Department of Political Science

Chair: European Union Policies

EUROPEAN UNION FIT FOR THE DIGITAL AGE: A TRANSFORMATION THAT BENEFITS ALL CITIZENS

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Ai miei genitori,
Per essere le radici che mi fanno sentire libera.

Index

Introduction……4

1. The digital theme: a priority……...7

1.1 Background and contextualization: what has been done so far……7

1.2 The digital transformation: strategies and objectives……..…...10

1.3 The Artificial Intelligence: advantages and implications ……..14

1.4 Resilience to future-oriented policy making: digitalization as a key player……...17

2. European Union as a role model for a society empowered by data……19

2.1 Objectives: promotion of sustainability and efficiency through digital technologies ……19

2.2 Obstacles to implementation ……..……...22

2.3 Future lines of action……28

3. Use of data in European Common Spaces: Green Deal data space…...……36

3.1 Analysis of how data could contribute to the transition to a greener economy……..36

Conclusion…….……38

Bibliography……...……..…….42

Webliography……48

Abstract……..49

Introduction

"Hope is not a strategy."[1]

Digital technology is objectively changing people's lives. Citizens of the European Union are facing new challenges. It is a real revolution. Economically and socially speaking. The new term storing real excitement is "disruptive technologies", which means innovation that replaces and destroys the existing technology. One of the biggest implications relating to disruptive digital innovation is associated with the elimination of jobs.[2] Indeed, a revolution always brings changes, not necessarily positive ones. Furthermore, it must be specified that a revolution affects social groups or categories in different ways. In this case, the digital revolution could represent a real threat to all those who carry out traditional jobs, in an economy that is increasingly destined to change and innovate. Obviously the most affected are always small businesses, not able to compete in an increasingly cutting-edge and interconnected market.[3] A key role in this context is played by the main actors at European level, who must be able to understand and adapt these processes, in order to derive as positive as possible from them. The vision of European integration must be confirmed, no longer merely aimed at creating the single market, but permeated by social, cultural, humanistic, and legal values.[4]

In this regard, the new European Commission, which was approved by the Parliament with 461 votes in favour on 16 July 2019 and took office on 1 December of the same year, has expressed itself very clearly. The Commission wants to make the digital theme a priority. One of the six strongpoints of the 2019-2024 political program of the new European Commission is to make sure that Europe is fit for the digital age.[5] In this regard, on February 19 of last year, the Commission published a package of measures aimed at outlining a strategy for Europe's digital future.[6] The package focuses on 3 fundamental points. The first is the Shaping Europe's digital future communication, which illustrates: an overall picture of the situation, the main objectives

[1] Reuters, Bond News, article: "*Update 3 – Eurozone risks relapse into recession without structural reforms – Draghi"*, 24 October 2014

[2] Von Weizsäcker E. U., Wijkman A., *Come On! Capitalism, Short-termism, Population and the Destruction of the Planet – A Report to the Club of Rome,* Springer Science and Business Media LLC, 2018, p. 44-49

[3] Monti L., *Politiche dell'Unione Europea. La programmazione 2014-2020,* Luiss University Press, Roma, 2016, p.144

[4] Baratta R., *Lezioni di Diritto dell'Unione Europea, terza edizione,* Luiss University Press, Roma, 2019, p.21

[5] European Commission, *Political Guidelines for the next European Commission 2019-2024,* 16 July 2019

[6] European Commission, *Shaping Europe's digital future,* 19 February 2020

that have to be achieved and the main actions that have to be done to change, for the better, the digital transformation in Europe. The second focus is on Artificial Intelligence: the theme is clearly analysed in the White Paper on Artificial Intelligence, about which a public consultation has been launched and ended the last May 19th.[7] The paper is accompanied by a Commission Report on the implications of the AI, IOT and robotics for product safety and the liability regime.[8] The last point focuses on the European Data Strategy, upon which the Commission is collecting the first feedback.[9]

Consistently with an invitation to reflection, the aim of this paper is to analyse the digital evolution in the European context, showing the objectives but also the problems that stand in the way. Furthermore, it will also partially try to analyse future scenarios foreshadowed, especially in light of the first feedback obtained from these new initiatives that have been adopted. Lastly, it will help the readers understand how and if the digital strategy adopted by the European Union is truly bringing benefits to citizens and businesses.

In the first chapter, there will be an overall analysis of the package proposed by the European Commission. It will be clarified why the digital theme deserves this much importance. Firstly, it will be illustrated the background of this theme, dating back to the mid-1980s, when the first European contributions on technology and digital communication were introduced. The theme will therefore be contextualized, going as far as the current Agenda.[10] Secondly, the strategy and objectives alongside this digital transformation will be delineated. It will be explained how digital technologies at the service of people could contribute to a fair and competitive economy and to an open, democratic, and sustainable society. Finally, there will be a focus on the White Paper on Artificial Intelligence, which aims to promote the development of systems and investments in the sector. The numerous interesting problems concerning the risks associated with certain uses will also be analysed, especially those relating to the respect of fundamental rights. The two main purposes of the White Paper will be clarified: to create a system of trust and one of excellence. The last paragraph of the chapter will be dedicated to the role of digitalization in the realization of future-oriented policy making, based on the concept of Resilience. The European Union must make this concept one of its strengths, in order to evolve

[7] European Commission, *White paper on Artificial Intelligence-A European approach to excellence and trust*, Brussels, 19 February 2020
[8] European Commission, *Report on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics*, Brussels, 19 February 2020
[9] European Commission, *A European strategy for data*, Brussels, 19 February 2020
[10] European Commission, *The EU explained*: *Digital Agenda for Europe*, Publications Office of the European Union, Luxembourg, 2014

towards better prospects. To do this it is necessary to implement prevention, protection, promotion, and transformation initiatives. The recent crisis caused by the Covid-19 pandemic is a perfect example.

The second chapter will instead be devoted to a thorough analysis of the European data strategy. First, there will be a focus on the objectives, which aim at the final realization of a single European area, in which the fundamental rights of the individual must be prioritized. Secondly, there will be a scrupulous focus on the problems that stand in the way of achieving the previously mentioned objectives, and that also prevent Europe from fully exploiting the potential of the data economy. Conclusively, it will be outlined the future line of action, which mainly consists of four pillars, aimed at making processes more efficient thanks to digital technologies and aimed at exploiting the transformation we are experiencing, in order to provide new opportunities to industries and citizens.

In the third chapter, it will be explained the development of European common data spaces in some strategic sectors and areas of public interest. The analysis will focus on the European common area related to the Green Deal, and in particular on the "Green Data 4 All" initiative.[11] It will be explained how tools like these could deeply contribute to the transition towards a more sustainable economy. It will be therefore understood the positive impact that digital transformation provides for the achievement of environmental sustainability data, which are set in the new European Green Deal.[12]

The tools used for the drafting of this document were primarily the documents made available by the websites of the institutions of the European Union, in particular the Commission. Secondly, various databases were used, in order to demonstrate the contents of this analysis through real data. Thirdly, the articles of national and international newspapers and social profiles of political actors involved in the topic were consulted, in order to obtain the most updated information.

[11] European Commission, *A European strategy for data*, Brussels, 19 February 2020
[12] European Commission, *The European Green Deal*, Brussels, 11 December 2019

Chapter 1

The digital theme: a priority

1.1 Background and contextualization: what has been done so far

The first European initiatives concerning digital were developed with multiple difficulties, caused by many obstacles. Examples of hardships were the fragmentation of digital markets between Member States; the lack of necessary investments and effective coordination between States; an insufficient commitment to research and innovation and finally the lack of a high level of digital and controlled literacy IT skills.[13] Therefore, it is evident that even in the past the digital theme highlighted the differences in resources and funds made available to the various Member States, which were not all ready to face this new challenge in an equal way.

As aforesaid in the introduction of this paper, to trace the first contributions from the European Union concerning digital and technology, we must go back to the mid-eighties. The first research and development program in the information technology sector was introduced in the European context in 1984.[14] However, the first real policy concerning this issue was proposed only a few years later, exactly in 1993. Thanks to the "*Commission's White Paper on Growth, Competitiveness and Employment. The challenges forward into the 21st century"*[15], the European community was preparing to learn about concepts such as the rise of employment's competitiveness in Europe, understanding how job competition would have started to grow with the introduction of new digital tools. In addition, European societies also began to understand the positive side of this development, that is, the advantages such as the economic and social growth that technology brings with it. At the same time, the European Union had to be ready to face this new challenge, otherwise, as mentioned above, the already evident differences belonging to the various countries would only have been accentuated. A very important concept in these terms, which needs to be highlighted, is certainly the "Digital Divide". The digital divide can refer to the disparity between individuals, households, communities and/or countries at different socioeconomic and institutional levels who have or who do not have the opportunity

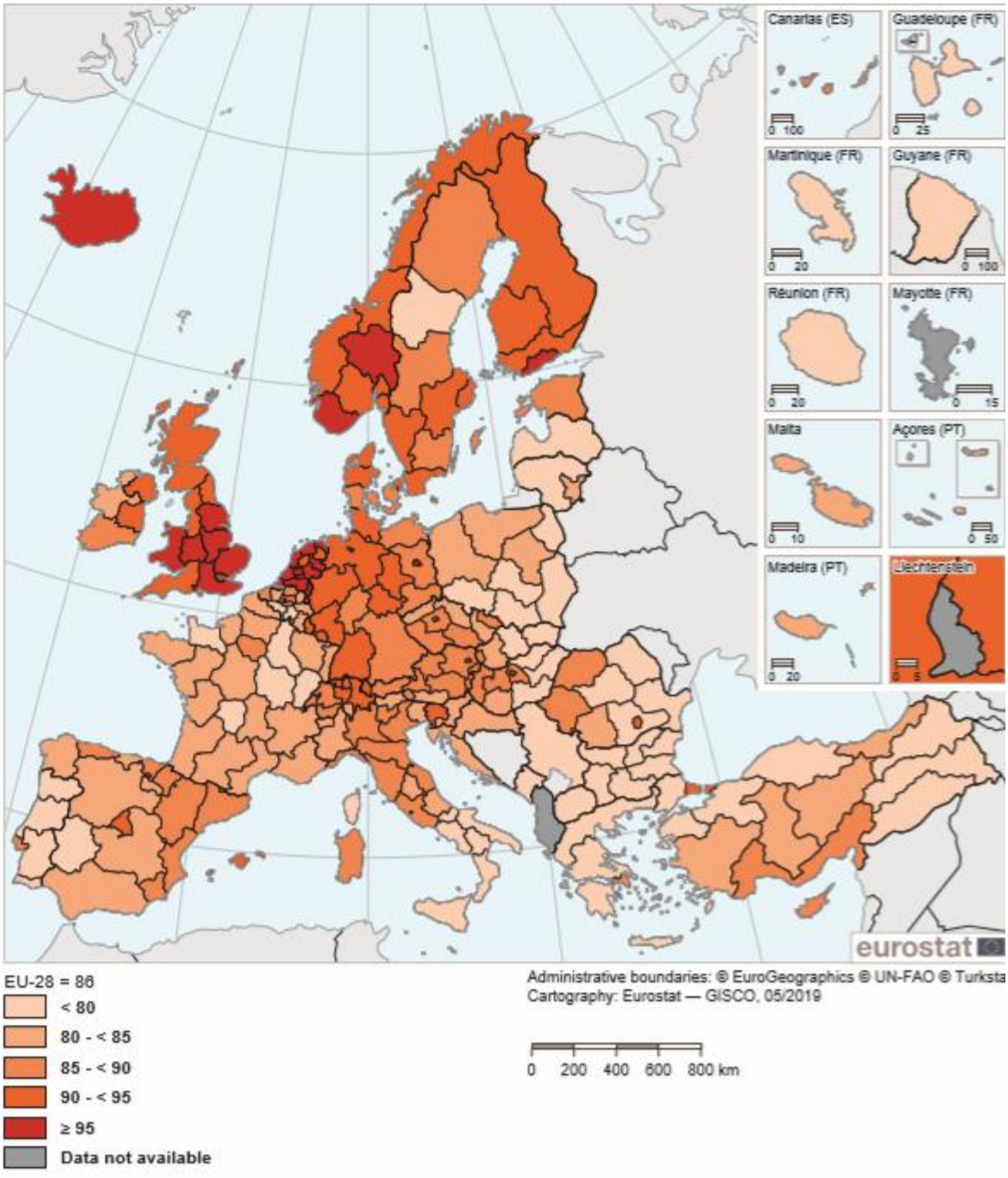
[13] Monti L., *Politiche dell'Unione Europea. La programmazione 2014-2020,* Luiss University Press, Roma, 2016, p.144

[14] European Commission, *FP1-ESPRIT 1 - European programme (EEC) for research and development in information technologies (ESPRIT), 1984-1988.*, Brussels, 1 January 1984

[15] European Commission, *Growth, Competitiveness, Employment – The challenges and ways forward into the 21st century – White Paper*, Brussels, 12 May 1993

to access and use ICTs.[16] Unfortunately, this gap is still not completely overcome today. Indeed, due to the recent crises we are facing, such as the one related to Covid19, the gap has been further highlighted.

