Athens Journal of Law

Quarterly Academic Periodical,
Volume 11, Issue 1, January 2025
URL: https://www.athensjournals.gr/ajl
Email: journals@atiner.gr
e-ISSN: 2407-9685 DOI: 10.30958/ajl

Front Pages

Athens Journal of Law

Published by the Athens Institute

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The Athens Journal of Law
ISSN NUMBER: 2407-9685 - DOI: 10.30958/ajl
Volume 11, Issue 1, January 2025
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The current issue is the third of the tenth volume of the *Athens Journal of Law (AJL)*, published by the *Business and Law Division of Athens Institute*.

Gregory T. Papanikos
President
Athens Institute

Athens Institute for Education and Research

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14-17 July 2025, Athens, Greece

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- Submission of Paper: **16 June 2025**

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- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **7 April 2025**

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- **Dr. Gregory T. Papanikos**, President, Athens Institute.
- **Dr. Michael P. Malloy**, Director, Business, Economics and Law Division, Athens Institute & Distinguished Professor & Scholar, University of the Pacific, USA.
- **Dr. David A. Frenkel**, LL.D., Head, Law Research Unit, Athens Institute & Emeritus Professor, Law Area, Guilford Glazer Faculty of Business and Management, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

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Athens Journal of Law - Volume 11, Issue 1, January 2025 – Pages 9-24

AI Occupational Exposure, Language Modeling and Personnel Selection: Future Perspectives of Labour Law

By Roberta Caragnano[*]

The authoress examines the evolving labor market due to digitalization and the effects produced by artificial intelligence, with particular attention to the implementation of models that aim at linguistic modeling and with a focus on the introduction of a measurement of occupational exposure (AI Occupational Exposure). In particular, the analysis of the AIOE (AI Occupational Exposure) is interesting, i.e. the measurement of the exposure of each profession to artificial intelligence. The paper also analyses the new methods of company selection with some case studies such as Unilever, and DeepSense. Finally, there are some reflections on the de iure condendo perspectives on the personality and legal responsibility of artificial intelligence and on the increasingly central role of collective bargaining.

Keywords: *Artificia lintelligence; ChatGPT; Language modeling; Occupation; Collective bargaining*

Introduction

Problem Location in the Scenario of Digitalization Processes and Eurostat Data

The labour market is constantly evolving as a result of digitalisation processes and the transitions that are occurring across it that contribute to outlining a sometimes-complex picture of employment. Therefore, trying to understand the ramifications of Artificial Intelligence (AI) on the labour market is equivalent to hitting a "moving target" as AI capabilities continue to evolve [1].

On the one hand artificial intelligence may reduce employment in some sectors for some professions, on the other hand it may produce new employment and professional profiles with new specific and multidisciplinary skills [2].

Data Scientists are a prime example of such newly developed central figures; they are experts who use AI methods to analyse and interpret data, neutralisng patterns, trends, and insights that are critical to making unbiased and objective business decisions. In fact, this professional role is expected to have multidisciplinarity between statistical, analytical, and programming skills.

According to The World Economic Forum in The Future of Jobs Report, "ccording to estimates from 803 companies interviewed for the report, employers

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[1]Felten, Raj & Seamans (2023); Cfr. ILO (2024) .

[2]On the impact of artificial intelligence read Treu (2024); Scarpetta (2023); Acemoglu, Autor, Hazell & Restepo (2022); OECD (2024).

expect to create 69 million new jobs and eliminate 83 million of the 673 million jobs corresponding to the data set, with a net decrease of 14 million jobs, or 2% of current employment"[3].

In this scenario, the loss of 2% of employment could cause significant changes in the labour market if, on the one hand, opportunities related to new emerging professions will develop, while on the other hand not all workers could benefit and adapt to the new market demands[4].

An important step forward, at the European and global level, was achieved with the development of machine learning algorithms [5]capable of not only "learning" from large volumes of data using specialised processors but also improving their precision capabilities over time. The estimates of the European Union and the European Court of Auditors predict that the global AI market will grow annually by 15.8% in the period 2024-2030, reaching 739 billion dollars (680 billion euros) in 2030. In contrast, the adoption of AI technologies by businesses and the public sector could lead to significant increases in productivity in the entire value chain (from research to commercialistion) in various economic sectors of the Union and also help solve social problems. This is because AI is an innovative technology and the efficiency of investments in this sector will probably be a key factor in determining the pace of economic growth in the years to come. Several countries around the world have set themselves the strategic goal of becoming leaders in the development and diffusion of AI [6].

According to research conducted by Eurostat, published in May 2024, in 2023, 8% of companies with more than 10 employees in the European Union have integrated artificial intelligence technologies into their operational frameworks. Denmark (15.2%), Finland (15.1%) and Luxembourg (14.4%) represent the countries with the highest percentage of companies that employ ten or more workers in the field of artificial intelligence technologies. On the contrary, Romania (1.5%), Bulgaria (3.6%), Poland (3.7%) and Hungary (3.7%), occupy the lowest positions in this ranking, while Italy's percentage is 5%. According to Eurostat, larger companies have shown a greater propensity to use artificial intelligence technologies than small and medium-sized enterprises (SMEs). In 2023, only 6.4% of small businesses and 13% of medium-sized businesses used AI, while a higher percentage, 30.4%, is represented by large businesses.

According to the European Statistical Office, the gap could be associated with various reasons, including the difficulties that arise when trying to adopt AI technologies in organisations. Another reason is that companies, with significant economies of scale, make more profits, and consequently, have a greater

[3]The World Economic Forum, (2023).

[4]For the applications and problems of artificial intelligence, please refer to Kaplan (2016); Brynjolfsson, Li & Raymond (2023). For an Italian analysis read Ponte (2024); Butera &De Michelis (2024); Biasi (2024); Romeo (2024); Faleri (2024).

[5]On the self-learning machine learning system, using the mass of information obtained from the universe of *big data* cfr. Mateescu & Nguyen (2019); Lee, Kusbit, Metsky &, Dabbish (2015); Lo Faro, (2022); Jarota (2023); Silberg & Manyika (2019).

[6]Read The White House (2024); White House (2023); Babina, Fedyk, He & Hodson, (2024); Autor & Dorn (2013).

propensity and availability of economic resources to implement advanced technologies and artificial intelligence systems.

In terms of specific AI technologies used by companies, the year 2023 saw the predominance of workflow automation or decision assistance (specifically, automation of robotic software processes using AI), used by 3% of companies. This was followed by written language analysis (text mining, at 2.9%) and machine learning (deep learning, at 2.6%).

Eurostat data highlights, however, that despite the growing attention to AI, its integration at an organisational level is not uniform and there are differences in applications.

The differences observed between different countries and between company sizes highlight some critical issues, including geographical disparities that are evident especially between Northern Europe and their Eastern and Southern counterparts with regard to digitalisation, technological infrastructures and innovation capacity. Furthermore, economically advanced countries seem to have better access to the essential resources for AI adoption, while those with less developed economies face significant financial and technical obstacles. The same situation occurs for SMEs (small and medium-sized enterprises), which, unlike large companies, face more difficulties in adopting superior technologies aimed at automation. This framework calls for greater support, more tax incentives and greater access to specialised skills to reduce the technological gap. Eurostat highlights that the complexity of AI implementation, the associated costs and the lack of economies of scale are key factors that impede the adoption of AI technologies in SMEs. This confirms the theory that although AI has substantial potential for transforming business practices, it requires a lot of investment that goes beyond financial assessments to include the improvement of skills and the advancement of infrastructure.

Overall, the study shows that there is a large gap in AI adoption in industrial Europe, with more developed companies and nations at the helm. It follows, therefore, that for AI to be a true catalyst for widespread transformation, it will be important to reduce disparities and promote policies that help SMEs and underdeveloped nations overcome economic and technical barriers.

Findings/Results

Exposure Language Modeling and AI Occupational Exposure

The topic of employment related to the implementation of models that aim at artificial intelligence also pertains to the issue related to linguistic modeling[7], that is, an AI and machine learning technique that allows a model to learn and generate texts in natural language; an example is ChatGPT[8], widely used by young people

[7]Cfr. Eloundou, Manning, Mishkin & Rock (2023).

[8]The program, introduced by OpenAI in late 2022, has attracted considerable attention and sparked considerable debate. On this point, see D'Elia (2023).

and adults, and which represents a system consisting of a chat bot, that is, an AI chat that has been developed to simulate a conversation with a human person.

The scientific literature on the point highlights that linguistic models are having a strong impact on working professions and there are many studies on the subject. In particular, a study by Felten[9] has attracted deep attention regarding the introduction of a measurement of occupational exposure (AI Occupational Exposure), which outlines the professions, sectors and geographical areas most susceptible to the influences of AI and to the advances of AI in language mediation (generative AI).

The results indicate that the most vulnerable occupations include telemarketers and a series of post-secondary teachers, including English language and literature instructors, foreign languages and literature, as well as history teachers, while the sectors most exposed to the advances of Artificial Intelligence are legal, financial and security services.

In detail, the analysis of the AIOE (AI Occupational Exposure) is interesting, i.e. the measure of the exposure of each profession to artificial intelligence. This term is used in a neutral context because it indicates that the impact on professions of AI can involve both the replacement of human work and the improvement of their potential and skills.

The AIOE measure was constructed by establishing connections between ten distinct AI applications (such as strategic gaming, image recognition, language modeling, and speech recognition, among others) and fifty-two human skills (e.g., listening comprehension, speaking, and inductive reasoning) through a crowdsourced matrix that assesses the degree of correlation between each AI application and these human skills[10].

