important issues remain: financing new mobility services on the one hand and the management of urban space on the other.

The **business models of new mobility providers are challenging**, and many new entrants have gone bankrupt. The question then arises as to whether public action is required and, if so, what form it should take. Policymakers will need to consider if subsidisation is necessary to achieve critical mass. If so, they must then grapple with how subsidies to traditional public transport should be combined with those to the new mobility services and the role that urban tolls might play. In addition to this, there are questions around what share of public funding should be directed to new mobility services.

In recent decades, policies for public transport and soft modes have been accompanied by a restriction of the public space dedicated to private cars. **Given the radical scarcity of urban**

public space, policymakers must consider how room can be made for new mobility services. Decisions must be taken as to whether they should be allowed to use the space reserved for public transport and/or whether they should be allocated specific spaces (e.g. reserved lanes, car parks) that would be removed from other uses, including private cars.

The introduction of some form of urban road pricing would appear to be essential as part of this development. Currently, electric vehicles are generally allowed free use of road space (except for a limited fixed charge), whereas fossil fuel powered vehicles pay fuel taxes. Making efficient use of urban road space will be central to the promotion of shared mobility.

Issues for policymakers

- *How to foster a move to shared mobility services which replace individual vehicles?*
- *What public support – both financial and in the use of public space – should be made available to these new services?*

Ambition #3: Empower mobility authorities to deliver Mobility 2.0

Central to the concept of Mobility as a Service (MaaS) is the principle that the services of various mobility providers - new and old, public and private – be combined through a unified gateway that creates and manages trips. This concept brings forward many questions about the production and sharing of data related to urban mobility. At the scale of a conurbation, the development of a multimodal digital application requires the collection of data which is still scattered today.

Do online availability and open data access constitute sufficient solutions enabling application developers to provide relevant mobility solutions for individuals and the community? Or **should we consider that public policies must not only organise the sharing of data but also guide service offerings in a way that favours, for example, public transport or soft modes?**

Policymakers at all levels will have to address a number of regulatory questions:

- Should mobility data, especially that automatically stored via e-hailing apps, be subject to additional regulation and why?
- Should commercial organisations be required to share their data with governments, and why?
- Should government and commercial organisations' data be readily available to the general public, including the research community and why?

The data issue is crucial for mobility authorities. However, we must also question if the open data approach has produced the innovations and economic results that it appears to offer. It is true that private applications have been created as a result of open data initiatives, but these applications have often failed to generate significant business and their durability has proven fragile once the start-up funds are exhausted. Experience to date would suggest that opening data access is certainly a necessary condition for the emergence of new services, but it is not a sufficient condition.

What also emerges from experience to date is that 'business-to-consumer' (B2C) models are challenging to maintain. The **development of MaaS will be effective if new mobility providers are to some extent integrated into the public transit supply**. As a consequence, their business models have to move from a B2C to a Business-to-Government (B2G) rationale. **Digitalisation and new mobility services will therefore lead to a more important role for mobility authorities**.

Issues for policymakers

- *What data sharing/access arrangements might be needed?*
- *Will public authorities remain the key organising agent of mobility systems, and if so, how and to what extent should new services be integrated?*

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