Map 1: Households with broadband access at home, 2018 ***(%, share of private households, by NUTS 2 regions)***[17]



Source: Eurostat (2019).

[16] Bohlin E., Srinuan C., *Understandig the digital divide: A literature survey and ways forward*, Leibniz Information Centre for Economics, January 2011, p.8

[17] Eurostat, *Eurostat regional yearbook, 2019 edition. Cap. 9 Digital economy and society*, Publication Office of the European Union, Luxembourg, 2019, p.134

At the beginning of the 21st century, once the rewards of the previous policies mentioned had been reaped, a new one was already going to be implemented. Undoubtedly, important progress had been achieved, such as opening up to competition in order to obtain many services at the best cost, the introduction of broadband and more resources and funds which were made available for the digital theme. In 2000, the Heads of State and Government of the member countries of the European Union approved the Lisbon strategy: a program of economic reforms that aimed to make Europe the most dynamic and competitive economy in the world, exploiting chiefly the digital opportunities.[18] A couple of years later, a further significant contribution was provided by the *eEurope 2002 action plan: An Information Society For All*.[19] It roughly resumed the lines of action of the previous mentioned *White Paper*, highlighting in particular the attention to be paid to people and small and medium-sized enterprises, the main recipients of the benefits brought by new technologies. These lenses were further refined in *eEurope 2005*, a few years later. In particular, the focus here was on the importance of new topics, then almost unknown, such as e-learning, e-health, and E-government.[20]

I2010 must also be mentioned: A European information society for growth and employment, approved by the European Council in 2005, which emphasized priorities related to ICT technologies, that represented a fundamental precondition for promoting economic and social cohesion.[21] Notably, this document introduced a theme that would have been treated with significant importance in subsequent years, namely E-government. In fact, this was taken up shortly later in the *eGovernment Action Plan for the i2010 initiative: to accelerate Europe for the benefit of all.*[22] The aim was to give particular importance to digital administration, making sure to accentuate social inclusion, allowing citizens a quick and easy access to services and above all greater transparency and effectiveness of public administrations, trying to eliminate the existing obstacles. Services provided through the E-government reasonably facilitate and shorten administrative processes, encourage the creation of new business, enhance the efficiency of public administration activities, and cut public expenditure. It is demonstrated that

[18] European Parliament, *The Lisbon Strategy 2000-2010. An analysis and evaluation of the methods used and results achieved*, Brussels, 2010.
[19] Commission of the European Communities, *eEurope 2002: An Information Society For All. Draft Action Plan prepared by the European Commission for the European Council in Feira 19-20 June 2000*, Brussels, 25 May 2000.
[20] Commission of the European Communities, *eEurope 2005: An Information Society For All. An Action Plan to be presented in view of the Sevilla European Council, 21/22 June 2002*, Brussels, 28 May 2002.
[21] Commission of the European Communities, *i2010: DIGITAL LIBRARIES*, Brussels, 30 September 2005.
[22] Commission of the European Communities, *i2010 eGovernment Action Plan: Accelerating eGovernment in Europe for the Benefit of All*, Brussels, 25 April 2006.

the E-government has a positive impact on the economy, by increasing the performance of economic activities. Nevertheless, digitization of public administration implies transparency and accountability of governments and open access on activities of public administrations in general. This is why, the open government approach increases the participation of citizens and their trust in the public authorities.[23]

Following the 2008 crisis, the European Commission has developed a new strategy on the digital theme. It is included in the European Digital Agenda, which is one of the seven flagship initiatives of Europe 2020.[24] The aim of this document is to promote Europe's smart, sustainable, and inclusive growth. Obviously, in order for the initiative to achieve the objectives set, it is necessary that all the main players in the European arena fully contribute to its implementation, in order to pursue an increasingly interconnected European economy. In particular, it will be vital to face the challenges and major changes taking place, in order to build a more resilient European society, as will be better explained in the fourth paragraph of this chapter.

1.2 The digital transformation: strategies and objectives

As already aforementioned, one of the six priorities of the 2019-2024 political program of the new European Commission is to ensure that Europe is ready for the digital age.[25] President Ursula Von Der Leyen has entrusted this task to the executive vice-president for a Europe fit for the digital age, as well as commissioner for the second consecutive mandate for competition: Margrethe Vestager. On 1 December 2019, Von Der Leyen indicates in the mission letter intended for Vestager the initiatives to be taken, in order to ensure that Europe fully grasps the potential of the digital age and strengthens its industry and its capacity for innovation.[26] Vestager, on her part, fully commits to fulfil the tasks that have been entrusted to her, confirming that there are so many things which still need to be done. In order to do so, she solicits to further develop the political visions so that it could be made a real contribution for a

[23] Monti L., Pepe E., Rizzuti P., *E-government and Open Data Boosting Economic Growth: A New Index*, Journal of Business and Economics, Volume 6, Academic Star Publishing Company, USA, December 2015, p. 2081
[24] European Commission, *The EU explained: Digital agenda for Europe*, Publication Office of the European Union, Luxembourg, 2014.
[25] European Commission, *Political Guidelines for the next European Commission 2019-2024*, Brussels, 16 July 2019.
[26] Von Der Leyen U., *Mission Letter*, Brussels, 1 December 2019.

better Europe. A Europe fit for the Digital age. A Europe that makes markets work better for consumers and businesses.[27]

In this regard, on 19 February 2019, the Commission published a package of measures, containing strategies for outlining Europe's digital future.[28] The package consists mainly of three parts: the Shaping Europe's digital future communication, which illustrates an overall vision and the key objectives to finalize the digital transformation of Europe; the White Paper on Artificial Intelligence, accompanied by a report on the implications of the same and other elements related to it, which will be better discussed in the third paragraph of this chapter; lastly, the package contains a European data strategy, about which there will be a focus in the second chapter of this paper.

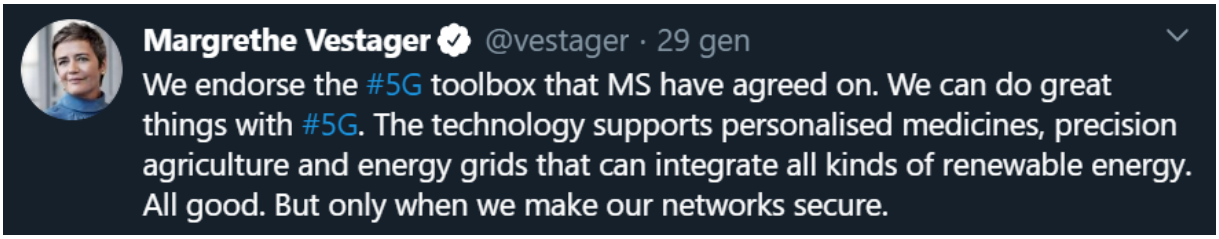
In the Shaping Europe's Digital Future Communication, as it has been said, an overall strategy for the digital future of Europe is outlined, which guarantees the benefits for European citizens and businesses and which at the same time remains rooted in the values of the European community. The latter are common to all the Member States: respect for human dignity, freedom, democratic principles and the principle of transparency which aims to strengthen the democratic foundation of the institutional system.[29] Furthermore, the Commission underlines how digital transformation can have an extremely positive impact for the achievement of further priorities, such as that of environmental sustainability, set in the Europe Green Deal program.[30] Vestager herself confirms that the link between the digital theme and the EU Green Deal and the target set for 2050 of climate neutrality are closely interconnected.[31] The Commission identifies three main objectives of the digital strategy and indicates, for each of them, the measures that have to be included in the coming years. It has to be recalled that the Commission remains in office for five years and the President is elected to an absolute report by the European Parliament on a proposal from the European Council. It is composed of one representative from each Member State and these personalities are chosen according to their competence, since they must be completely independent, meaning that during the mandate they must not receive instructions from governments, or from other institutions or bodies.[32] For this reason, the

[27] Vestager M., *Answers to the European Parliament questionnaire to the Commissioner-designate.*
[28] European Commission, *Shaping Europe's Digital Future*, Publications Office of the European Union, Luxembourg, 2020.
[29] Baratta R., *Lezioni di Diritto dell'Unione Europea, terza edizione,* Luiss University Press, *Roma, 2019, p.20*
[30] European Commission, *The European Green Deal*, Brussels, 11 December 2019.
[31] Vestager M., *Answers to the European Parliament questionnaire to the Commissioner-designate*, p.4
[32] Baratta R., *Lezioni di Diritto dell'Unione Europea, terza edizione,* Luiss University Press, *Roma, 2019,* p.137

Commission chaired by Von Der Leyen will be required to carry out its measures and possibly achieve the objectives set in the expected period.

The first objective concerns the preconditions for digital transformation. In particular, issues such as connectivity, frontier technologies, trust and digital skills are mentioned.[33] By 2025, expanded connectivity goals are expected to be achieved, accelerating deployment of ultrafast broadband. Particular attention is given to 5G, to encourage connected and automated mobility. In this regard, the Executive Vice-President Margrethe Vestager has clearly expressed herself in a tweet, claiming that resources like 5g are precious, but only when they are used efficiently and safely.

Margrethe Vestager's tweet on her personal Twitter profile. [34]



Source: Twitter.

Another sector in which the European Commission wants to invest a lot is that of frontier technologies, in particular in the areas of Artificial Intelligence and blockchain. Confidence in the use of digital must also be strengthened. In this regard, the Commission plans new cybersecurity initiatives. This theme will be discussed better in the next paragraph dedicated exclusively to Artificial Intelligence, since it is one of the objectives that it aims to achieve. To conclude the argumentations concerning the first objective, that is the focus on the benefits of technology towards people, the last topic is the strengthening of digital skills. Starting from the school system, the plan is to offer citizens the opportunity to take advantage of the opportunities offered by digital transformation, to then ensure the necessary professional skills and possibly retrain workers based on the transformations taking place.

The second objective concerns the achievement of a fair and competitive European economy.[35] Having to deal with global economies where new technologies play a key role, the Commission

[33] European Commission, *Shaping Europe's Digital Future*, Publications Office of the European Union, Luxembourg, 2020, p.4
[34] Vestager M., Twitter, 29 January 2020.
[35] European Commission, *Shaping Europe's Digital Future*, Publications Office of the European Union, Luxembourg, 2020, p.5

wants to promote wider access to high quality data and strengthen the single market, again with regard to data. This particular point will be deepened in the second chapter, which will deal exclusively with the European data strategy. Particular attention is paid to small and medium-sized enterprises, proposing an industrial policy aimed at promoting the advantages towards the latter. A reflection is also presented about the adequacy of the competition rules in the digital age, in particular with reference to the cooperation agreements and the control of State aid for projects of common European interest, regarding which there will be a particular deepening in the last chapter of this paper. Once more on the subject of competition, there is a discussion as to whether and in what terms an ex ante regulation framework for large online platforms is needed, to ensure that markets remain fair and contestable. Lastly, the challenges for the taxation concerning the digital economy and the protection of workers will be analysed, in order to provide more information, so that consumers can participate actively and consciously in the digital transformation.