The AI applications dataset comes from the Electronic Frontier Foundation (EFF), while the human skills data comes from the O*NET database, developed by the U.S. Department of Labour. This study found both the strong influence that AI has on some professions and the exposure of many occupations to AI language modeling advances. Specifically, 20 (twenty) professions were identified for each sector.

[9]Felten, Raj & Seamans (2018); Felten, Raj & Seamans (2021).
[10]On the topic of skills, read Lane, Williams & Broecke (2023); Acemolu & Johnson (2023).

Table 1. *Top 20 Occupations Exposed to AI, Original and with Language Modeling Adjustment*

Rank	Top 20 Occupations from Original AIOE	Top 20 Occupations after Language Modeling Adjustment
1	Genetic Counselors	Telemarketers
2	Financial Examiners	English Language and Literature Teachers, Postsecondary
3	Actuaries	Foreign Language and Literature Teachers, Postsecondary
4	Purchasing Agents, Except Wholesale, Retail, and Farm Products	History Teachers, Postsecondary
5	Budget Analysts	Law Teachers, Postsecondary
6	Judges, Magistrate Judges, and Magistrates	Philosophy and Religion Teachers, Postsecondary
7	Procurement Clerks	Sociology Teachers, Postsecondary
8	Accountants and Auditors	Political Science Teachers, Postsecondary
9	Mathematicians	Criminal Justice and Law Enforcement Teachers, Postsecondary
10	Judicial Law Clerks	Sociologists
11	Education Administrators, Postsecondary	Social Work Teachers, Postsecondary
12	Clinical, Counseling, and School Psychologists	Psychology Teachers, Postsecondary
13	Financial Managers	Communications Teachers, Postsecondary
14	Compensation, Benefits, and Job Analysis Specialists	Political Scientists
15	Credit Authorizers, Checkers, and Clerks	Area, Ethnic, and Cultural Studies Teachers, Postsecondary
16	History Teachers, Postsecondary	Arbitrators, Mediators, and Conciliators
17	Geographers	Judges, Magistrate Judges, and Magistrates
18	Epidemiologists	Geography Teachers, Postsecondary
19	Management Analysts	Library Science Teachers, Postsecondary
20	Arbitrators, Mediators, and Conciliators	Clinical, Counseling, and School Psychologists

Source: Felten, E. W., Raj, M. & R. Seamans (2023), How will Language Modelers like ChatGPT Affect Occupations and Industries? 6 March 2023, p. 15.

Automating Tasks

In the same vein, other studies[11] have highlighted how digital technologies can automate so-called "routine tasks," that is, tasks in which a specific set of standardised rules and practices are followed. These tasks are codified in computer software and performed by machines, such as robots to assemble a car and e-mails to send messages. In contrast, "non-routine tasks" have historically been difficult to program because the explicit steps to perform these tasks are often not formally described; these are tasks that require tacit knowledge[12], intuition, integrating the expertise of workers.

Paradoxically, even if we cannot formally express non-routine tasks in an algorithm, many of these tasks are easy for humans to perform.

Goos, Manning, & Salomons[13], in their analysis, demonstrate that routine tasks fall into the category of medium-wage occupations (e.g., machine operators, office clerks), while "non" routine tasks (e.g., waiting tables in a restaurant, cleaning a room, diagnosing diseases, or managing a team) fall into the low-wage (e.g., waiter, cleaner) and high-wage occupations (e.g., health professionals, managers)[14].

Old technologies have been able to automate only repetitive and routine tasks, while artificial intelligence intervenes by automating all non-repetitive professions and with a high or low salary. In literature, Webb [15] conducted research in which he used algorithms derived from natural language processing that exploit the overlap

[11]Brian, D'Asaro, Garcez & Raffinetti (2022).
[12]Autor (2024).
[13]Goos, Manning & Salomons (2014).
[14]On this point, please read The White House (2022).
[15]Webb (2020).

between the text containing the description of the different occupations and the text of the patents[16]. This overlap is done to understand which tasks Artificial Intelligence can automate, emphasising the exposure of that task to technology.

For example, in the text containing the main characteristics of the doctor's job, if it is assumed that there is the task "diagnose the patient's condition", the NLP (Natural Language Processing) algorithm will extract the noun and the verb, therefore "diagnose" and "condition" and will compare them with the various existing patents; at the end of the comparison, it is verified which technological initiatives can replace the doctor's activity in question. Webb, with this approach, focuses especially on two technologies specifically: software and robots. Software has a lower percentage of exposure in replacing workers with medium-high education, to the detriment of middle-category professionals. Its exposure increases in the male gender and decreases in women, reflecting the fact that women tend to almost always cover complex roles of interpersonal interaction. The robot, on the other hand, increases its extension in individuals with no or little education and in men under 30.

In addition to software and robots, Webb also focuses on AI exposure in relation to job demand, resulting in the most exposed occupations including clinical laboratory technicians, chemical engineers, opticians and power plant operators, as well as low-skilled jobs such as manufacturing and specifically control and inspection.

The increase in the adoption of AI in medium-high level jobs in the long term can lead to professional deskilling, making the skills, experience and knowledge of the worker less relevant in the working world.

Companies, through the correct use of artificial intelligence, can avoid the spread of this situation. In fact, workers must not be left alone by the organisation during the transitions generated by change and technological development, but must be supported by continuous training[17] and development of the staff[18]. Only through the correct implementation of AI will it be possible to have greater profits and, at the same time, greater job satisfaction.

The main purpose of artificial technologies is, therefore, to support human beings in daily activities, improving efficiency and work production, which is why humans must not feel replaced by the machine, but must see in it a colleague capable of helping them to best perform the specific task required.

[16]NLP (acronym for Natural Language Processing) or natural language processing refers to Artificial Intelligence algorithms capable of analyzing, representing and therefore understanding natural language. The purposes can vary from understanding content, to translation, to autonomously producing text starting from data or documents provided as input.

[17]Cfr. ILO (2021),.

[18]Advanced robots equipped with intelligent sensors are able to not only operate in proximity to workers but also interact directly with them. On the relationship between robots and humans, read EUROFOUND (2024).

Discussion

What are the Prospects of using Artificial Intelligence in Personnel Selection Processes?

As a result of changes in the labour market, selection methods are also changing. Today, in fact, more and more companies are adopting Artificial Intelligence systems to recruit staff. HrExecutive, one of the main American human resources portals, claims that after a survey of 225 American managers who are experts in personnel research, it emerges that 60% of large American companies already use advanced AI (Artificial Intelligence) systems to manage human resources. The percentage is expected to grow to 82% by 2026. The Globe Newswire network of Los Angeles estimates that the business generated this year by Artificial Intelligence applications for the personnel management sector in companies will be 4 billion dollars. This figure is estimated to increase by 35% in the next five years, reaching 17 billion dollars.

According to a Report in the Journal of Society, Economics and Management, human resources (HR) selectors are increasingly filling strategic positions, leaving administrative activities under the guidance of artificial intelligence systems.

The most relevant case of collaboration between recruiters and industry 4.0 is that of the robot Vera, created in 2018 by a Russian start-up, Strafory, which had a resounding success when the IKEA company identified it for the selection of personnel. IKEA is a multinational that receives thousands of CVs a day. The advanced technology that makes up the Vera robot represents the only solution capable of performing a rapid and efficient screening of candidates.

Vera Robot, in fact, is capable of conducting more than 1500 interviews in a day and it takes only 8 minutes to conduct an interview with candidates, and then identify those selected for the next step, where they will be evaluated by human selectors.

Randstad Italia, which is part of the Dutch multinational, has also recently implemented an AI-based recruiting management system. This is a software that controls all the phases of the selection process, from the creation of the job description and job profile, to the application, to the publication of the adverts, up to the hiring of the candidate. In addition, the company will soon introduce advanced chatbots with the aim of conducting more in-depth interviews as well as enhancing data sharing between colleagues[19].

The Artificial Intelligence framework used by Randstad Italia is able to evaluate up to 29,000 CVs per day, subsequently transmitting the profiles of interest to the organisation, based on the respective job offers. This particular selection method radically transforms the methodology of the entire recruitment and selection paradigm of personnel[20].

Many organisations extend this technique further, delegating to automatic selection processes, including the first preliminary contact with potential candidates, using chatbots (software designed to imitate human conversation) or emails aimed at

[19]On this point, please read Randstad (2023b).
[20]Randstad (2023a).

arranging a face-to-face meeting with the recruiter. The entire process minimises human involvement until the actual interview. Among the various personnel selection methods, video selection is also worth considering, a form of video interview that has achieved considerable success: Companies looking for personnel often ask candidates to send a video response to a predetermined series of questions as an initial filtering mechanism. Then, after having carried out the initial screening of CVs, if the company is interested in the candidate, a face-to-face interview will be requested. This methodology, considered very innovative, has been implemented by several large organisations, such as Blablacar, Leroy Merlin, Crédit Agricole, Sephora and Cartier. Companies prefer this method because it allows them to both speed up the selection decision-making processes and to offer candidates the opportunity to reflect extensively on their answers without leaving their residence[21], and with a subsequent reduction in costs and times.

Case Studies: Unilever and DeepSense

The use of automated processes in personnel selection offers numerous advantages. The most relevant for the company is economic: investments in the automated recruitment sector are expected to exceed 200 billion dollars, with a figure destined to increase, since by 2030 Artificial Intelligence is expected to contribute 15.7 trillion dollars to the global economy, a part of which will come specifically from applications in the job recruitment sector[22].