The third and final objective of the strategy of the European Commission chaired by Von Der Leyen is to ensure that the digital transformation takes place while preserving the European rights model, therefore always placing the well-being of individuals and respect for the person first, protecting pluralism, the democratic model and promoting development.[36] To achieve this, the Commission first announces clearer rules on the liability of online platforms and the strengthening of control over them. The Commission intends to allow citizens greater control over their digital identity and their data. A key point is the action plan for European democracy: the purpose is to implement a specific action plan for the media and audio-visual sector in order to support pluralism of information and combat the risk of disinformation, promoting the access only to quality content. Aiming for a sustainable society, numerous digital initiatives are also concentrated in the Green Deal plan, which pursues sustainable development objectives. Regarding these initiatives, there will be a deepening in the third chapter of this paper. To conclude, a focus must be duly made on the theme that could be defined as the most important for a society, especially after the latest world events: health. The Commission realizes the importance for citizens and companies of drawing on health-related information in the most efficient and prompt way possible. In this regard, it proposes, through a single European format, access to health information contained in electronic medical records, in order to promote the creation of a common European health data area. Further advantages connected to this theme could then concern the targeted activities of research, diagnosis, and treatment of diseases, certainly facilitated by this electronic system.

[36] *ibid*, p.6

After illustrating the strategies envisaged to achieve the three objectives set, the Communication dedicates a paragraph to the role of Europe in the international context. [37] Precisely because many legal systems have drawn inspiration from the European model, as will be better explained in the second chapter of this paper, the Commission wants to promote the European approach to digital transformation on a global level. To this end, a comprehensive strategy for digital cooperation will be developed and implemented and initiatives will be proposed with third countries and in multilateral contexts (United Nations, OECD etc.). Lastly, the Commission wants to use the standardization tool to ensure Europe a leading role in defining standards for the new generation of technologies (such as 5G, which represented a positive experience in this regard) and to encourage also the development of interoperable technologies, which must always respect European rules.

1.3 The Artificial Intelligence: advantages and implications

"Artificial intelligence can serve us in many sectors of the economy, such as health, transport, communication and education. It can enable a wide-scale automation of decisions and processes that has an enormous potential to increase quality, efficiency, and productivity. It will impact many aspects of our lives, from self-driving cars to improved medical procedures. At the same time, this technology, which is based on self-learning and self-improving algorithms, can raise many policy issues, for instance issues such as accountability or social acceptance."[38] Margrethe Vestager explains one of the fundamental points of the package about Europe's digital future: Artificial Intelligence. In particular, the Commission's policy proposals aimed at outlining a framework for artificial intelligence, considering the enormous potential of all areas, are contained in the White Paper on artificial intelligence.[39] They are aimed at promoting the development and application of this branch of information technology and promoting investments in the sector. At the same time, however, the various risks associated with a given use of this tool must be considered, especially those inherent the respect of fundamental rights.

The White Paper has two objectives in particular, as mentioned in the introduction of this thesis: creating an ecosystem of excellence and one of trust.[40] This means that measures must be taken to speed up research, promote collaboration between Member States and encourage investment

[37] *ibid*, p.7
[38] Vestager M., *Answers to the European Parliament questionnaire to the Commissioner-designate*, p.6
[39] European Commission, *WHITE PAPER on Artificial Intelligence – A European approach to excellence and trust*, Brussels, 19 February 2020.
[40] *ibid.*

in the development of AI-based solutions. Furthermore, it must be ensured that AI systems are developed and used in compliance with European rules and fundamental rights.

In particular, considering the first objective, the Commission wants to resume the coordinated plan with the Member States on AI presented in 2018 and revise it in some parts, in order to further incentivize investments (both public and private), so to provide more available resources and funds at European level for this sector. Moreover, another proposal is to logically facilitate access to these funds by the various European AI research centres. To encourage the adoption of AI-based solutions in the public sector, in particular in areas such as health and transport, the Commission will launch sectoral dialogues, which aim to define a special program for public procurement of AI systems. The same dialogues also generally avail to encourage the use of AI, in order to make procedures more efficient and faster.

As for the second objective, namely the creation of a trusted ecosystem, it must be said that some characteristics of the AI can make the application of current European legislation problematic. In this regard, the White Paper contains proposals to define a legal framework that allows to minimize the dangers associated with the use of this branch of information technology, in particular, as we have already said, those relating to fundamental rights. In this context, the dangers associated with other sectors must also be mentioned, such as safety or the proper functioning of the liability regime.

In order to achieve the two objectives set, without having to introduce limits to innovation, the Commission intends to follow a risk-based approach. This means that it wants to provide specific rules for the sectors in which AI is applied, where significant risks can occur precisely in terms of protection of safety and protection of fundamental rights. The purpose of this tactic is that only high-risk AI systems are bound by a series of mandatory requirements, for example relating to data sets containing sufficiently large and representative data, in order to avoid discriminatory results. Another topic addressed, always inherent to the correct use of AI, concerns remote biometric identification. The classic example is facial recognition, which is currently allowed if justified for valid purposes. The Commission wants to launch a European debate to extend the use of this tool in exceptional circumstances, obviously accompanying it with safeguards that must be adopted. In terms of enforcement, the White Paper claims to consider a preventive conformity assessment for high-risk AI systems, aimed at verifying compliance with applicable mandatory requirements, without prejudice to the possibility of

expost controls. Furthermore, for AI systems deemed not to be at high risk, the possibility of establishing a voluntary labelling scheme is still provided.

In addition to the advantages, in this paragraph the aim is to analyse the implications of Artificial Intelligence. In this regard, it is taken as a reference of analysis a Report that accompanies the White Paper.[41] This report from the Commission to the European Parliament, the Council and the Economic and Social Committee is aimed at analysing the challenges that AI, the Internet of Things and robotics pose to the current European legal framework on product safety and liability regime. The aim of the European legal framework is to ensure that all relevant products and services work efficiently, safely and above all reliably. Furthermore, the Commission wants to ensure that adequate and related remedies exist in the event of damage. The adequacy of the rules is essential not only for consumers, who benefit from actively exploiting services, but it is also important for businesses and even more generally for the European economy, which must always enjoy a fair competitiveness.

It is necessary to identify the problems associated with AI, IoT and robotics. Critical issues can be raised regarding product safety and attribution of responsibilities, such as dependence on connectivity, the involvement of multiple components, the possibility of continuous updates following the launch of the product on the market, the unclearness of some processes and last but not least, the risk of cyber-attacks. In order to integrate the current European regulatory framework, the Commission identifies various initiatives, in particular regarding the safety of products and services. First, the initiative of a procedure to re-evaluate the risks related to a product already placed on the market and which has however undergone changes over time. Second, to introduce specific human control obligations towards long-lasting products, especially to upgrade the potential of self-learning. Finally, fundamental forecasts aimed at guaranteeing the quality of the data throughout the period of use of AI products and systems. Conclusively, the Report analyses how to consider liability for product damage, proposing a common European approach in this regard. For example, for high risk profile AI applications, the Commission indicates that a strict liability regime could be envisaged, accompanied by insurance coverage obligations. The last important issue analysed in the Report is whether the notion of "putting into circulation" of the product should be reviewed considering that products in the digital context can change rapidly and at any time.

[41] European Commission, *Report on the safety and liability implications of Artificial Intelligence, the Internet of Things and robotics,* Brussels, 19 February 2020.

1.4 Resilience to future-oriented policy making: digitalization as a key player

Resilience refers to the capacity of a dynamic system to adapt successfully to disturbances that threaten the viability, the function, or the development of that system.[42] This is how Dr. Ann Masten defines the concept of resilience: basically as the capacity of a dynamic system to adapt successfully. It is a fundamental concept in the European political and economic context, especially in recent years, after that companies have faced various crises, the most recent being the pandemic Covid19. What role does digitalization play in creating future-oriented policy making based precisely on the concept of resilience? First of all, it must be understood that it would be unthinkable to consider to avoid the crises or the persistent structural changes of the system, since these are not controllable and for this reason they could even increase in the near future. What needs to be done is understand how to learn from these shocks, creating policies that prepare citizens, industries and institutions to face and overcome them with the least possible damage.[43] At this point the concept of "Resilience" comes into play. Institutions, such as the European Union in particular, in the case that this paper aims to analyse, must make this concept their strong point, in order to evolve towards better prospects. To do this, they must implement prevention, protection, promotion, and transformation initiatives. The recent crisis caused by the Covid19 virus is a perfect example. Modern society was not ready for all this. Crises of this kind lead to accentuate the already present economic and social inequalities and therefore to accentuate the huge gap between rich and poor. A crisis of this magnitude will undoubtedly also change the way the populations lives the everyday-life and for this reason will have to get used to a "new normal". In this regard, the concept of resilience is fundamental, since it is necessary for companies to be prepared and above all to get used to situations like these, trying to execute as consistent performances as possible. A company defined as resilient can face a shock in two phases: by absorbing the structural changes caused by it or by adopting a flexible perspective, trying to implement changes within the system. An example of these dynamics could be found in the European Union's policy response to the 2008 financial crisis. The short-term response to the threat of bankruptcy and the emergence of a system in crisis was able to immediately provide financial support to banks. The next step, however, was the gradual creation of financial stability, guaranteed by a banking union, which was intended to implement important changes in the banking system's operations.[44] This confirms the crucial aspect of the

[42] Masten A., *Resilience definitions, theory, and challenges: interdisciplinary perspectives,* European Journal of Psychotraumatology, October 2014, p.3
[43] Benczur P., Giovannini E., Manca A., *Building a Scientific Narrative Towards a More Resilient EU Society, Part 1: a conceptual framework,* JRC Science for Policy Report, 2017, p.3
[44] *ibid*, p.5

concept of resilience: learning from past difficulties, getting out of it stronger and being able to use difficulties as opportunities. Another fundamental point is the concept of a sustainable society, that is, that it aims to support a common well-being, without however preserving that of future generations. In other words, sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.[45]

A conceptual framework for future-oriented policy making needs to be identified. It consists of three basic points. First, collect indicators and develop analytical tools that examine the system in several places and are able to detect relevant changes. Second, monitor resilience and identify the most relevant intervention points. Third, to develop analytical tools capable of capturing the "system vision" and supporting the design of more effective policies to support the resilience of companies.[46] This type of approach will allow to: continuously monitor the degree of resilience of European society, an assessment of the expected impacts on policies and precisely the formation of new policies that enhance resilience. To conclude, it is necessary to underline once again why digitalization entails a higher level of productivity, creating a situation of "rebounding forward", where the concept of resilience inevitably comes into play. The development of digitalization is the perfect example to understand this phenomenon: it certainly generates advantages, but at the same time it also foresees the loss of some jobs, strictly linked to manual functions, easily replaceable by machines. In this sense, the concept of resilience is fully affirmed: if some jobs are lost in certain sectors, others will have to be created elsewhere. There must be a continuous process of reallocation and renewal, adapting to changes in the present, while always thinking about the future.

[45] Siddiqui A. H., *A Sustainable Society: Its Meaning and Objectives*, International Journal of Research and Scientific Innovation Volume V, Issue I, January 2018, p.128
[46] Benczur P., Giovannini E., Manca A., *Building a Scientific Narrative Towards a More Resilient EU Society, Part 1: a conceptual framework*, JRC Science for Policy Report, 2017, p.9

Chapter 2

European Union as a role model for a society empowered by data

2.1 Objectives: promotion of sustainability and efficiency through digital technologies

The Communication on the European common data strategy illustrates how the Commission wants to make the European Union an example of the world's most attractive, safest and most agile economy, focusing on data-driven innovation and illustrating how this can bring enormous benefits to the economy and to societies.[47] A common European data strategy aims to improve decision-making processes in various areas, in order to increase competitiveness and also productivity, contributing to the quality of public services and the effectiveness of policies to protect health, mobility and the environment. Although the purpose of the EU is to exploit the opportunities that are offered by data, to face a digital future as equipped as possible, a fundamental point (which often involves various problems, as it will be explained in the next paragraph of this chapter), is the respect and promotion of European standards, values and rights. The European data strategy contained in the Communication, on the one hand, wants to define the objectives following a European model, which must place the individual and the fundamental rights at the centre, as already explained above, and on the other hand it aims to identify a series of lines of action, in order to achieve the predetermined results.

As regards the objectives, the strategy aims to create a single European area, following four main points. Firstly, unjustified obstacles to the circulation of data within the EU area, and also between different sectors, must be removed. Obviously, this point aims to benefit citizens, but above all businesses and public administrations. Secondly, as mentioned above, European values are a key point of this strategy: personal data must be protected. Moreover, it has to be granted the protection of the consumer and furthermore competition measures must be fully guaranteed and respected. Thirdly, there must be clear and precise rules for accessing and using data, which, however, must also be functional and efficient at the same time, without putting aside valid and reliable governance mechanisms. Lastly, corresponding to international data flows, an open approach must be adopted, which at the same time must also be proactive and must always promote European values.

To achieve their complete development, the objectives listed above must be integrated with a broader industrial strategy, which is also related to the economics of data. Data spaces should

[47] European Commission, *A European strategy for data*, Brussels, 19 February 2020

favour an ecosystem (both including civil society and private individuals) that creates new products and services, based on more accessible data. Public policies can improve the demand for data-enabled offers, both by increasing the capacity of the public sector to use data for decision-making and public services and also by updating sectoral regulations and policies to reflect the opportunities provided by the data. [48]

The document also deals with analyzing in depth the context in which this strategy has to be inserted. Currently, the volume of data produced worldwide is growing rapidly, from 33 zettabytes in 2018 to expected 175 zettabytes in 2025.[49] Logically, this organized growth for Europe is a great opportunity to establish itself as one of the world leaders in this area. Despite this, Europe currently has a global economic share of data, referring to the data collected, processed, and listed, which is under its economic weight. In the program, the Commission expects that it would be possible to refill this gap by exploiting the technological developments that will lead in the next few years to an exponential increase in the volume of data produced (including non-personal data), which have been previously indicated: zettabytes. In addition, the way in which data is collected and processed will also change. Currently, very high energy consumption is recorded by data storage, the so-called data centres.[50]

However, the objective of this strategy is to bring the benefits deriving from data to the population, in every area of society: from a more conscious consumption and production of energy, to healthier lives but above all, a very important point is that to obtain a better health service thanks to the data. The European Commission states: *"Personalised medicine will better respond to the patients' needs by enabling doctors to take data-enabled decisions. This will make it possible to tailor the right therapeutic strategy to the needs of the right person at the right time, and/or to determine the predisposition to disease and/or to deliver timely and targeted prevention."*[51] Another fundamental aspect where data can show its benefits is certainly the economic one: data is an essential resource for improving start-ups and small and medium-sized enterprises for producing services. In order to make it possible to produce more personalized products, data also serves to facilitate better policy making, as illustrated in paragraph four of chapter one. Another fundamental point, which will be further explored in

[48] *ibid,* p.5
[49] Gantz J., Reinsel D., Rydning J., *The Digitalization of the World. From Edge to Core, ICD White Paper*, November 2018, p.3
[50] Il Sole 24 Ore.com, Hot Topics, article by Cristina Da Rold, *"Quanto inquinano gli aerei? Il settore produce il 2% circa delle emissioni di Co2",* 23 September 2019
[51] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.2

chapter three, is to understand how data is truly able to contribute to the development of sustainable societies and how it can also more specifically help to develop policies aimed at realizing the European Green Deal.

The plan of the European Commission therefore seems to develop tactics, thanks to which it will be possible to collect results in the near future. Studies show that large parts of the data will come from industrial sectors, areas of public interest, or even simply from internet-of-things applications in everyday life. But above all, as recent events have demonstrated, like the crisis caused by Covid19, the greatest opportunities will come from technological change, willy-nilly. The latter will impose itself on society more and more and will change the way we live, offering new perspectives. From these we must decide whether to take inspiration, trying in some way to be able to predict the future, referring to the concept of Resilience already discussed in paragraph four of chapter one.

To understand what has to be done, as always, it must first be understood what are the contributions that have already been given about the theme, in order to be able to contextualize it. The first major contribution from the Commission was in 2014, with the General Data Protection Regulation (GDPR)[52], with which the European Union created a solid basis for trust in digital. Other initiatives that must be mentioned are: Regulation on the free flow of non-personal data (FFD)[53], the Cybersecurity Act (CSA)[54], the Open Data Directive[55], and the Digital Content Directive.[56] They all basically aimed to implement more and more the digital element in the most effective way possible in the everyday life.

[52] European Parliament and Council, *Regulation (EU) 2016/679 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/EC (General Data Protection Regulation)*, Official Journal of the European Union, Brussels, 27 April 2016

[53] European Parliament and Council, *Regulation (EU) 2018/1807 on a framework for the free flow of non-personal data in the European Union,* Official Journal of the European Union, Strasbourg, 14 November 2018

[54] European Parliament and Council, *Regulation (EU) 2019/881 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No 526/2013 (Cybersecurity Act)*, Official Journal of the European Union, Strasbourg, 17 April 2019

[55] European Parliament and Council, *Directive (EU) 2019/1024 on open data and the re-use of public sector information*, Official Journal of the European Union, Brussels, 20 June 2019

[56] European Parliament and Council, *Directive (EU) on certain aspects concerning contracts for the supply of digital content and digital services*, Official Journal of the European Union, Brussels, 20 May 2019

The main objective of the European Union, in particular of the Von Der Leyen Commission, is to be able to create, for 2030, a single European data space and market, where data, personal and otherwise, will be safe, easily accessible and of high quality.[57] The functioning of this common space will depend on the ability and availability of the European Union to invest in the next generation technologies and consequently in digital skills. However, competitors like China and the United States are already innovating rapidly and projecting their concepts of data access and use around the world. On the one hand, in the United States, the organization of the data space is left to the private sector, with significant concentration effects. On the other hand, China has a combination of government surveillance with strong Big Tech companies' control over huge amounts of data without sufficient guarantees for individuals. To unlock Europe's potential, it must be found a European path, balancing the flow and the wide use of data, while maintaining high standards of privacy, security, and ethics.[58] However, it must be specified, that even if the data is considered essential for every sector of the economy, each of these has its own specificities and not all sectors move at the same speed. Therefore, the intra-sector initiatives that fall within the European data space must be accompanied by the development of specific data spaces for each sector involved.[59]

2.2 Obstacles to implementation

However, all the objectives listed so far find obstacles on their way, which prevent Europe from fully exploiting the potential of the data economy. In general, the most common critical issue is the permanent fragmentation of the approaches of the Member States with regard to some important aspects regarding the data economy: the application of the competition rules or the conditions of access to private data by the public sector. A number of Member States have started to adapt their legal framework, for example on the use of private property data by government authorities. For example, the French *"LOI n ° 2016-1321 du 7 octobre 2016 pour une République numérique"* allows the public sector to access certain data of the private sector of general interest.[60] Another example is the Finnish Forest Law which obliges forest owners to share forest management information with the public sector.[61] A further adaptation of the legal framework for individual States has been developed inherently to the processing of data

[57] Von der Leyen U., *My agenda for Europe. Political guidelines for the next European Commission 2019-2024*, p.13
[58] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.3
[59] *ibid*, p.6
[60] Assemblée nationale et le Sénat, *LOI n° 2016-1321 du 7 octobre 2016 pour une République numérique*, Paris, 7 octobre 2016
[61] Finnish Ministry of Agriculture and Forestry, *Forest Act*, Helsinki, 1996

for scientific research purposes also by the Finnish law on the secondary use of health and social data, which creates a data authorization authority.[62] Further adaptations concern competition law: discussions are currently underway on adapting the competition rules to make them more equipped for the data economy in Germany and in other countries.[63] In any case, for this sector, reference should be made to the Commission's report on "Competition policy for the digital age"[64]. Other Member States are only now beginning to explore how to manage the issues at stake. The emerging differences underline the importance of joint action in order to exploit the size of the internal market. To do this, however, the Commission first has to identify the problems that have to be addressed.

First problem, the availability of data.[65] In Europe there is not enough data available to be reused in an innovative way, also with regard to the efficient development of AI. The problem must be faced in a different way, depending on whether it is personal data and in relation to the identity (public or private) of the person who holds the data and the potential re-user. Many of the issues concern the availability of data for the public good: *"Data is created by society and can serve to combat emergencies, such as floods and wildfires, to ensure that people can live longer and healthier lives, to improve public services, and to tackle environmental degradation and climate change, and, where necessary and proportionate, to ensure more efficient fight against crime. Data generated by the public sector as well as the value created should be available for the common good by ensuring, including through preferential access, that these data are used by researchers, other public institutions, SMEs, or start-ups. Data from the private sector can also make a significant contribution as public goods. The use of aggregated and anonymised social media data can for example be an effective way of complementing the reports of general practitioners in case of an epidemic."*[66] With these words, the European Commission explains, deepening, in the data strategy report, how data can benefit the various sectors of daily life. The Commission outlines four scenarios.

First, the use by companies of information in public sector availability (G2B). The opening of information held by the government is a long-standing European policy, dating back to the adoption of Directive 2003/98/EC regarding the re-use of public sector information.[67] This data

[62] Finnish Ministry of Social Affairs and Health, *Act on the Secondary Use of Health and Social Data,* Helsinki, 26 April 2019
[63] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.6
[64] Crémer J., Montjoye Y., Schweitzer H., *Competition policy for the digital era*, Publications Office of the European Union, Luxembourg, 2019
[65] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.6
[66] *ibid*
[67] European Parliament and Council, *Directive 2003/98/EC on the re-use of public sector information*, Official Journal of the European Union, Brussels, 17 November 2003

was produced with public money and should therefore benefit the society. The recently revised Open Data Directive[68] and other sector-specific regulations ensure that the public sector makes more data readily available for use than it produces. About this, governments can do more. High-value datasets are often not available under the same conditions across the EU to the detriment of SMEs' use of data that cannot afford this fragmentation. At the same time, sensitive data (e.g. health data) in public databases are often not made available for research purposes, in the absence of capabilities or mechanisms that allow specific research actions to be undertaken in a manner that complies with the rules on the protection of personal data.[69]

Second scenario: data sharing between companies (B2B). Despite the economic potential, data sharing between companies has not taken off on a sufficient scale. This is due to the lack of economic incentives (including the fear of losing a competitive advantage), the lack of confidence among economic operators that the data will be used in line with contractual agreements, imbalances in negotiating power, fear of misappropriation of data by third parties and a lack of legal clarity on who can do what with the data (e.g. for co-created data, in particular IoT data).[70]

Third: the use by public authorities of data held by private individuals (B2G). There is currently insufficient private sector data available for use by the public sector to improve the development of public policies and services such as mobility management or to improve the scope and timeliness of official statistics. The recommendations of a group of experts created by the Commission[71] include the creation of national structures for sharing B2G data, the development of adequate incentives to create a culture of data sharing and the suggestion to explore a EU regulatory framework to control public sector's reuse for the public interest of privately owned data.[72]

Last scenario: data sharing between public administrations (G2G). This could make a significant contribution to improve decision-making and public services, but also to reduce administrative burdens for companies operating in the single market.[73]

[68] European Parliament and Council, *Directive (EU) 2019/1024 on open data and the re-use of public sector information*, Official Journal of the European Union, Brussels, 20 June 2019
[69] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.7
[70] *ibid*
[71] High-Level Expert Group on Business-to-Government Data Sharing, *Towards a European strategy on business-to-government data sharing for the public interest*, Publications Office of the European Union, Luxembourg, 2020
[72] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.7
[73] *ibid,* p.8

For each of the four scenarios, measures have already been taken in the past, in some cases of a legislative nature (in particular Directive 2003/98/EC on the re-use of public sector information previously mentioned[74], subsequently replaced later by Directive (EU) 2019/1024, the so-called "Open Data"[75], also previously indicated). Despite these developments, data sharing should be further promoted according to the Commission.

Second problem, imbalances in market power.[76] In particular, the Commission refers to imbalances in relation to the access and use of data, for example when it comes to accessing data by SMEs, referring above all to the ability of online platforms to accumulate huge quantities of data. This in turn may affect the contestability of the markets in specific cases. The other degree of market power resulting from the "data advantage" may allow large players to establish rules on the platform and unilaterally impose conditions for access and use of data. The concentration of the offer of cloud services and data infrastructures, and the possible imbalances of power in relation to access to data co-generated by multiple subjects in the context of the IoT are also introduced.