Another advantage is that traditional recruitment models are based on manual analysis of CVs, which requires a lot of time and resources, making recruiters feel overwhelmed by the heavy workload. Furthermore, the traditional selection process operates more slowly which can also lead to a loss of talented candidates who may elude the attention of a traditional company and end up hired by a competitor that was much speedier.

It is necessary, however, to also consider the numerous applications that companies receive every day. CV screening requires a considerable amount of time and energy, winding up by setting aside applications that could have been valid for the company.

In this context, Artificial Intelligence represents a significant solution because it allows you to evaluate candidates effectively and reduce continuous work requests. Kelli Dragovich, a personnel selector at Hired, claims that the early stages of recruitment are the longest and most tiring, especially when you have to contact a candidate[23].

With the implementation of Artificial Intelligence, recruiters can take care of more strategic activities by leaving machine learning systems the task of analyzing candidate data relating to knowledge, skills and work experience, and then comparing them with the requirements of the job description of a given position. The advantage lies in the greater precision and accuracy of the results since the human recruiter, unlike artificial systems, is more likely to make mistakes when

[21]Capponi (2024).
[22]Fierro (2022).
[23]Hook (2024).

carrying out repetitive and heavy tasks. Algorithms, on the other hand, if trained in the right way, can reduce discrimination and prejudice, creating a more diversified database that excludes gender bias, ethnicity, sexual orientation and any other aspect[24]. AI also allows for improved communication between candidates and companies. An example is virtual chatbot tools that stand out for their promptness in providing answers to the candidate, without having to request the intervention of the recruiter[25].

The additional benefits of implementing AI in recruitment are particularly evident within multinationals. A pertinent point of reference is the Case Study of Unilever[26], one of the longest-running and most expansive Anglo-Dutch multinationals. The company operates in various sectors, including food, personal care and household products, and distributes its products in 190 countries around the world, reaching approximately 2.5 billion consumers per day.

By using Artificial Intelligence in the recruitment process, Unilever claims to have effectively saved approximately 50,000 hours normally spent on interviews. The multinational has partnered with two technology companies: HireVue and Pymetrics.

HireVue is a multinational company that develops software for analyzing and evaluating video resumes submitted by candidates and uses a platform known as "Hiring Intelligence," which has significantly improved the process of finding and identifying new potential talent. The platform allows for the analysis and use of video analysis techniques to evaluate candidates, who are required to submit to the HR group a recording of themselves while they answer a predetermined series of approximately ten questions. The audio of the recording is then automatically transcribed for analysis by the system[27]. The algorithm behind this technology includes approximately 25,000 characteristics, previously defined by the employer, to facilitate the evaluation of candidates based on multiple criteria, including, but not limited to, eye contact, enthusiasm, smile, facial and body expressions, clothing and voice modulation. For example, the algorithm can look for specific terms in the interview, such as the words "I" or "we": if the candidate tends to speak too much in the singular it could mean that he or she is inclined to work individually, vice versa, a frequent use of "we" could suggest a propensity for team work.

This methodology is clearly advantageous for candidates, as it offers them the flexibility to record their answers at their convenience, and for recruiters, as it allows them to focus exclusively on the final report generated by the video assessment[28].

Pymetrics, on the other hand, is a company that uses neuroscience and AI with the aim of building a platform that eliminates any type of discrimination in

[24]For a comparison on the topic, read Hall & Ellis (2023); Fabris, Purpura, Silvello & Susto (2020); Kelly & Mirpourian (2021); Kamiran & Calders (2012).
[25]Martorana (2021).
[26]The company's portfolio consists of 400 brands, including Algida, Findus, Bertolli, Dove, Calvé, Mentadent, Cif, Magnum, Svelto and Coccolino. Furthermore, given its importance, it registers a continuous demand for qualified personnel, with the strategic objective of recruiting 60% of its workforce from the "millennial" demographic.
[27]Cacciatore & Comelli (2020).
[28]See *Tecnologia* (2021).

personnel selection processes. In fact, the tests that are administered are the same for all candidates and are evaluated by a non-human operator, eliminating possible prejudices of gender, skin color, name and ethnicity. The platform created by Pymetrics involves the completion of various gamified activities, lasting 10-12 minutes, with the aim of evaluating the behavioural and social characteristics of the candidates. In particular, cognitive aptitude, logical reasoning skills, risk propensity and level of motivation are analysed. Subsequently, the scores emerging from the tests are compared with ideal psychometric profiles for specific roles within the company, in order to match the candidate with the roles most suited to them. Compared to traditional tests, consisting of questions and answers, the Pymetrics platform is more dynamic and interactive. These characteristics involve the individual more in completing the tests, promoting much more authentic interactions and behaviours since stress levels are reduced.

In contrast, the technological framework implemented by DeepSense, a company based in San Francisco and New Delhi, uses Artificial Intelligence to analyse the personalities of candidates based on their social curriculum vitae, referring to the Ocean model, used for over two decades in marketing to understand the behavioural choices of consumers; candidates are evaluated on the basis of all the content shared on their social media profiles, such as LinkedIn, Instagram, Facebook and Twitter, with the aim of outlining a profile regarding the personality and the probable behaviour that they will have at work. The Big Five model analyses the candidate on the basis of five dimensions: openness, conscientiousness, extraversion, agreeableness and neuroticism.

Conclusion

Legal Personality for artificial Intelligence: Perspectives de iure Condendo

In conclusion, it seems necessary to ask ourselves questions about the interaction between humans, workers, technological tools and artificial intelligence[29] and whether it is not an oversimplification to think that the intrinsic value of a potential candidate can be assessed through his competence in online games or his ability to modulate the tone of his voice or facial expressions.

It follows that it is legitimate to ask whether the time is not ripe to outline and attribute, with a system of positive legislation, a legal personality - and consequent responsibility in compliance with the principle of neminem laedere - to artificial intelligence, given that the same (intelligence) now produces a significant decisional impact on the lives of people, companies and workers from the selection phase to the job placement phase, as well as an impact on career progression [30].

[29]On the relationship between artificial intelligence and employment cfr. Silberg & Manyika (2019); Zappalà (2021); Piccinini & Isceri (2021). On the topic of data management and transparency in general, read Purtova. (2018) while a focus on digital workers is present in Gaudio (2022).
[30]Cfr. Green, Salvi Del Pero & Verhagen (2023).

From the content point of view, we are - and would be - in the presence of a "dematerialised" legal personality in which the center of attribution of responsibility[31] is the algorithm; in a quaestio with legal implications similar to those that exist within the debate on the relationship between worker and Avatar [32]; in this case, one could identify, conversely, also a legal responsibility with respect to the employer but also with respect to the software used, the programmer, the developer, the producer[33]. The implications also concern the delicate aspects of health and safety and the sanctioning system that derives from it[34].

The topic, however, is complex and the terrain slippery and originates from problematic aspects or at least ones difficult to define with respect to the predetermination of risk. If on the one hand technology is able to predict a multiplicity of situations, at the same time such predetermination cannot be traced back sic et simpliciter to a probabilistic evaluation regarding the potential impact deriving from the adoption of artificial intelligence tools. At the center of the working relationship there is always the human person and this also implies broader reflections of an ethical and algorithmic nature [35].

The rigidity of an algorithmic evaluation system cannot be completely replaced by "human" aspects, with the risk that even the artificial intelligence system - despite its great predictive capabilities - could lead to an underestimation of the actual risk and create a vulnerability. Likewise, the issues inherent in the management of the employment relationship from both a legal[36] and managerial point of view are of fundamental importance in the renewed scenario of labour market transitions[37] in hybrid organisations[38].

HR areas, in fact, are called upon to identify both new evolutionary lines towards possible future policy mix paths for overcoming crises and to develop models and/or good practices to be implemented in companies both in terms of organisational models and changes in production processes in supply chains, with a direct impact in terms of corporate social responsibility.

Collective bargaining is always a central role, capable of intervening on fundamental issues such as production models, remuneration policies and work organisation (in order to avoid discriminatory phenomena) together with the

[31]On possible and future regulations on civil liability of artificial intelligence systems cfr. Chiappini (2022); Chiappini (2019).

[32]On this point and in relation to the legal personality of digital entities, please read Cheong (2022); Donini & Novella (2022); Biasi (2023); Ciucciovino (2024).

[33]Conti (2023).

[34]On this point, see Cairoli (2024), who, for the compensatory aspects, with regard to the profiles inherent to safety, believes that it would be desirable to facilitate the burden of proof on the worker, based on a reversal of the burden of proof or at least on the basis of a mitigation of the burden of proof itself, perhaps by means of the demonstration of mere "serious, precise and consistent evidence", as asserted by the ECJ in the ruling of 21 June 2017 on the safety of vaccines.

[35]Cfr. Benanti (2018); Mingo (2024); Basti & Vitiello (2024); Sharkey (2014).

[36]For a reflection on the freedom of work in the digital age and on the transformations of work performance due to the advent of technology, read Bavaro (2021).

[37]On this point, read the study European Commission, Jrc, Ilo, Rani., Pesole, & Gonzalez Vazquez (2024).

[38]For a broader framework, reference is allowed to Caragnano (2023).

training and declination of contractual frameworks[39] on which a timely reflection by the social partners is needed in light of the new skills and new mindsets determined by artificial intelligence[40].