Third problem, the quality and interoperability of the data.[77] To fully exploit the potential of data-driven innovation, it is necessary to ensure their quality and integrity, particularly in the context of AI distribution. At the same time, problems related to the lack of interoperability of data from different sources within the same sector or between different sectors must be overcome. The application of standard and shared compatible formats and protocols for the collection and processing of data from different sources in a coherent and interoperable way between sectors and vertical markets should be encouraged through the rolling plan for ICT standardization[78] and (as regards the public services) a strengthened European Interoperability Framework[79].

[74] European Parliament and Council, *Directive 2003/98/EC on the re-use of public sector information*, Official Journal of the European Union, Brussels, 17 November 2003
[75] European Parliament and Council, *Directive (EU) 2019/1024 on open data and the re-use of public sector information*, Official Journal of the European Union, Brussels, 20 June 2019
[76] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.8
[77] *ibid*
[78] European Commission, *Rolling plan for ICT standardization*, 2018
[79] European Commission, *New European Interoperability Framework: Promotion seamless services and data flows for European publica administrations*, Publication Office of the European Union, Luxembourg, 2017

Fourth problem, critical issues related to infrastructures and technologies.[80] The Commission highlights some critical issues related to the offer of cloud services, in particular the strong dependence on suppliers not established in the European Union and the often cruel conditions applied to micro and medium-sized enterprises. Furthermore, service providers operating in the EU may also be subject to the legislation of third countries. This presents the risk that EU citizen and business data will be accessible to third country jurisdictions. This would mean the contradiction of the EU data protection framework. In particular, concerns have been expressed about several Chinese laws relating to cyber security and national intelligence. The EU is taking action to mitigate these concerns through mutually beneficial international cooperation, such as the EU-US proposal. It is an agreement to facilitate cross-border access to electronic evidence, alleviating the risk of conflict of laws and establishing clear guarantees for EU citizens and enterprises. The EU is also working at a multilateral level, in order to develop common rules on access to electronic evidence, based on a high level of protection of fundamental and procedural rights. Another problem in this sector is the poor interoperability between cloud services, with particular reference to data portability. There is low cloud absorption in Europe, especially in the public sector, and there are significant differences in cloud adoption between Member States, once again highlighting the significant differences between the latter.

Fifth problem, control by individuals over their data.[81] Despite the high protection provided by the previously mentioned GDPR[82], the Commission observes that the tools available to interested parties could be further strengthened to maintain full control over their data and effectively exercise the rights recognized by European legislation. As consumers generate increasing amounts of data when using IoT devices and digital services, consumers may face discrimination risks, unfair practices, and "blocking" effects. In response to this, there are digital platforms which aim to provide individuals with the tools and means in order to decide on a granular level what is being done with their data. To cite an example of these online calls, it should be named the most important and known: MyData[83]. Tools like this provide significant benefits for people in various sectors, including health and well-being, better personal finances, reduced environmental footprint, hassle-free access to public and private services and greater

[80] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.9
[81] *ibid*, p.10
[82] European Parliament and Council, *Regulation (EU) 2016/679 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/EC (General Data Protection Regulation)*, Official Journal of the European Union, Brussels, 27 April 2016
[83] https://mydata.org/

control and transparency over their personal data. Currently, these tools are still at their beginning, although they have significant potential and need a favourable environment.

Sixth problem, digital skills.[84] The Commission highlights the lack of professional skills in the area of big data and data analysis, also highlighting the problem of the gender gap in this sector, which tends to be predominantly composed by male. About this, in the next chapter concerning future lines of action, it will be explained how the Commission intends to fill the gender gap in this sector, a subject that the chair of the Commissioner's Group on Europe Fit for the Digital Age, Margrethe Vestager, has particularly at heart. Notably, in 2017, there were about 496,000 uncovered job positions in the European Union. In addition, general data literacy in the workforce and across the population is relatively low and there are gaps in participation (e.g. in the aged sector of the population). If not addressed, the lack of data experts and the lack of data literacy will affect the present and future EU's ability to address the challenges of the data economy and society.

Seventh issue, Cybersecurity.[85] In this area, Europe has developed an already comprehensive framework to help Member States, businesses, and citizens, in order to deal with cyber security threats and attacks. The European Union will also continue to develop and improve its mechanisms, in order to protect its data and services based on it. The widespread and safe use of data-based products and services will also depend on the highest IT security standards. The EU Cybersecurity Certification Framework and the already mentioned EU Cybersecurity Agency (ENISA)[86] should play an important role on this.

Lastly, data governance:[87] there have already been calls for further strengthening the governance of data use in the society and the economy.[88] For these data spaces to become operational, organizational approaches (both public and private) that allow data-driven innovation are needed, based of course on the existing legal framework.

[84] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.10
[85] *ibid,* p.11
[86] European Parliament and Council, *Regulation (EU) 2019/881 on ENISA (the European Union Agency for Cybersecurity) and on information and communications technology cybersecurity certification and repealing Regulation (EU) No526/2013(Cybersecurity Act)*, Official Journal of the European Union, Strasbourg, 17 April 2019
[87] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.8
[88] European Commission (Directorate-General for Communications Networks, Content and Technology), *Workshop on promoting a data-driven finance and insurance sector*, Luxembourg, 2 July 2019

2.3 Future lines of action

The European data strategy aims to achieve the ultimate goal of the digital single market, which is central to the Von der Leyen agenda. Furthermore, there is a reference to the concept of sustainability, previously explained in the first chapter of this paper: the standards will be defined for the new generation of technologies, which will become the global norm. There will be the need to go from "need to know" to "need to share", in order to preserve and support the well-being of the future.[89] In order to achieve these ambitious targets, the Commission outlines a precise strategy, centred on four pillars, addressing the problems identified through policy measures and funds, based on what has already been achieved in recent years.

First point: a cross-sectoral governance framework for accessing and using data.[90] The aim is to avoid the fragmentation of the internal market through differentiated actions between sectors, or worse, between Member States. For this reason, the various measures must consider the specificities of individual sectors and of each State. In order to address the problems identified, the strategy proposed by the Commission provides the definition of a legislative framework for the governance of the European common data spaces, containing very precise measures for accessing and using data. This framework has three very definite intentions. First, to facilitate the cross-sectoral use of data and their interoperability, identifying the priorities of activities between sectors. This obviously implies that the specific authorities of certain sectors will be authorized to specify and request certain requirements in those same sectors. This aims in particular to solve the third problem that was exposed in the previous paragraph, namely the quality and interoperability of the data. Furthermore, this outlook aims to strengthen the general governance mechanism at European level and in the Member States, especially relevant in the sectors where data are used in an intersectoral way, involving both the public and private sectors. Second scope: to simplify the decisions related to the use of data for scientific research purposes, respecting the GDPR[91], in particular implying sensitive data contained in public sector databases not covered by the "Open Data"[92] directive. The European Commissioner for Innovation and Research Mariya Gabriel, in this regard, expresses on her Twitter private profile

[89] Von der Leyen U., *My agenda for Europe. Political guidelines for the next European Commission 2019-2024*, p.13
[90] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.12
[91] European Parliament and Council, *Regulation (EU) 2016/679 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/EC (General Data Protection Regulation)*, Official Journal of the European Union, Brussels, 27 April 2016
[92] European Parliament and Council, *Directive (EU) 2019/1024 on open data and the re-use of public sector information*, Official Journal of the European Union, Brussels, 20 June 2019

about how the effective management of data, for example the one related to genomics, could contribute to improve health and more simply the daily life of every European citizen.

Marya Gabriel's tweet on her personal Twitter profile.[93]

Source: Twitter.

Third purpose: to give individuals the opportunity to allow the use of the data they generate for the public good, always respecting the GDPR document.[94] This aims to solve the first problem, widely explained in the previous paragraph, of data availability, diversifying the various types of subjects from which the data is produced and used. However, it is important to repeat what it was already highlighted: efficient use can only be achieved if common European principles and values are respected.

Secondly, always referring to the framework of intersectoral governance for data access and use, the Commission, in addition to wanting to define the legislative framework just explained for the governance of European common spaces, has the aim of making available for the reuse more high-quality public sector data.[95] Obviously this aims to solve the third problem that was introduced in the previous paragraph, the one of data quality and interoperability. To do this, the Commission intends to adopt, on the basis of the Open Data Directive[96], an implementing act on high value data sets to be made available in Europe in a totally free and machine-readable format. In this respect, the Commission wants to take particular account of the needs and demands of small and medium-sized enterprises.

The Commission is also considering whether to introduce a "Data Act" in which certain issues should be addressed. First question: promote the sharing of B2G data (i.e. those held by private

[93] Gabriel M., Twitter, 16 January 2020.
[94] European Parliament and Council, *Regulation (EU) 2016/679 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/EC (General Data Protection Regulation)*, Official Journal of the European Union, Brussels, 27 April 2016
[95] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.13
[96] European Parliament and Council, *Directive (EU) 2019/1024 on open data and the re-use of public sector information*, Official Journal of the European Union, Brussels, 20 June 2019

individuals but used by public authorities), for public interest purposes. Second question: support the sharing of B2B data (i.e. data shared between companies), solving the uncertainties relating to the rights of use for the co-generated data. In particular, with regard to B2B sharing, the Commission indicates as a general rule the exclusively voluntary sharing of data, specifying that an obligation to grant access could be justified only in specific circumstances and at sectoral level, in the presence of a market failure in a specific sector, while taking into account the legitimate interests of the data holder. Third question: evaluate, and possibly revise and clarify, the legal framework on intellectual property rights, in order to facilitate access and reuse of data.

The Commission also wants to examine how to promote the creation of data pools functional to the innovation. Moreover, the Commission wants to clarify the conditions for the compatibility with the competition rules of data sharing and data pools, both in the context of the revision of the guidelines on cooperation agreements and, possibly, providing guidelines with respect to specific projects.

With regard to concentrations, attention will be focused on the impact on competition of acquisitions involving the accumulation of large-scale data and on utility, in order to remove competitive problems or corrective measures that provide for the obligation to grant access to or share data. The Commission will also have to assess whether, in order to make certain forms of business support compatible, such as aid for digital transformation, data sharing may be required from aid recipients. On the other hand, further problems set out in the previous paragraph, such as the accumulation of large amounts of data by online platforms, the role of data in creating or strengthening imbalances in bargaining power and the opportunity to introduce ex ante rules, will be addressed in the context of the Digital Services Act package. In her political guidelines, the President of the European Commission, Ursula von der Leyen, has committed to upgrade the Union's liability and safety rules for digital platforms, services, and products, with a new Digital Services Act. The latter has the aim to upgrade the liability and safety rules for digital platforms, services and products, and complete the Digital Single Market.[97] However, in any case, Europe must compromise on its principles: all companies that somehow find themselves involved in selling or providing services connected to the digital economy in Europe, must obligatorily and uncompromisingly comply with European laws and this cannot be modified in any way, especially not by bodies or requests outside of Europe.

[97] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.13

The Commission also undertakes to solve the problem of the scarcity of quality data available, instead ensuring only high-quality data, through various platforms such as EU Data Portal[98] and European Open Science Cloud[99]. Essentially, the Commission will strive to achieve excellence, organizing its data in the most efficient way possible, especially for future purposes. By ensuring the wide availability of the data produced, it will avail to improve future initiatives, such as policy and decision making (as already explained in chapter three), or simply to review and modify existing policies.

The second pillar that makes up the strategy involves investments and enabling factors.[100] Investments must be coordinated with the competent authorities of the Member States and supported, in line with the State aid rules, with national and regional funding and with investments through structural and investment funds. As regards this point, the fundamental contribution of the Commission, in the period 2021-2027, will be the High Impact Project on European data spaces and federated cloud infrastructures.[101] The aim of the project is to finance the creation of European common spaces of data that are interoperable with each other, in particular in the strategic sectors of prevalence. In addition, it aims to build interconnected, energy efficient and reliable cloud infrastructures. This project is part of a wider set of strategic European investments in new technologies (such as edge-computing, high-performance computing, and cybersecurity), which the Commission wants to present to integrate the industrial strategy sphere. This project will address in particular the specific interests of European industries. It will involve and benefit the European ecosystem of data-intensive companies and will support European companies and the public sector in their digital transformation. For this project to be credible as a pan-European initiative, it needs an adequate level of investment. Member States and industry should co-invest with the Commission in the project, drawing on different spending programs, subject to an agreement on the next Multiannual Financial Framework.

In order to encourage compliance with European rules, which is one of the essential prerequisites, the Commission wants to develop a "cloud rebook" by 2022, mainly addressed to cloud service providers operating in the European Union. This will contain a survey of existing codes of conduct and certifications relating to safety, energy efficiency, quality of

[98] European Data Portal: https://www.europeandataportal.eu/en
[99] European Open Science Cloud (EOSC): https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud
[100] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.15
[101] *ibid*, p.16

services, data portability and protection. With the support of the cloud rebook, the Commission will also promote the development of common European standards and requirements for public procurement related to data processing. Another Commission initiative is to promote a marketplace for cloud services, in order to allow potential European users (in particular those belonging to the public sector and small and medium-sized enterprises), to select the services that respect certain requirements in terms of data protection, portability and security. Participation in the marketplace for service providers will be subject to the use of transparent and fair contractual conditions, which the current market does not always provide, in particular for micro, small and medium-sized enterprises. While a number of Member States are already developing similar market initiatives at national level, the advantage of an EU-level cloud services market is twofold: first, it can solve the current problem of market asymmetry between global players who often offer solutions containing applications also provided by smaller European actors. Second, it can generate clarity about cloud services' compliance with the relevant rules. This will ensure a better match between the EU supply and demand resulting in particular from public administrations, services of general public interest and SMEs.[102]

Finally, the Commission intends to support advances in data technologies. The Horizon Europe program will continue to support crucial technologies for the next stages of the data economy, such as privacy protection technologies and the technologies behind industrial and personal data spaces.[103]

Third pillar: skills.[104] The Commission will evaluate the opportunity to strengthen the right to portability of personal data, already provided for in Article 20 of the GDPR,[105] in order to allow individuals to have more control over their data. This aims in particular to solve the fifth problem set out in the previous paragraph, namely the control of individuals over their data and the effective exercise of the rights recognized by the European legislation. In particular, control over who can access the data generated by the machines, including smart home applications and wearables devices, will be strengthened.

[102] *ibid,* p.19
[103] European Commission, *Proposal for a Regulation of the European Parliament and of the Council establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination,* Brussels, 7 June 2018
[104] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.20
[105] European Parliament and Council, *Regulation (EU) 2016/679 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/EC (General Data Protection Regulation)*, Official Journal of the European Union, Brussels, 27 April 2016, Chapter 3

Initiatives are also planned to strengthen the specialist skills needed in the field of data analysis, in order to help small and medium-sized enterprises and start-ups to take advantage of the opportunities offered by data-based business models. The updated action plan on digital education, together with Horizon Europe, aim to strengthen better access and use of data as one of the key priorities, in order to make education and training institutions suitable for the digital age and equip them with the necessary skills to make better decisions and improve competences and abilities. This aims to solve the sixth problem set out in the previous paragraph, namely that related to the scarce digital skills currently available. In this regard, it had been explained that there is also a clear gap in the sector, which is mainly male. On this issue, Commissioner Margrethe Vestager expressed herself with great involvement on the occasion of International Women's Day on her Twitter profile, underlining the ambitious intention of the Commission which wants to fill up this evident gap.

Margrethe Vestager's tweet on her personal Twitter profile.[106]

Source: Twitter.

The final pillar of the strategy involves the creation of common European data spaces in strategic sectors and areas of public interest.[107] These sectors or domains are those where the use of data will have a systemic impact on the entire ecosystem, but also on citizens. The data spaces will be developed in full compliance with data protection regulations and according to the highest IT security standards available. Data spaces must be integrated with policies that stimulate the use of data and the demand for data-enriched services. The Commission will also support the establishment of the following nine common European data spaces. First, a common European industrial (manufacturing) data space to support the competitiveness and performance of the EU industry. Second, a common European data area on mobility, to develop an intelligent transport system. Third, a common European health data space, which is essential for advances in disease prevention, detection, and treatment, as well as for informed and evidence-based decisions to improve the accessibility, effectiveness, and sustainability of

[106] Vestager M., Twitter, 8 March 2020.
[107] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.21

health systems. Fourth, a common European financial data area, to stimulate innovation, market transparency, sustainable financing, as well as access to finance for European businesses and a more integrated market. Fifth, a common European energy data space, to promote greater cross-sectoral availability and sharing of data, as this would facilitate innovative solutions and support the decarbonisation of the energy system. Sixth, a common European data area on agriculture, to improve the sustainability performance and competitiveness of the agricultural sector. Seventh, common European data spaces for the public administration, to improve the transparency and accountability of public spending and the quality of spending, with the purpose of fighting corruption, both at EU and national level. Eighth, a common European skills data space, to reduce discrepancies between the education and training system on the one hand and labour market needs on the other. Last but not least, a common European data space for the European green deal program. The latter is perhaps the most obvious example of how interoperability of data between various sectors can bring evident huge benefits. For this reason, this topic will be deeply analysed in the third chapter of this paper.

Finally, the last section of the document deals with international cooperation.[108] Today's European companies operate in a connected environment that goes beyond the borders of the European Union; therefore, international data flows are essential for their competitiveness. The Commission specifies that the European Union will adopt on the one hand an open approach to international data flows and on the other a proactive attitude in promoting European values and rules. The European Union must therefore ensure that any access to European citizens' personal data and European commercial data, complies with its values and the legislative framework. In this context, transfers and data sharing between trusted countries should be promoted. The European Union must have an open but firm international data approach based on its strategic values and interests. The Commission also proposes to address unjustified obstacles faced by European companies operating in third countries. Lastly, an analytical framework will be developed to measure data flows, both in the European Union and between the European Union and third countries, in order to estimate their economic value. The European Union should take advantage of its effective data regulatory and policy framework to attract data storage and processing from other countries and regions and to increase the high added value innovation that comes from these data spaces. Companies around the world will be able to make use of the European data space, subject to compliance with applicable rules, including those developed in

[108] *ibid,* p.23

relation to data sharing. The Connecting Europe Facility program[109] will support third country connectivity with Europe, which in turn will increase the attractiveness of data exchange between the European Union and the partner countries concerned. In order to promote the European model worldwide, the European Union will work with trusted partners who share the same standards and values, in order to support foreign countries that wish to give their citizens greater control over their data, in line with the values they share with Europe. For example, the European Union will support Africa in creating an African data economy for the benefit of its citizens and businesses.

Taking as an example an Italian region in transition in the EU ranking such as Sardinia, whose per capita GDP is between 75% and 90% of the European average, it is appropriate to effectively understand how the digitization process can be combined. According to Professor Luciano Monti, there are four fundamental initiatives to be undertaken in this specific case. First, larger involvement of local authorities: the smart villages model that targets small urban centres or rural areas with less than 20 thousand inhabitants. Second, engagement of the entrepreneurial system related to the digitization process with a new digitization process governance, as was done in the Spanish Extremadura region where smart specialization was combined with many territorial levels. Third, get out of isolation: benchmark with some Spanish regions looking for models to share and participation in interregional pilot projects. In this regard, it is possible to use the structural distance index 34, which allows to identify good practices in regions that share a similar structural level and context to develop the smart specialization strategy. Lastly, public procurement as a stimulus to digital innovation. Considerably, in order to promote digitization, it is not enough to invest directly in research and development, but it is also required to promote digitization processes by stimulating innovation in the supply of goods and services to the PA.[110]

Having explained the strategy and the lines of action of which it is composed, it is now clear the source of the term "European role model": the European Union has the ambition to become the most attractive, safest and most dynamic global economy in the world as it has already been said, and can achieve this goal only by strengthening the data strategy, through targeted policies and investments.

[109] European Commission, *Investing in European networks. The Connecting Europe facility. Five years supporting European infrastructure*, Brussels, July 2019

[110] Monti L., *La digitalizzazione e il futuro passano dalle pubbliche amministrazioni: il caso della Sardegna,* Amministrazione in cammino, 9 settembre 2019, p.17-20

Chapter 3

Use of data in European Common Spaces: Green Deal data space

3.1 Analysis of how data could contribute to the transition to a greener economy

As already explained towards the end of chapter two, the European data strategy foresees the development of European common data spaces in some strategic sectors and areas of public interest. Many have been mentioned, but as it was anticipated, in this chapter there will be a focus exclusively on the use of data regarding the European Green Deal. The Von der Leyen Commission is particularly attentive to this issue, making it one of its workhorses. The first item on her agenda is indeed the Green Deal.[111] To fully achieve the goal of making Europe the first climate-neutral continent, it is necessary to exploit the complementarity of this theme with that of the digital. Digitalization has huge potential to transform our most energy-intensive sectors and transition to a low carbon circular economy. Authorities should recognise this potential and fully integrate digital technologies and policies into the European Union's Green Deal initiatives.[112] On that, the Vice-President and Commissioner for a Europe fit for the Digital Age Margrethe Vestager, expresses herself by arguing that in order for Europe to remain a global industrial leader, the industry will not only have to accelerate its digital transformation, but also its transition towards a climate neutral economy. Greening the economy will be a great challenge, as well as an opportunity to develop innovative products and production processes and to promote the circular economy.[113] Likewise, the Commissioner expresses herself on her Twitter profile, underlining once again the importance and the close connection between the two elements: digital transformation and environmental challenges.

Margrethe Vestager's tweet on her personal Twitter profile.[114]

Source: Twitter

[111] Von der Leyen U., *My agenda for Europe. Political guidelines for the next European Commission 2019-2024*, p.5-7
[112] Digital Europe, *A Stronger Digital Industrial Europe, Digital transformation and its Focus*, Brussels, February 2020
[113] Vestager M., *Answers to the European Parliament questionnaire to the Commissioner-designate*, p.4
[114] Vestager M., Twitter, 11 December 2019.

Concerning the European common area of data relating in particular to the Green Deal, in the Appendix of the document relating to the European data strategy it is explained the initiative "GreenData4All".[115] This one, starting from the revision of the directive on information infrastructure territorial in Europe called the INSIPIRE directive[116] and the directive on public access to environmental information[117], has the following objective: to modernize the regime in line with technological and innovation opportunities, making it easier for public authorities, European businesses and citizens to support the transition to a greener and carbon neutral economy and to reduce administrative burdens.

In addition, the creation of a common data space for smart applications for the circular economy is envisaged. In this context, the introduction of digital product passports is being considered to manage information on the origin, duration, composition, possibilities of reuse, disassembly, and management of the end of life of the product.[118]

As well, another aim is to implement large-scale reusable data services to help collect, share, process and analyse large volumes of relevant data, in order to ensure compliance with environmental legislation and the rules relating to priority actions set out in the Green Deal.[119]

As well, another aspiration is to start a project for the implementation of the data strategy in the context of the "zero pollution" ambition, in order to reap the potential of a domain already rich in data, implementing it with more data on chemical products, air emissions, in water and soil, dangerous substances in consumer products, etc. The intention is to suggest that this tool could and must be exploited more, since it is now underutilized. The first results can directly benefit consumers and the planet.[120]

Last but not least, an initiative of due importance in this sector is the "Destination Earth" initiative.[121] This initiative will bring together European scientific and industrial excellence to develop a very high precision digital model of the Earth. This revolutionary initiative will offer

[115] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.26-27
[116] INSIRE Thematic Working Group Coordinate reference systems and Geographical grid systems, *D2.8.I.2 INSIPIRE Specification on Geographical Grid Systems-Guidelines*, 26 April 2010
[117] European Parliament and Council, *Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information and repealing Council Directive 90/313/EEC*, Brussels, 28 January 2003
[118] European Commission, *A European strategy for data*, Brussels, 19 February 2020, p.27
[119] *ibid*
[120] *ibid*
[121] *ibid*

a digital modelling platform to view, monitor and predict natural and human activities on the planet in support of sustainable development, thus supporting Europe's efforts for a better environment as indicated in the Green Deal. Earth's digital twin will be built progressively, starting in 2021.[122]

To conclude, it can undoubtedly be affirmed that the Green Deal is one of the projects that the Von der Leyen Commission cares most about, together with Digitization and many others. It is one of the priorities and everything will be done to complete it, despite the difficulties encountered on the way such as the crisis caused by the Covid19, which will inevitably lead to having to review the priorities. In this regard, President Von der Leyen has expressed herself in a speech on April 28, 2020, about the role of the European Green Deal in the economic recovery. On this occasion, Ursula Von Der Leyen stated that, by using the European Green Deal as compass, the crisis of the coronavirus pandemic can be turned into an opportunity to rebuild our economies differently and make them more resilient.[123] This summarizes what was highlighted in the last paragraph of the first chapter where it was explained the concept of resilience: the ability to face challenges and learn from them, to be able to adapt and anticipate what will come next, in this case by seeking to take advantage of existing tools that are worthy of relevance.