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Athens Journal of Law - Volume 11, Issue 1, January 2025 – Pages 25-44

Renewable Energy Communities: Paradigmatic Example of a New Decentralised Governance of the Energy Market[1]

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This paper analyses renewable energy communities (hereinafter RECs) as introduced and regulated by Directive 2018/2001/EU, highlighting their pivotal role in the liberalisation and decarbonisation of the European energy market. RECs represent a point of intersection between these two processes, fostering a more open and decentralised market while promoting renewable energy and facilitating the energy transition. Their impact is multi-faceted: they decentralise energy production, encourage local generation, reduce end consumers' dependence on large energy companies, and lower energy costs for members. By advancing the use of renewable energy, RECs contribute to the energy transition, decarbonisation of European industry, and the Union's climate objectives. Citizens play a fundamental role in this transformation, evolving from passive consumers to active market participants, reshaping the market's structure. However, RECs face challenges, particularly regulatory and bureaucratic barriers in several European countries. To overcome these obstacles, the article calls for a more structured approach at the national level. This would involve reforms to support their expansion, ensuring that RECs can achieve their full potential as drivers of market decentralisation, citizen engagement, and climate action.

Keywords*: Renewable energy communities; Energy market; Liberalisation; Decarbonisation; Renewable energy sources; Prosumer; Citizens.*

Introduction

The promotion of sustainable energy production and consumption is central to the EU's climate policies, aiming for an ecological transition that will make the European Union the first continent with net-zero greenhouse gas emissions by 2050. This objective, adopted by the EU through the European Green Deal[2], aligns with

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[1]This paper is the result of a joint reflection by the Authors. For the sole purpose of formally attributing each person's contribution, paragraphs 1 and 5 are attributed to Francesco Vetrò, and paragraphs 2, 3, and 4 to Nicola Brignoli

[2]Ref. COM (2019) 640 final, Brussels, 11 December 2019. Alongside the final target set for 2050, a series of interim targets have been established for 2030: *a*) a 55% reduction in greenhouse gas emissions compared to 1990 levels; *b*) an increase in the share of renewable energy sources to 32%, which, as noted, has been raised to "at least 40%" under the Fit for 55 package and 42.5% under the Red III Directive (2023/2413/EU); and *c*) an improvement in energy efficiency by 32.5%, increased to 36-39% also under the Fit for 55 package.

commitments previously undertaken by the European Union in the 2015 Paris Agreement, which seeks to keep global temperature rise well below 2°C above pre-industrial levels, ideally limiting it to 1.5°C[3], and with the 2030 Agenda, which includes Goal 7 to ensure access for all to affordable, reliable, sustainable, and modern energy systems.

In this context, where the EU's energy market liberalisation, launched in 1996 with the first energy package, has inevitably intertwined with the decarbonisation of European industry and the energy transition – currently the primary objective of EU policy – renewable energy communities stand out as a major innovation in Europe's energy landscape. Introduced and regulated under the fourth energy package, they occupy a unique position between the two aforementioned trajectories, as they have the potential to impact both market liberalisation and structure, as well as the shift towards sustainable energy production, while enhancing the active role of end consumers.

The aim of this paper is to analyse the institution of renewable energy communities, starting with the social and political context in which they operate and the legislative framework provided at the EU level. Building on this foundation, the article seeks to outline the impacts of these instruments within the current European energy landscape, with particular attention to their implications for citizens and public entities, which may be involved in various capacities.

This paper is structured as follows:

Section 2 provides a preliminary overview of the paths of liberalisation and decarbonisation of the European energy market through the five energy packages, illustrating how liberalisation and decarbonisation measures have complemented each other and may find a convergence point in renewable energy communities.

Section 3 analyses the EU regulation of collective self-consumption and renewable energy communities, which serves as a framework for subsequent detailed implementation at the national level.

Section 4 seeks to highlight the impact of renewable energy communities on the European energy market, with a particular focus on the active role of end consumers and the decentralisation of the energy market.

Finally, Section 5 explores the future prospects for renewable energy communities, identifying key areas for intervention to ensure their effective dissemination.

[3]The Paris Climate Agreement (Paris Outcome) is an implementing agreement of the 1992 Framework Convention, consisting of two separate documents with distinct legal natures and effects, yet whose provisions are mutually complementary: the Decision and the Paris Agreement, the latter being an annex to the Decision. Article 2 of the Agreement, in line with the "dual target" mechanism introduced at COP 16 in Cancún, establishes the dual objective of keeping the global average temperature increase well below 2°C above pre-industrial levels, while also striving to limit this increase to 1.5°C. On the Paris Agreement, see, among others, Bodansky (2016) and Klein, Carazo, Doelle, Bulmer & Higham (2017).

The Liberalisation and Decarbonisation of the European Energy Market

The liberalisation and decarbonisation of the energy market in the European Union are two processes which, despite having different objectives, can complement and reinforce each other. The creation of a more open, competitive, and flexible energy market can serve as a precondition for fostering sectoral innovation and the transition towards more sustainable energy sources. It is with these two objectives in mind that the Union has intervened over the years with five legislative packages, initially focused on liberalising energy markets within Member States to achieve a single energy market, and later aimed at decarbonising the market to reach the ultimate goal of making Europe the first continent with net-zero CO_2 emissions by 2050.

The five energy packages represent a series of legislative initiatives developed over a period from 1996 to the present, reflecting the evolution of the Union's energy policy from liberalisation and the promotion of competition to the transition towards a sustainable and decarbonised energy market, encompassing security of supply and improved energy efficiency. Each package has thus contributed to creating a more integrated, competitive energy market aligned with the European Union's economic and climate objectives.

Although initially, the energy sector was not included in the 1957 Treaty of Rome establishing the European Economic Community (EEC), from the 1980s onwards, the creation of an internal energy market became one of the priorities of the then European Community (EC). This shift followed the 1986 Single European Act, specifically Article 7A of the EEC Treaty (added by Article 13 of the Single Act, later becoming Article 14 of the EC Treaty, and ultimately Article 26 of the Treaty on the Functioning of the European Union (TFEU). According to this provision, the establishment of an internal market involves a borderless area ensuring the free movement of goods, persons, services, and capital. Completion of an internal electricity market was deemed essential to achieving this internal market, as electricity was considered a 'good' under the then Article 28 the EC (now Article 34 of TFEU). European case law[4] has repeatedly confirmed that electricity fell fully within the scope of Article 14 of the EC, meaning that, for electricity as well, the Community's policy and legislative action should be directed towards establishing a unified and uniform market[5].

Classifying electricity as a "good" was crucial, as this classification underpinned the concept of an internal electricity market and, to a large extent, the internal energy market – a single, borderless market where energy constitutes a freely tradable commodity.

Another relevant aspect is the need for continuity in electricity supply and the availability of different service levels for users, which qualifies various aspects of

[4]See Court of Justice of the European Communities (CJEU) - judgment of 15 July 1964, Case 6/64, *Costa* v. *Enel*, in *Racc.*, 1964, at 1127 ff.; judgment of 27 April 1994, Case C-393/92, *Comune di Almeno and Others* v. *NV Energiebedrijf*, in *Racc.*, 1994, at I-1477 ff.; judgment of 23 October 1997, Case C-158/94, *Commission of the European Communities* v. *Italian Republic*, in *Racc.*, at I-5789 ff.

[5]Similarly, see among others, McGowan (1995) and Pfrang (1999) at 24 ff.

electricity company services as a 'service'. From this perspective, electricity provision is clearly aligned with the residual definition of "service" in the then Article 50 of the EC (now Article 57 of TFEU), as well as with the category of services of general economic interest delineated in the then Article 86(2) of the EC (now Article 106 of TFEU)[6].

Until the 1990s, most energy markets in European Community countries were dominated by state monopolies and characterised by a substantial lack of competition. Under this model, where large public companies-controlled electricity production, distribution, and sale, service continuity was ensured, but it did not always guarantee efficiency, consumer protection, or innovation. The lack of application of competition rules to the sector in question was largely justified by the exception in Article 86(2) of the EC, which exempted companies managing services of general economic interest from the Treaty's provisions, especially competition rules, whenever and to the extent that applying such rules would hinder the fulfilment of their specific mission. However, following the adoption of the Single European Act and subsequently the Maastricht Treaty, a notable push from the Community institutions, particularly the Commission, sought to introduce at least partial elements of competitiveness and market forces into the electricity sector. This move aligned with the traditional Community objective of maximising competition in all areas.

As a result, various legislative interventions aimed at opening up the energy sector to the market have followed[7]. According to the Commission's repeated guidance[8], the liberalisation process of the electricity sector within the European Community was to proceed progressively to introduce at least partial competitiveness and market elements into the electricity sector and to improve efficiency and ensure a more transparent and fair energy service for consumers[9].

The true liberalisation process was preceded by several Council directives on price transparency and tariff structures (Directive 90/377/EEC) and the international transit of electricity across major high-voltage transmission networks (Directive 90/547/EEC)[10], which established a common regulatory framework[11] for electricity aimed at creating a unified and competitive market. Additionally, the Council directive on procurement in the so-called "excluded sectors" (Directive 90/531/EEC) extended the Community's procurement regime to the energy sector – as well as to water, transport, and telecommunications – to remove barriers to market entry in this public utility sector.

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[6]See Corapi (1995) at 294.

[7]On the energy sector in Europe, see Roggenkamp, Redgwell, Rønne & Del Guayo (eds.) (2016).