[122] European Space Agency, United Space in Europe, *Destination Earth:* *http://www.esa.int/Enabling_Support/Space_Engineering_Technology/Destination_Earth*

[123] European Commission, *Statement by Ursula Von Der Leyen, President of the EC, on the role of the European Green Deal in the economic recovery (English version),* Brussels, 28 April 2020: https://audiovisual.ec.europa.eu/en/video/I-190013

Conclusion

What emerges from the analysis carried out so far is that the theme of digital is now a principal in the daily life of every European citizen. It also became clear that in this area, Member States strongly need the European Union, as they are characterized by perceptible inequalities. About this, the former president of the European Central Bank, the Italian economist Mario Draghi expresses himself in these terms: "it is necessary to recover that unity of vision and action that can hold such different States together. We need to respond to the perception that the European Union lacks equity, between countries and social classes. It is necessary to feel, first of all, then act and explain".[124] Unfortunately, it had been possible to realize the large gaps between the various Member States and between the regions due to the recent crisis caused by the Covid-19 pandemic, which highlighted and accelerated the problems inherent, in particular, the digital theme. The most know problem in these terms, as it has been aforesaid, is the digital divide. In this regard, a post-2020 cohesion policy called "REACT-EU" has been proposed by the European Commission. REACT-EU stands for Recovery Assistance for Cohesion and the Territories of Europe and is an initiative that continues and extends the crisis response and crisis repair measures delivered through the Coronavirus Response Investment Initiative and the Coronavirus Response Investment Initiative Plus. It will contribute to a green, digital, and resilient recovery of the economy.[125]

It is necessary to understand how to incorporate major transformations and how to manage them, but above all how to manage the digital and also the ecological transformation in the post-pandemic. The digital transition has undoubtedly been accelerated by unexpected events, such as the huge spread of the virus and has therefore found itself forced to reinvent in many ways. The ability to interpret change to generate value appears necessary: the population will have much more complex needs and will therefore be much more demanding. For this reason, it is necessary to perceive the existing technology and adapt it to new needs. The digital component is strong, internalized and evolved in the way of working: those who hold it are in fact in an evident beneficial and advantageous position. In addition, it has been realized how artificial intelligence could have greatly contributed to reduce the disasters caused by the pandemic: it is evident that there is the need to collect data. There is a generalized problem of unavailable data,

[124] Il Foglio.it, Politica, article: "*Un'Europa da Draghi"*. Full speech by Mario Draghi on the occasion of the honorary degree in Law of the Alma mater, 22 February 2019
[125] European Commission, *EU budget for recovery: Questions and answers on REACT-EU, cohesion policy post-2020 and the European Social Fund+*, Brussels, 28 May 2020

and it was clear how useful they would have been to be able to make forecasts and therefore, in general, sharpen the disaster in various fields.

The crisis also requires a rethinking of the concept of resilience, which was discussed in chapter three of this analysis. There must be a start from the theories, since especially in uncertain times they are needed to explain the data. In modern times there is the problem of having a lot of data and few theories. The European Union could enjoy greater legitimacy and unreserved support from its citizens if it acts precisely in the sectors that closely affect the most urgent problems of European citizens, as in the case it has been analysed, the digital urgency, which highlights how acceleration appears indispensable and necessary in these terms. In this regard, Mario Draghi expresses himself in these terms: "given the growing complexity and scale of the challenges, the only way forward to guarantee European prosperity for generations to come is to continue building an ever-stronger Union".[126]

Precisely because of the enormous challenges that have arisen in recent months, Ursula von Der Leyen has been forced to revise her programs and above all the priorities of the Commission led by her. However, the digital theme remains among the preferences and appears to be one of the most important. On May 27, an "Adjusted Commission Work Programme" has been published, in view of the needs provoked by the pandemic. The Adjusted Programme proposes the six key points of the Von der Leyen Commission, reviewing the priorities in terms of the pandemic but above all showing what has been done so far, meaning where we stand now regarding the large macro themes scheduled by the Commission.[127] Moreover, in light of the great crisis, the Commission has proposed a major recovery plan, symbolically called the “Next Generation EU”, as the funds allocated are intended to repair economic and social damage and prepare the next generation for a better future.[128]

"There is a remedy that could transform the whole scene and make Europe free and happy in a few years. It consists in the reconstruction of the family of European peoples and in endowing it with a structure that allows to live in peace, security, and freedom. We have to create a kind of United States of Europe",[129] said Winston Churchill in 1946, who had led Britain during the

[126] Randow J., Speciale A., *Mario Draghi l’artefice. La vera storia dell’uomo che ha salvato l’euro*, Milano: Rizzoli, 2019, p.305
[127] European Commission, *Adjusted Commission Work Programme 2020,* 27 May 2020
[128] European Commission, *Financing the Recovery Plan for Europe*, 27 May 2020
[129] ISESP- Istituto Superiore Europeo di Studi Politici, Centro di documentazione europea-3, *Speech given by Winston Churchill at the University of Zurich,* 19 September 1946

war. Today the European Union is very different from what Churchill perhaps had in mind, but it continues to be, and perchance this is precisely its strength, the unity of many differences.

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Abstract

La presente tesi di laurea è il risultato di uno studio finalizzato a tracciare una panoramica ad ampio spettro dell'evoluzione digitale nel contesto europeo.

Al fine di garantire i caratteri dell'obiettività, della trasparenza e imparzialità all'analisi, la ricerca è stata condotta su rilevazioni e documenti pubblicati dai principali enti in materia. Gli strumenti utilizzati per la stesura della tesi sono stati: i documenti pubblicati nei siti ufficiali delle istituzioni dell'Unione Europea e in particolare della Commissione, le banche dati fornite da Eurostat, gli articoli dei quotidiani nazionali e internazionali e infine i profili Twitter di commissari europei particolarmente coinvolti nel tema dell'evoluzione digitale. Tutto ciò premesso, l'elaborato ha inteso illustrare gli obiettivi della trasformazione digitale e al contempo stimolare la riflessione sulle criticità che si frappongono alla sua completa realizzazione.

L'elaborato è articolato in tre capitoli che sono preceduti da un'introduzione e seguiti da una conclusione; nell'introduzione si illustra, in una visione d'insieme la rilevanza e l'attualità del tema scelto, la conclusione ha lo scopo di contestualizzare l'argomento, che ha subito una particolare accelerazione in seguito all'emergenza sanitaria causata dal virus SARS-Cov-2, più semplicemente denominato Covid-19.

Capitolo I: nel primo capitolo è stato analizzato il pacchetto proposto dalla Commissione Europea e sono chiarite le ragioni dell'assoluta rilevanza del tema della digitalizzazione. A tal proposito, infatti, la nuova Commissione Europea presieduta da Ursula Von der Leyen, che si è insediata il 1 dicembre 2019, ha inserito tra le sue priorità il processo di completa digitalizzazione. Uno dei sei pilastri del programma politico 2019-2024 della nuova Commissione Europea è assicurare che l'Europa sia pronta per l'era digitale. Al fine di analizzare l'argomento in maniera esaustiva e approfondita, è stato ritenuto opportuno includere nell'elaborato la trattazione del pacchetto delle misure strategiche per il futuro digitale dell'Europa. Il pacchetto si concentra su tre punti fondamentali: la Comunicazione "*Shaping Europe's digital future"*, Intelligenza Artificiale e una Comunicazione sulla strategia europea per i dati.

In primis, la Comunicazione "*Shaping Europe's digital future*", in cui vengono illustrati: il quadro generale dell'attuale situazione sul tema, gli obiettivi prioritari da perseguire e le necessarie azioni da intraprendere per il passaggio al digitale in Europa. Viene delineata una strategia complessiva per il futuro digitale dell'Europa, che garantisca benefici per i cittadini e per le imprese e che allo stesso tempo rimanga radicata ai valori della comunità europea. La Commissione individua tre principali obiettivi della strategia digitale e indica, per ciascuno di

essi, le misure che intende adottare nei prossimi anni. Il primo obiettivo riguarda le precondizioni per la trasformazione digitale che in particolare sono individuate nella connettività, le tecnologie di frontiera, e la fiducia nelle competenze digitali. Il secondo obiettivo si riferisce alla realizzazione di un'economia europea equa e competitiva attraverso la promozione di un accesso più ampio ai dati di elevata qualità e il rafforzamento del mercato unico dei dati. Il terzo e ultimo obiettivo consiste nell'assicurare che la trasformazione digitale avvenga in conformità ai principi informatori del sistema giuridico europeo, collocando al primo posto il rispetto della persona e il benessere dell'individuo, tutelando il pluralismo e il modello democratico e promuovendo lo sviluppo. La Comunicazione dedica infine un paragrafo al ruolo dell'Europa nel contesto internazionale. Proprio perché molti ordinamenti hanno tratto ispirazione dal modello europeo, la Commissione intende promuovere l'approccio comunitario alla trasformazione digitale a livello globale.

Il secondo punto del pacchetto è costituito dall' Intelligenza Artificiale, tema meticolosamente analizzato nel Libro Bianco sull'Intelligenza Artificiale (riguardo al quale è stata avviata una consultazione pubblica conclusasi lo scorso 19 maggio) e in un Rapporto della Commissione relativo alle implicazioni dell'Intelligenza Artificiale, dell'*Internet of Things* e della robotica sulla sicurezza dei prodotti e sul regime di responsabilità. In particolare, lo scopo del Libro Bianco sull'Intelligenza Artificiale è la promozione dello sviluppo dei sistemi e degli investimenti del settore. Sono state analizzate le problematiche afferenti ai rischi associati all'utilizzo di dati, specialmente quelle relative al rispetto dei diritti fondamentali. Sono poi chiariti i due principali obiettivi che si propone il Libro Bianco: creare un sistema di fiducia e uno di eccellenza attraverso l'adozione di misure idonee a velocizzare la ricerca, promuovere la collaborazione tra gli Stati membri e incentivare gli investimenti nello sviluppo di soluzioni basate sull'Intelligenza Artificiale. Inoltre, è necessario garantire che i sistemi vengano sviluppati e utilizzati rispettando i principi e i diritti fondamentali dell'Unione Europea. In particolare, per quanto riguarda il primo obiettivo, ovvero la creazione di un sistema di fiducia, la Commissione intende riproporre il piano sull'Intelligenza Artificiale del 2018 e revisionarlo in alcune parti, al fine di incentivare ulteriormente gli investimenti attraverso l'incremento delle risorse e dei fondi europei per questo settore e agevolando l'accesso a queste opportunità per i centri di ricerca europei. Rimanendo nell'ambito dell'obiettivo della creazione dell'ecosistema di fiducia, si evidenzia che alcune peculiarità dell'Intelligenza Artificiale potrebbero incidere sull'esatta applicazione dell'attuale normativa europea e proprio per questo, il Libro Bianco contiene delle proposte per definire un quadro giuridico che consenta di minimizzare i pericoli associati all'utilizzo di questo ramo dell'informatica, in particolare in presenza di diritti fondamentali. Il Rapporto che accompagna il Libro Bianco è volto ad analizzare le sfide che

l'Intelligenza Artificiale e la robotica pongono all'attuale quadro giuridico europeo in riferimento alla sicurezza dei prodotti e al regime di responsabilità. Le criticità che possono sorgere in questo settore sono: la dipendenza dalla connettività, l'eventualità di continui aggiornamenti in seguito al lancio del prodotto sul mercato, la non chiarezza di alcuni processi ma soprattutto, il rischio di attacchi cyber.