[8]See EEC Commission Document, 1 June 1990, *The Internal Energy Market – First Interim Report* (COM 90/124 final), also published in *Rass. giur. en. elettr.*, 1990, at 862 ff., and EEC Commission Document, 2 July 1993, *Second Report on the Progress of the Internal Energy Market* (COM 93/261 final), also published in *Rass. giur. en. elettr.*, 1993, at 1048 ff.

[9]On the liberalisation process and competitive energy markets, see Cameron (2007) and Kalus (2013) at 289 ff.

[10]Similarly to the provisions established for the electricity sector, Directive 91/296/EEC regulated the transit of natural gas over major networks.

[11]See Colavecchio (2000) at 52 ff.

With these foundations, the liberalisation process formally began with the first energy package, consisting of Directive 96/92/EC for the electricity market and Directive 98/30/EC for the natural gas market[12]. These directives were not solely concerned with opening the target markets to competition but sought to outline and establish a comprehensive and exhaustive framework of common rules within the then European Community. The provisions within the directives addressed not only market access procedures and the fundamental criteria for market liberalisation but also the overall regulation of the European market[13].

In both sectors, the first energy package initiated an initial, partial, and progressive liberalisation targeting "eligible customers", or those economic entities with consumption above a certain threshold[14], scheduled for gradual reduction to progressively broaden the pool of participants in the free market, who gained the right to freely choose their supplier.

As for network access[15], the first energy package introduced, alongside the *single buyer model* (SB), *third-party access* (TPA), thereby opening up the possibility for suppliers, producers, and consumers to use energy transport and distribution infrastructure managed by other companies to supply, purchase, or sell energy. TPA included two variants: *negotiated access* and *regulated access*. In the former, producers (and, where permitted by Member States, electricity supply companies) and eligible customers were allowed to negotiate with network operators for access to conclude supply contracts on the basis of voluntary commercial agreements. Conversely, regulated access imposed a genuine duty to contract upon the network operator, with eligible customers having a corresponding right to access at regulated prices. In the negotiated model, the network operator was obliged to negotiate, with any failure to do so potentially constituting abuse of a dominant position or a pre-contractual liability; in the regulated model, however, where a binding duty to contract existed, customers were protected by a right to performance

[12]Although in the natural gas sector, the liberalisation process began with Directive 94/22/EC, which aimed to foster competition and enhance supply security. This directive initiated the first liberalisation of production activities by regulating the conditions for granting and exercising authorisations for the exploration, extraction, and production of hydrocarbons, based on objective and non-discriminatory criteria, and according to rules of transparency and publicity.

[13]See Vetrò (2005) at 241-242.

[14]With reference to the electricity sector (cf. Art. 19, Directive 96/92/EC), the stipulated threshold was initially set at 40 GWh per annum, which was to be reduced to 20 GWh per annum three years after the directive's entry into force, and ultimately to 9 GWh per annum six years following its enactment. Moreover, electricity distribution companies supplying other entities with consumption levels sufficient to qualify them as eligible customers were, regardless of annual consumption, consistently classified as "eligible customers". In the natural gas sector (cf. Art. 18, Directive 98/30/EC), gas plants designated for electricity production were required to be classified as eligible customers regardless of their annual consumption, as well as other final customers whose annual consumption exceeded 25 million cubic metres of gas per location. Member States were also mandated to ensure that the definition of "eligible customers" led to a market opening equal to at least 20% of total annual national gas consumption, rising to 28% after five years and to 33% after ten years.

[15]The issue of network access holds a central role in the liberalisation process of the energy market, as it pertains to the rights and opportunities for operators to utilise electricity and gas transmission and distribution infrastructures, which were previously controlled by monopolistic companies, often state-owned or vertically integrated private entities.

of the contractual obligation. The introduction of TPA brought several benefits to the energy market, primarily in three areas: *a*) promoting competition by enabling various operators to utilise the same infrastructure, thus creating a more competitive environment in which consumers could select among suppliers; *b*) increasing efficiency by fostering fair and non-discriminatory network access, which enhanced resource allocation, innovation, and efficiency within the energy sector; and *c*) advancing the energy transition by facilitating the integration of new renewable energy sources, allowing green energy producers to feed electricity into the grid.

To ensure equitable network access, the first energy package also introduced accounting unbundling across various energy sector activities. Vertically integrated companies were thus required to maintain separate accounts for electricity production, transmission, distribution, and gas transport, distribution, and supply, as though these activities were conducted by distinct companies. Although vertical integration was not prohibited in the energy sector, firms were required to adopt separate accounting for each activity to accurately assign costs, revenues, and profits (or losses).

The first energy package was followed in 2003 by a second package of measures, comprising Directives 2003/54/EC and 2003/55/EC on electricity market opening and the establishment of a single European gas market, respectively. These directives completed the liberalisation of both the electricity and natural gas markets, effective from 1 July 2007, when all consumers, including households, would gain the right to choose their supplier freely. As of that date, all final customers were to be deemed eligible.

With reference to network access, regulated access became the sole mode of entry, and both functional and legal unbundling – on top of accounting unbundling – were introduced between network management activities (transmission and distribution in the case of electricity, transport and distribution for gas) and other activities, where the appointed entities operated within vertically integrated enterprises involved in generation or supply.

The second energy package also mandated each Member State to establish an independent regulatory authority to monitor the energy sector, ensuring the promotion of competition, overseeing the application of standards, and guaranteeing fair and non-discriminatory access to the networks for new operators.

The liberalisation process advanced further in 2009 with the third energy package[16], which introduced environmental and climate targets alongside objectives for energy supply security, complementing the sector's market-opening measures. This package bolstered the separation of network management from production and supply activities by introducing three unbundling models: *Ownership Unbundling*, requiring full separation of production/supply ownership from transmission network ownership; the *Independent System Operator* (ISO) model, permitting transmission

[16]The Third Energy Package comprised two directives and three regulations: Directive 2009/72/EC, on common rules for the internal electricity market; Directive 2009/73/EC, on common rules for the internal natural gas market; Regulation 2009/713/EC, establishing the Agency for the Cooperation of Energy Regulators; Regulation 2009/714/EC, concerning conditions for access to the network for cross-border exchanges in electricity; and Regulation 2009/715/EC, concerning conditions for access to the natural gas transmission networks.

network ownership to remain with the historical operator while management was transferred to an independent operator; and the *Independent Transmission Operator* (ITO) model, allowing historic operators to retain both ownership and management of networks under strict requirements to ensure operational and managerial independence. It also enhanced the independence of national authorities, both in relation to companies and national governments, and to facilitate European-level coordination, established the Agency for the Cooperation of Energy Regulators (ACER) and the European Network of Transmission System Operators for Electricity (ENTSO-E) and Gas (ENTSO-G).

In the same year, the 20-20-20 Package was approved[17], following a legislative technique widely adopted at the European level[18], setting three 2020 targets: *a*) reducing greenhouse gas emissions by at least 20% compared to 1990 levels; *b*) raising the share of renewable energy to 20% of total EU energy production; and *c*) improving energy efficiency by 20%[19]. This package reflects an integrated climate-energy approach that the European Union, recognising since the 2000s the inextricable link between climate change and energy, has embedded within its action and the trajectory of energy transition pursued through the fourth and fifth energy packages[20]. Since then, European energy market liberalisation and decarbonisation have advanced in unison, complementing one another. Liberalising the energy market has enabled the entry of new operators, including renewable energy producers, which has fostered competition and reduced green energy production costs. Competition has also stimulated investment in new technologies and infrastructure, making renewable energy more accessible and affordable. In other words, renewable energy promotion has also been achieved through competition.

The adoption of the fourth energy package was announced by the European Commission on 30 November 2016, in Communication No. 860, with three main objectives: *a*) prioritising energy efficiency; *b*) achieving global leadership in renewable energy; and *c*) ensuring fair treatment for consumers. This package of measures, known as the *Clean Energy Package*, comprises eight provisions[21], all

[17]See Directive 2009/28/EC.

[18]Setting medium-to long-term targets is a legislative technique widely used at the European and international levels, especially in the context of combating climate change. This approach serves to gauge progress towards specific policy goals while simultaneously providing indicators to guide their achievement. See Johnston & Van der Marel (2016) at 176.

[19]According to the European Environmental Agency (EEA) report, *Trends and Projections in Europe 2021*, available at *www.eea.europa.eu*, the European Union has achieved «*full achievement – and even overachievement – of Europe's 20-20-20 goals for climate change mitigation, renewable energy deployment and energy efficiency gains*».

[20]On the importance of renewable energy in combating climate change, see Alenza García & Sarasíbar Iriarte (2007).

[21]The measures that make up the *Clean Energy Package* are as follows: Regulation 2018/1999/EU on the governance of the Energy Union; Directive 2018/2002/EU on energy efficiency; Directive 2018/2001/EU on the promotion of renewable energy sources (commonly known as Red II); Directive 2018/844/EU on energy performance in buildings; Regulation 2019/943/EU on the internal electricity market; Directive 2019/944/EU on common rules for the internal electricity market; Regulation 2019/941/EU on risk preparedness in the electricity sector; and finally, Regulation 2019/ 942/EU on the establishment of a European Union Agency for the Cooperation of Energy Regulators. In this regard, see Ludwig (2019) and Nouicer, Kehoe, Nysten, Fouquet, Hancher & Meeus (2020).

aimed at aligning the energy sector with Europe's climate neutrality goals, made binding by the so-called *European Climate Law*[22], and implementing sustainable development focused on climate neutrality in line with the commitments made by the European Union under the Paris Agreement[23].