In questa sezione della tesi è stato reputato fondamentale esaminare il fenomeno dalla sua genesi, ne è stata illustrata l'evoluzione, l'aspetto sociologico e quindi il rapporto con cittadini e imprese, risalendo alla metà degli anni Ottanta, quando hanno inizio i primi contributi europei in materia di tecnologia e comunicazione digitale. Il primo programma di ricerca e sviluppo nel settore delle tecnologie dell'informazione è stato introdotto nel contesto europeo nel 1984. Tuttavia, la prima politica di settore è stata proposta alcuni anni dopo, esattamente nel 1993, quando alla comunità europea si presentano nuove sfide quali l'aumento della competitività in Europa, e si delinea la consapevolezza che la concorrenza nel lavoro sarebbe cresciuta con l'introduzione di nuovi strumenti digitali. Pertanto, la sezione dell'elaborato, analizza i numerosi programmi che sono stati adottati nel corso del tempo giungendo all'attuale Agenda. A seguito della crisi del 2008, la Commissione Europea ha infatti definito una nuova strategia sul tema, definita nell'Agenda Digitale Europea, la quale è una delle sette iniziative faro di Europa 2020, i cui obiettivi sono quelli di favorire una crescita intelligente, sostenibile e inclusiva.

L'ultima sezione del capitolo è dedicata al concetto di resilienza e alla comprensione dell'influenza di quest'ultima sui programmi politici. È un principio fondamentale nell'attuale contesto politico-economico europeo, dopo che le società si sono trovate a dover affrontare diverse crisi, la più recente quella causata dalla pandemia Covid-19. Appare necessario comprendere come e cosa imparare da questi *shocks*, creando politiche che preparino i cittadini, le industrie e le istituzioni ad affrontarli e superarli riducendo al minimo i danni. L'essenza del ragionamento è imparare dalle difficoltà passate, uscirne rafforzati ed essere capaci di trasformare la crisi in opportunità per il futuro. Una volta individuato il quadro per l'elaborazione delle politiche volte al futuro, è possibile essere in grado di monitorare continuamente il grado di resilienza della società europea, operare una valutazione degli impatti previsti sulle politiche e infine delineare nuovi accorgimenti che vadano, per l'appunto, a intensificare la resilienza. Lo sviluppo della digitalizzazione è il perfetto esempio per comprendere questo fenomeno: esso genera indubbiamente considerevoli vantaggi, ma allo stesso tempo provoca la perdita di alcuni lavori, strettamente legati all'espletamento di mansioni manuali e quindi sostituibili da macchine. In questo senso il concetto di resilienza si afferma in toto: la scomparsa di alcune categorie di lavoro in un determinato settore dovrebbe

provocare la creazione di altre tipologie di lavoro in un settore diverso, attraverso un continuo processo di riallocazione e rinnovamento, adattandosi ai cambiamenti del presente e orientando le azioni e decisioni verso il futuro.

Capitolo II: il secondo capitolo è dedicato all'analisi della strategia europea per i dati. La Comunicazione illustra come la Commissione intenda individuare nell'Unione Europea l'esempio di economia più attrattiva, più sicura e agile al mondo, incentrando l'attenzione sull'innovazione basata sui dati e spiegando come quest'ultima possa portare benefici rilevanti sia alla società che all'economia. Una strategia comune europea sui dati si prefigge di migliorare i processi decisionali nei vari ambiti, aumentare la competitività e la produttività, contribuendo alla qualità dei servizi pubblici e all'efficacia delle politiche a tutela della salute, della mobilità e dell'ambiente. In primo luogo, è stata rivolta un'attenzione particolare agli obiettivi, i quali mirano alla realizzazione finale di uno spazio unico europeo, nel quale devono essere anteposti a tutto, i diritti fondamentali dell'individuo. La strategia si articola in quattro punti:

1) rimozione degli ostacoli ingiustificati alla circolazione dei dati all'interno dell'area EU, e anche fra i diversi settori;

2) tutela dei valori europei e dei dati personali e garanzia e rispetto delle misure di concorrenza;

3) previsione di regole ben chiare e precise per l'accesso e l'utilizzo di dati funzionali ed efficienti, tralasciando meccanismi di governance inefficaci e inaffidabili;

4) adozione di un approccio proattivo e promotore dei valori europei in relazione al flusso internazionale dei dati.

In secondo luogo, l'attenzione è stata focalizzata su una serie di problematiche che si frappongono al raggiungimento degli obiettivi di cui sopra e che impediscono all'Europa di sfruttare compiutamente il potenziale dell'economia dei dati: l'insufficiente disponibilità dei dati atti alla riutilizzazione in modo innovativo, gli squilibri nel potere di mercato, le incongruenze in relazione all'accesso e all'utilizzo dei dati, la disomogeneità nella qualità e l'interoperabilità dei dati, le criticità connesse alle infrastrutture e alle tecnologie. La Commissione ha evidenziato alcune criticità relative all'offerta dei servizi cloud, come la dipendenza da imprese fornitrici delocalizzate e le condizioni spesso vessatorie applicate alle microimprese e alle piccole e medie. Tra le problematiche viene inserita anche la necessità di controllo da parte degli individui sui propri dati. Infatti, nonostante l'elevata protezione prevista dal Regolamento Generale sulla Protezione dei Dati, la Commissione osserva che si potrebbero ulteriormente rafforzare gli strumenti a disposizione degli interessati per mantenere un pieno controllo sui propri dati ed esercitare in maniera effettiva i diritti riconosciuti dalla normativa

europea. La Commissione evidenzia la scarsità di competenze professionali nell'area dei big data e dell'analisi dei dati, segnalando anche il problema del divario di genere in questo settore, tendenzialmente a prevalenza maschile. Da ultimo sono considerate la *Cybersecurity*; infatti, in questo settore l'Europa ha sviluppato un quadro già completo per aiutare gli Stati membri, le imprese e i cittadini ad affrontare le minacce e gli attacchi alla sicurezza informatica e continuerà a sviluppare e migliorare i suoi meccanismi per proteggere i dati e la *Governance* dei dati. Affinché questi spazi diventino operativi, sono necessari approcci e strutture organizzative che consentano l'innovazione incentrata sui dati, sulla base del quadro giuridico esistente.

Infine, il secondo capitolo si conclude con la descrizione della futura linea di azione, la quale si compone principalmente di quattro pilastri, finalizzati alla maggiore efficienza dei processi con il contributo delle tecnologie digitali e a sfruttare la trasformazione che stiamo vivendo in nuove opportunità per le imprese e i cittadini europei. In questa sezione si rimanda inoltre al concetto di sostenibilità: sono definiti gli standard per siffatta nuova generazione di tecnologie, che diventeranno la nuova norma globale stabilita al fine di sostenere e preservare il benessere delle generazioni future. Il primo pilastro consiste in un quadro di governance intersettoriale per l'accesso e l'utilizzo dei dati mirato a evitare frammentazioni del mercato interno attraverso azioni differenziate tra settori, o ancor peggio, tra Stati membri. Il secondo pilastro che compone la strategia prevede investimenti ingenti: questi devono essere coordinati con le autorità competenti degli Stati membri e affiancati da finanziamenti nazionali e regionali ed erogati attraverso i fondi strutturali e di investimento. Il terzo pilastro riguarda le competenze e in questo contesto la Commissione si propone di valutare l'opportunità di rafforzare il diritto di portabilità dei dati personali per consentire agli individui un maggiore controllo sugli stessi. L'ultimo pilastro della strategia prevede la creazione di spazi comuni europei dei dati in settori strategici e ambiti di interesse pubblico. Questi settori o domini sono quelli in cui l'uso dei dati avrà un impatto considerevole sull'intero ecosistema.

Capitolo III: il terzo capitolo è dedicato all'analisi approfondita dello sviluppo degli spazi comuni europei dei dati in alcuni settori strategici e ambiti di interesse pubblico. Attenzione particolare ha meritato lo spazio comune europeo relativo al *Green Deal*, sono state indicate iniziative come "*Green Data 4 All*", per comprendere come tali strumenti e progetti possano contribuire alla transizione verso un'economia più sostenibile. In particolare, questa iniziativa promuove l'obiettivo di modernizzare il regime in linea con le opportunità tecnologiche e di innovazione, riducendo gli oneri amministrativi e rendendo più semplice per le autorità pubbliche, le imprese e i cittadini dell'Unione Europea sostenere la transizione verso un'economia più verde e neutrale rispetto alle emissioni di carbonio. In questa sezione

dell'elaborato, sono stati inseriti ulteriori significativi progetti quali: la creazione di uno spazio comune dei dati per le applicazioni smart per l'economia circolare, il rafforzamento della strategia sui dati nel contesto dell'ambizione "zero inquinamento", l'implementazione dei servizi di dati riutilizzabili su larga scala. Infine, un'iniziativa di assoluta rilevanza in questo settore è la "*Destination Earth*" che riunirà l'eccellenza scientifica e industriale europea per sviluppare un modello digitale della terra di altissima precisione e offrirà una piattaforma digitale per visualizzare, monitorare e prevedere le attività naturali e umane sul pianeta a sostegno dello sviluppo sostenibile. Allo scopo di perseguire interamente l'obiettivo proposto nel *Green Deal europeo,* ovvero far diventare l'Europa il primo continente neutro dal punto di vista climatico entro il 2050, è imprescindibile sfruttare totalmente la complementarità del tema digitale con quello dello sviluppo sostenibile.

La disquisizione si conclude con la contestualizzazione del tema digitale all'interno dell'attuale contesto, ovverosia la crisi provocata dalla pandemia Covid-19, a causa della quale sono stati chiari gli enormi divari legati alla tematica del digitale presenti tra i diversi Stati membri, segnatamente tra le diverse regioni europee. Emerge in modo chiaro come il virus stia cambiando profondamente la vita e le abitudini dei cittadini europei. Essi si trovano a dover affrontare una vera e propria rivoluzione, economica e sociale. Questa trasformazione comporta indubbiamente considerevoli cambiamenti, non sempre positivi e incide in misura diversa sul tessuto sociale. In questo caso, la rivoluzione digitale potrebbe rappresentare una vera e propria minaccia per tutti coloro che svolgono lavori tradizionali basati su mansioni manuali, in un'economia che è sempre più destinata a cambiare e innovarsi. Un ruolo di fondamentale importanza in questo contesto viene svolto dai principali attori a livello europeo, che devono essere in grado di comprendere e adattare questi processi al fine di trarne benefici. A tal proposito, è stata proposta, da parte dell'Unione, un'iniziativa post-2020, chiamata "*REACT-EU*", che estende le misure di risposta e riparazione alla crisi. Occorre infatti comprendere come incorporare le grandi trasformazioni e governarle, ma specialmente come gestire la trasformazione digitale nel post pandemia. La transizione digitale è stata accelerata da eventi inattesi, come per l'appunto il virus, ed è stata per questo costretta a reinventarsi. Appare necessaria la capacità di interpretare il cambiamento per generare valore: avremo bisogni molto più complessi e saremo per questo più esigenti. Quindi, è indispensabile percepire la tecnologia esistente e adattarla alle nuove esigenze. L'intelligenza artificiale avrebbe potuto contribuire largamente ad attenuare i disastri causati dalla pandemia se i dati fossero stati collezionati e resi disponibili. Proprio a causa delle colossali sfide che si sono presentate in questi ultimi mesi, la Presidente Ursula Von der Leyen è stata costretta a dover rivedere i programmi e soprattutto le priorità della Commissione. Il tema del digitale resta comunque tra queste ultime e appare come

il più importante, insieme al *Green Deal* europeo. In data 27 maggio è stato pubblicato un piano di lavoro riveduto dalla Commissione, alla luce dei recenti eventi e in vista delle esigenze provocate dalla pandemia. Appare quindi evidente che i cittadini abbiano ancora più di prima bisogno dell'Unione Europea, in quanto si rilevano tuttora oggettive disuguaglianze tra gli Stati membri e all'interno degli stessi. Pertanto, si auspica che venga confermata la visione di una integrazione europea, non più solo banalmente rivolta alla realizzazione del mercato unico, ma permeata dagli stessi valori sociali, culturali, umanistici e di legalità per tutti i cittadini europei.