In particular, the fourth package emphasises the decarbonisation of the energy system, setting ambitious targets for renewable energy growth and reducing greenhouse gas emissions. In this regard, Directive 2018/2001/EU (known as RED II) established a 32% target for the share of renewable energy in the EU's gross final energy consumption by 2030[24], introduced measures to facilitate consumer participation in renewable energy production, such as collective self-consumption configurations and renewable energy communities[25], and set out specific provisions for the promotion of renewables in heating, cooling[26], and transport sectors.

On energy efficiency, Directive 2018/2002/EU set a 32.5% reduction in energy consumption by 2030 and promoted energy efficiency measures in buildings, industrial processes, and public services, with particular attention to retrofitting existing buildings.

To achieve these targets, Regulation 2018/1999/EU on Energy Union governance established a common framework for planning, monitoring, and reporting on the progress towards the Union's energy and climate targets, based on *National Energy and Climate Plans* (NECPs) and *Long-term strategies for greenhouse gas reduction*, which each Member State must periodically submit to the European Commission. These plans are underpinned by a dual cooperative logic, involving not only cooperation between Member States and the Commission, who may work jointly to identify the best measures to implement, but also cooperation between Member States[27], who may comment on the NECPs of other Member States to ensure no plan hinders or complicates the achievement of common objectives.

Finally, the fourth package, through Regulation 2019/943/EU and Directive 2019/944/EU, intervened in the internal electricity market, promoting a more integrated, competitive market centred on consumer participation, allowing them to

[22]See Regulation 2021/1119/EU.

[23]On the energy transition undertaken at the European level and the allocation of competences between the EU and Member States, see Fehling (2021).

[24]As noted in Monti & Martínez Romera (2020), at 224-225, within the EU context, targets can be set either at the level of individual Member States or at the Union level, and in both cases, they may be "indicative" or "binding". In the case of the 2030 renewable energy targets, unlike the 20-20-20 Package where goals were established for individual Member States, the 2030 targets are binding and set at the Union level. Member States are collectively obliged to ensure that the share of energy from renewable sources in the EU's gross final energy consumption by 2030 reaches at least the level established by the relevant directives.

[25]See Lowitzsch (2020).

[26]For insights into the impact of heating and cooling – a sector where the energy transition has progressed more slowly than in electricity – and the importance of decarbonisation policies in this area, see Gerard, Guevara Opinska, Smit & Rademaekers (2022).

[27]According to Article 2, point 21, of Regulation 2018/1999/EU, «regional cooperation» is defined as «*cooperation between two or more Member States engaged in a partnership covering one or more of the five dimensions of the Energy Union*».

produce, store, and sell self-generated electricity, as well as freely choose their energy supplier and benefit from competitive rates.

In 2021, the *Clean Energy Package* was followed by the fifth energy package, known as *Fit for 55%*, as part of the *European Green Deal* framework, outlining a European strategy to transform the EU into a net-zero greenhouse gas economy by 2050 in line with the 2030 Agenda. The package's primary objective is to accelerate decarbonisation by aligning the Union's energy and climate policies to ensure a significant reduction in emissions by 2030, aiming towards climate neutrality by 2050. The name "*Fit for 55%*" refers to the Union's target to reduce net greenhouse gas emissions by 55% by 2030 compared to 1990 levels as part of the strategy towards 2050 climate neutrality.

To this end, the Fit for 55% package seeks to expand the use of renewable energy, initially setting a 40% target for the share of renewables in the Union's gross final energy consumption, later increased to 42.5% by Directive 2023/2413/EU (known as RED III[28]), with a collective commitment from Member States to raise this share to 45%. Additionally, the package introduced a new 11.7% reduction in energy consumption at Union level by 2030 relative to 2020 projections, and stricter measures for the public sector, which must renew at least 3% of the total building surface annually to improve energy efficiency and reduce consumption.

The Fit for 55% package continues to strengthen consumer involvement by promoting the active role of citizens and direct participation in renewable energy production and use, while also protecting the most vulnerable consumers through the establishment of a Social Climate Fund[29]. Furthermore, the package aims to enhance European competitiveness by ensuring that European businesses remain competitive globally, fostering innovation and clean technologies, and protecting European industry from imports from countries with lower environmental standards through the Carbon Border Adjustment Mechanism (CBAM) – a carbon tax applied to imports of carbon-intensive products such as steel, aluminium, cement, and fertilisers. This mechanism, established by Regulation 2023/956/EU, aims to prevent carbon leakage and ensure that imported products are subject to climate standards equivalent to those of the Union.

While the first three energy packages focused on opening the energy market, treating citizens largely as passive consumers of energy produced by large companies, the fourth and fifth packages, as seen with their decarbonisation focus, represent a paradigm shift, actively recognising citizens as a dynamic force in the evolution of the market itself.

Renewable Energy Communities within the European Framework

[28]Recently, on the impact of the RED III Directive, see Lehnert & Traum (2024).

[29]Established under Regulation 2023/955/EU with a maximum allocation of 65 billion euros from 1 January 2026 to 31 December 2032. Member States must contribute at least 25% of the total estimated costs of their plans and may request the transfer of resources to the Fund from cohesion policy programmes managed under a shared management regime, as established by Regulation 2021/1060/EU. Member States may also transfer up to 15% of their allocation to cohesion policy programmes.

Among the measures introduced by the fourth energy package that have had a significant impact on the evolution of the energy market – both in terms of liberalisation and decarbonisation – are those relating to collective self-consumption and renewable energy communities[30], as outlined in Directive 2018/2001/EU (commonly known as RED II)[31].

A renewable energy self-consumer is defined as a final customer who, operating on their own premises, produces renewable energy for their own consumption and may store or sell any excess, provided these activities do not constitute their primary commercial or professional activity[32]. If at least two renewable energy self-consumers are located within the same building or condominium, they may join together and act collectively, generating renewable electricity for their own use, storing it, or selling it, again provided that such activities do not form their main commercial or professional endeavour[33].

With respect to renewable energy self-consumers, whether acting individually or collectively, Member States are required to ensure that final consumers are authorised not only to produce renewable energy for their own self-consumption but also to store or sell any surplus production (including through purchase agreements[34]), to install and manage storage systems for self-consumption, and to receive remuneration (including through support schemes) for renewable energy they produce and feed back into the grid[35].

The Red II Directive, in addition to individual and collective self-consumption, also provides for self-consumption organised as a renewable energy community. This involves an autonomous legal entity based on open and voluntary participation and controlled by shareholders or members (individuals, small or medium-sized enterprises, or local authorities, including municipal administrations), who are located in proximity to the renewable energy production facilities owned or developed by the community itself. The primary objective of such communities is to provide environmental, economic, or social benefits to their members and local areas, rather than to generate financial profit[36]. Member States must ensure the right for final customers to participate in energy communities, guaranteeing these communities the ability to conduct activities of production, consumption, storage,

[30]On the terminological and legal distinction between collective self-consumption and energy communities, see De Almeida, Cappelli, Klausmann & van Soest (2021).

[31]See Sokołowski (2018).

[32]See Article 2, point 14), Directive 2018/2001/EU.

[33]See Article 2, point 15), Directive 2018/2001/EU. Regarding collective self-consumption, a notable antecedent is the document SWD(2015) 141 final, *Commission Staff Working Document: Best practices on Renewable Energy Self-consumption* – Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Delivering a New Deal for Energy Consumers (COM(2015) 339 final), Brussels, 15 July 2015, available on *eur-lex.europa.eu*.

[34]That is a contract whereby a natural or legal person commits to purchasing electricity produced from renewable sources directly from an electricity producer. See Recital 17, Directive 2018/2001/EU.

[35]See Article 21, paragraphs 1 and 2, Directive 2018/2001/EU.

[36]See Article. 2, para. 2, no. 16, of Directive 2018/2001/EU. On the benefits that the so-called "Energy community" can provide to society, with a comparison between the United Kingdom, Germany, and the United States, see Brummer (2018).

and sale of renewable energy. Furthermore, they must be allowed to exchange self-produced renewable energy within the community and access all electricity markets in a non-discriminatory manner. Member States are also required to consider the possibility of support schemes to remove any formal and substantive barriers to their development[37].

With respect to the benefits associated with self-consumption, Directive 2018/2001/EU allows Member States to apply non-discriminatory and proportionate charges and tariffs on renewable energy self-consumers for renewable electricity they produce and retain, in three specific cases: *a*) if the energy benefits from support schemes, only to the extent that the project's economic sustainability and the incentive effect of such support are not compromised; *b*) from 1 December 2026, if the total share of self-consumption facilities exceeds 8% of the installed electricity capacity in a Member State and, as evidenced through a cost-benefit analysis by the national regulatory authority conducted through an open, transparent, and participatory process, the provision in paragraph 2, point *ii*[38], results in a disproportionate burden on the long-term financial sustainability of the electricity system or creates an incentive beyond what is objectively necessary for achieving the cost-effective deployment of renewable energy, and where it is not feasible to mitigate this burden or incentive by adopting other reasonable measures; *c*) if the energy is generated in installations with a total installed electricity capacity exceeding 30 kW[39].

Given the European framework on this matter, the key elements that characterise renewable energy communities can be identified as follows: *a*) open and voluntary participation from any local actor, including citizens, small and medium-sized enterprises, and local authorities (including municipal administrations); *b*) shared management that involves each member irrespective of economic contribution; *c*) a primary goal of generating environmental, economic, and social benefits for members and the community in which the energy community operates, rather than financial profit.

Regarding point *a*), open and voluntary participation means that Renewable Energy Communities (RECs) may not impose arbitrary and/or discriminatory criteria to exclude any consumer wishing to join the initiative. Conversely, they must guarantee the right for members to exit the community. However, the directive limits its regulation to consumer participation, leaving the exit provisions for members in the role of investors or shareholders to the transposition laws of individual Member States. This process will largely depend on the legal form chosen by the REC (primarily in the form of an association or cooperative[40]) and the existing rules

[37]See Article 22, Directive 2018/2001/EU

[38]Accordingly, Member States ensure that renewable energy self-consumers, whether individually or through aggregators, are authorised to produce renewable energy, including for their own consumption; to store and sell any excess renewable electricity they produce, including through renewable power purchase agreements, electricity suppliers, and peer-to-peer trading arrangements, without being subject to discriminatory or disproportionate procedures, charges, or tariffs for renewable electricity produced from renewable sources that remains within their own usage.

[39]See Article 21, paragraph 3, of Directive 2018/2001/EU.

[40]See Biresselioglu, Limoncuglo, Demir, Reichi, Burhstaller, Schiullo & Ferrero (2021).

governing membership and exit[41]. Concerning specific participants, the directive excludes large enterprises, central administrations, and energy production and distribution companies from direct membership in RECs. Nonetheless, this does not preclude these entities, particularly the latter, from participating indirectly as external producers – entities that own and operate renewable energy generation facilities made available to the REC without becoming a member.

In terms of point *b*), the Red II directive requires that the governance of RECs be shared among members based on a principle of territorial proximity to the REC's production facilities and projects, and according to an autonomy principle, whereby the REC must remain independent of individual members or shareholders. This autonomy ensures that no single member or group of members can undermine the collective interest through undue influence on the REC's decision-making processes. Here again, Member States must establish rules on effective REC governance, tailored to the REC's legal structure, while ensuring compatibility with the principles set at the Union level.

Lastly, concerning point *c*), RECs can be classified as social innovations[42], as their primary aim is to deliver socioeconomic and environmental benefits to both their self-consumers and the broader communities within which they operate. They can thus serve as catalysts for socioeconomic and environmental development in local areas. This does not imply an outright prohibition on profit generation; however, profits must be reinvested within the REC, primarily for the regular and extraordinary maintenance of production facilities, and to update technologies to enhance efficiency. Profits may also support activities connected to the REC's social and environmental objectives[43], such as providing services to members, investing in local infrastructure and sustainable mobility, or funding environmental projects and research and development initiatives in new technologies.

The impact of RECs on the energy market is therefore multifaceted[44]. RECs promote the decentralisation of energy production, supporting local energy generation and reducing the reliance of end consumers on large energy companies. They yield economic savings for members who benefit from lower energy costs and increased autonomy. Ultimately, by advancing the use of energy derived from renewable sources, RECs support the energy transition and contribute to the decarbonisation of European industry and the achievement of the Union's climate objectives.

The Decentralisation of the Energy Market and the Active Role of Consumers

In the energy market, a dual decentralisation process is underway[45], driven by the principles of vertical and horizontal subsidiarity, and significantly advanced by

[41]See Roberts (2020).
[42]See Brignoli (2022) at 37 ff.
[43]In agreement on this point Cocciolo (2020) at 498.
[44]On the role these new actors can play in energy markets, see Lowitzsch, Hoicka, & van Tulder (2020).
[45]See Miccù & Bernardi (2022) at 616-617. They observe that this process is driven, on one hand, by the further advancement of energy market liberalisation, spurred by transformations stemming

the provisions of Directive 2018/2001/EU. This directive aims to embed individual, collective, and organised forms of renewable energy self-consumption into European legal frameworks. On one hand, there is an increasing involvement of local authorities in achieving energy transition targets set at EU and national levels, enabling them to participate in the formation and management of renewable energy communities. Specifically, the role of municipalities is emphasised, as they represent the collective interests of communities; in this way, the principle of proximity – derived from vertical subsidiarity – acts as a basis to foster horizontal subsidiarity, thus encouraging the active role of local communities that municipalities represent.

On the other hand, citizens are playing a more active role: transitioning from passive consumers to active participants in the energy market[46]. This shift challenges the traditional model of large public companies operating as state monopolies or within regulated post-liberalisation frameworks. Instead, renewable energy communities stand in clear opposition to the vertically integrated enterprise model, embodying the principle of unbundling[47].

Through the formal recognition of individual, collective, and organised self-consumption, a new category known as the "prosumer" has emerged[48]. This term, a blend of "producer" and "consumer," refers to an individual who, while primarily a consumer, also produces a particular good. In the energy market, a prosumer is someone who generates electricity, albeit not as their primary economic or professional activity, while also being the end consumer (or self-consumer) of this energy[49]. Essentially, a prosumer owns their own generation facility, using part of the energy produced to meet personal needs and feeding any surplus back into the grid for sale to other users, thus enabling direct energy exchanges among private individuals. This evolution marks a significant consumer-led opening of the energy market, allowing individuals to actively engage in the production of the energy they consume within a decentralised and more democratic marketplace[50].

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from technological progress, and, on the other hand, by the increasing involvement of regional and local governments in achieving energy savings and consumption rationalisation objectives.

[46]The term "energy citizens" was used in the study by Kampman, Blommerde & Afman (2016). The authors highlight that the increased spread of renewable energy production in Europe is set to enhance the active role of citizens, shifting from passive consumers to active producers of energy. They estimate that approximately 83% of European households have the potential to contribute to renewable energy production by 2030 and 2050. On the changing role of citizens and their direct involvement in the electricity sector, see also Katzeff & Wangel (2015).

[47]In this regard, Bartlett Castellá (2022) at 304.

[48]lready McLuhan & Nevitt (1972) suggested the possibility that technological progress could enable consumers to also become producers. However, the term 'prosumer' was later coined by Toffler (1980), who had earlier, in Toffler (1970), hypothesised the merging of consumer and producer roles. For discussions on the role of prosumers in the energy market, see, among others: May & Huang (2023); Campos, Pontes Luz, Marín-González, Gährs, Hall & Holstenkamp (2020); Cseres (2018); and Leal-Arcas, Lesniewska & Proedrou (2018). Additionally, an interesting perspective is presented in Korsnes, Labanca, Campos & Bertoldi (2024), where energy prosumerism is categorised based on three interconnected dimensions within the intersecting concepts of energy sufficiency and energy justice: technological, ownership, and participation.

[49]According to the definition provided by Parag & Sovacool (2016), «*prosuming refers to when energy customers actively manage their own consumption and production of energy*».

[50]On energy communities as a contributing factor to sustainable energy democracy, see Diestelmeier (2021).

In a market geared towards liberalisation and decarbonisation, final consumers can generate energy by installing photovoltaic or micro-wind systems in their homes or apartment buildings, thereby producing their own electricity and becoming producers. When the energy generated exceeds their consumption, they can sell the surplus back to the grid, contributing to the overall energy supply. This process is facilitated by smart meters and net metering systems that enable efficient monitoring and management of both generated and consumed energy. Consumers can also form autonomous legal entities, such as renewable energy communities, or invest in joint projects like wind or solar farms, thus becoming shareholders or co-owners of these infrastructures. Such initiatives foster the spread of renewable energy at a community level, encouraging active participation in the energy market. The result is a more active consumer, less dependent on large production companies and more aware of their own energy consumption, ultimately supporting a more efficient and flexible energy market[51].

As noted, beyond restructuring the energy market, self-consumption configurations offer socio-economic and environmental benefits not only to the prosumers but also to the communities in which they operate, positioning themselves as tools for addressing energy poverty. Energy poverty is a complex phenomenon, influenced by a multitude of factors, with no universally accepted definition or uniform set of indicators for its assessment. While initial definitions considered energy poverty as a condition in which households spend more than 10% of their income on basic energy needs[52], newer approaches utilise multiple indicators[53]. Broadly, energy poverty can be defined as the inability or difficulty to access essential energy services and to meet the energy needs of oneself or one's family. It is primarily influenced by income, high energy costs, and inefficient housing that requires greater energy for heating or cooling.

In the fourth energy package, the European Commission explicitly identified the fight against energy poverty as a primary objective of the European Union. Among the tools aimed at achieving this goal are self-consumption and renewable

[51]On the central role of the prosumer in the future energy market see Jabobs (2017).

[52]See Boardman (1991).

[53]In a study by Kearns, Whitley & Curl (2019), it is suggested that energy poverty stems from four primary factors: the energy inefficiency of housing, high energy prices, low disposable income, and individual behaviour. Conversely, the 2020 report by the Italian Energy Poverty Observatory (OIPE), available on *oipeosservatorio.it*, at 9 ff., indicates that at the European level, two main data sources are utilised for monitoring energy poverty: the Survey on Income and Living Conditions (EU-SILC), which includes consensual indicators, and the Household Budget Surveys (HBS), which enable the construction of expenditure-based indicators. The Third Report of the European Energy Poverty Observatory (EPOV) (Bouzarovski, Thomson, Cornelis, Varo & Guyet (2020)) uses these sources to employ four primary indicators (two consensual and two income and expenditure-based) and 18 secondary indicators. Consensual indicators include households that report being unable to adequately heat their homes and those falling behind on bill payments. Among the income and expenditure indicators are those identifying a household as energy-poor if its energy expenditure ratio to income is more than twice the median value, or if the absolute energy expenditure is below half the median. In its report, OIPE also includes the so-called "10% indicator", which considers households as energy-poor if their energy expenditure exceeds 10% of total income, and the Faiella-Lavecchia Index (Faiella & Lavecchia (2015)), which identifies households in energy poverty as those with high electricity and heating expenditure ratios, as well as those in severe deprivation with zero heating expenditure.

energy communities, which, by generating savings and enhancing energy efficiency, can bring economic benefits to their members. These benefits range from reductions in energy bills and tax incentives to lower transportation costs, decreased system charges, and access to systems for monitoring and optimising consumption, simultaneously fostering greater awareness and responsibility among consumers[54]. Renewable energy communities, however, offer an additional dimension compared to collective self-consumption: energy sharing. According to the intent of the European legislator, energy sharing is driven not by market principles but by a purely solidaristic approach, positioning renewable energy communities as a fundamental tool in combating energy poverty and providing vulnerable consumers with access to energy-sharing schemes[55].

Conclusions

The liberalisation and decarbonisation of the energy market are complementary processes that, if managed effectively, can accelerate the transition to a more sustainable and competitive energy market. Establishing an open and integrated energy market, backed by robust climate policy and support mechanisms, is essential for meeting the EU's decarbonisation goals by 2050.

The renewable energy self-consumption configurations introduced by Directive 2018/2001/EU, by promoting active citizen participation, are driving a shift towards a more democratic, efficient, and flexible energy market, reducing final customers' dependency on major energy companies and decreasing the prevalence of energy poverty.

The fifth energy package reaffirmed the central role of self-consumption configurations, particularly renewable energy communities, as a tool for achieving an equitable and inclusive energy transition that benefits consumers, especially vulnerable groups. However, a decisive role will be played by Member States and their national implementation measures. Many countries have already begun the process of implementing these regulations, which will be lengthy and must account for regional specificities and community needs. In several European countries, renewable energy communities still face challenges due to various factors, including regulatory obstacles, bureaucratic barriers, limited financing access, and a lack of awareness and technical knowledge among citizens. National regulations must therefore facilitate the spread of energy communities, enabling local authorities to support their establishment and active citizen participation, maximising their social and environmental potential.

To increase the prevalence of renewable energy communities, a more structured approach is required. From a regulatory standpoint, legislative reforms and incentives are needed to simplify approval processes and provide tax relief.

[54]See Barroco, Borghetti, Capellaro, Carani, Chiarini, D'Agosta, De Sabbata, Napolitano, Nigliaccio, Nucci, Orozco Corredor, Palumbo, Pizzuti, Pulazza, Romano, Tossani &Valperta (2020) at 26 ff.

[55]In this regard see Cocciolo (2024) at 498. On the central role of the sharing function inherent to renewable energy communities, which is distinct from supply and other similar activities such as peer-to-peer and collective self-consumption see Diestelmeier & Cappelli (2023).

Furthermore, favourable access to the energy grid should be guaranteed, with preferential rates to ensure equitable and transparent grid access for established communities. Dedicated financing should also be provided, with the creation of specific funds at both national and EU levels to finance energy community projects, including grants, low-interest loans, and guarantees. In terms of technical and informational support for citizens, there should be the establishment of information centres and digital platforms offering technical, legal, and financial assistance to groups interested in forming energy communities, as well as awareness campaigns to highlight the advantages and opportunities of this new model, involving citizens, SMEs, and local authorities. A significant contribution could also come from public-private partnership models, fostering solid partnerships between local authorities, private companies, and citizens to support shared energy projects and create sustainable business models. In this context, the role of municipal administrations is critical, as they must start prioritising energy issues, focusing their efforts on promoting renewable energy through self-consumption and directing public economic incentives towards social spending to combat energy poverty.

It is essential to remember that the energy community model, as previously discussed, stands in contrast to the model of large, vertically integrated companies. It is, therefore, crucial that this model remains under the control of citizens and local authorities (albeit with the support of production and distribution companies acting as external producers), thus serving as an engine for the economic development of the communities it operates within, while avoiding the dominance of large energy companies in their formation, especially through franchising and partnership models. While this approach allows companies to expand their presence in the renewable energy sector and communities to benefit from the expertise and resources of large firms, it also risks undermining the democratic and participatory nature that renewable energy communities are meant to uphold, exerting excessive control over them, limiting their independence, and altering their fundamental nature.

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Athens Journal of Law - Volume 11, Issue 1, January 2025 – Pages 45-62

Artificial Intelligence in Decision-making: A Test of Consistency between the "EU AI Act" and the "General Data Protection Regulation"

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The recent Regulation that sets down harmonised rules on Artificial Intelligence in the European Union, known as the "AI Act," includes a significant requirement for human oversight in high-risk AI systems during their use (art. 14). This requirement embodies the "human-in-command" approach, ensuring both legal and ethical compliance. The AI Act is intended to complement the General Data Protection Regulation (hereinafter GDPR), thereby forming a consistent and comprehensive legal framework. This paper focuses on AI systems producing decisions and examines the consistency of the AI Act's mandatory human oversight measures (art. 14) with GDPR's provisions on decisions based solely on automated processing (art. 22). At first glance, the provisions seem mutually exclusive. Mandatory human oversight under the AI Act could render art. 22 of GDPR inapplicable, as it applies only to decisions made by automated processing, implying no human involvement in decision-making. However, art. 22 of GDPR provides crucial safeguards for individuals, such as the right to human intervention, the ability to express opinions, and the right to contest decisions. This raises questions about whether the AI Act will exhaust these safeguards, and if it is capable of providing equivalent protection for decisions made by AI systems. This paper aims to analytically address these questions and arguments for a revision of the ordinary interpretation of art. 22 of GDPR, § 1.

Keywords: *AI Act; Algorithmic decisions; GDPR; Human oversight.*

Introduction

Following a procedure that lasted more than three years, on June 13th, 2024, the new European Regulation (EU) 2024/1689 setting down harmonised rules on artificial intelligence, usually referred to as the "AI Act", was finally approved and formally signed. This was a long-awaited and extremely complex piece of regulation, not only because of the subject matter but also because it stood at the centre of an already existing (and still not completed) regulatory universe about data governance and AI that informs the European Union digital strategy as outlined in 2020 in a formal communication by the European Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions[1].

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[1]See European Commission (2020).

Although already in force, the complete application of the AI Act was delayed till August 2nd, 2026, letting the stakeholders prepare themselves for a full compliance. In the meantime, some parts of the Act would receive a progressive application, creating all the specific governance institutions and technical tools provided for in the Regulation.

The high complexity of the AI Act was aggravated by the modifications it underwent during the procedure of approval: From April 2021, the time of the first proposal by the Commission, much transpired in AI technology making the Regulation at risk of being severely obsolete from the start[2].

Since the AI Act explicitly acknowledges many other regulatory European acts, and given the fact that AI could in principle be implemented in many specific fields with their own regulations, the legal community will be engaged in quite a lot of difficult work to make unitary sense of such normative universe.

In fact, along with the numerous interpretative issues of such a complex regulation *per se*, the most serious application problems will be determined by the intersection of these many regulations in the new socio-economic dynamics that technology is expected to determine.

Of course, one of the most important Regulations the AI Act is destined to interact with is the General Data Protection Regulation (Reg. UE 2018/679, hereinafter also as "GDPR"), and, as a matter of fact, the AI Act explicitly states that it must be applied "without any prejudice" to its application[3].

Therefore, the AI Act is supposed to complement the GDPR when the AI system is used to process "personal data" (which obviously is not always the case) in building a general legal framework. Consequently, they are meant to be consistent with each other in order to prevent regulatory shortcomings.

One of the major points in the AI Act is the mandatory prescription to design and develop high-risk (HR) AI systems in a way to ensure human oversight during the period of use[4]. This provision aims to realise the continually recommended "human-in-command" approach, and it is a crucial requirement in order to guarantee AI systems not only legal but also ethical compliance[5].

An AI system is defined as a "machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after

[2]The major innovation has been of course the advent of generative AI which at the moment seems to be the most powerful driving force in AI economic implementation, but that was completely uncovered by the original AI Act Proposal. The final formulation includes a Chapter V entitled "General purpose AI models" which are those that display significant generality and are capable of competently performing a wide range of distinct tasks regardless of the way the models are placed on the market and that can be integrated into a variety of downstream systems or applications (AI Act, art. 3 n. 63). Chapter V provides specific obligations for providers of such models (with a significant distinction between models presenting "systemic risk" and others), that need to be coordinated with those already introduced for providers of HR AI systems in case the model is implemented in that kind of systems.

[3]AI Act, art. 2 § 7.

[4]art.14.

[5]See the 2019 document entitled *Ethics Guidelines for a Trustworthy AI*, approved by the High-Level Expert Group on Artificial Intelligence, set up by the European Commission, at 14 – ss.

deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or ***decisions*** that can influence physical or virtual environments"[6].

This paper concerns AI systems producing decisions and how the AI Act art. 14 requiring mandatory human oversight measures impacts onto the consolidated interpretation of art. 22 of GDPR about decisions based solely on automatic data processing. I will assume a referent scenario in which both regulations are theoretically applicable, that is in the case of an AI HR system which processes personal data and takes decisions that produce legal effect on a subject or affect him/her significantly (more on this later). The rest of this paper is structured as follows: first it will briefly recall the legal European discipline about automatic decision-making as stated in the GDPR (§ 2); then it will discuss the Human Oversight Principle (HOP) as provided by the AI Act showing that the interaction with the GDPR, as usually interpreted on point, is likely to determine a diminished protection of the data subject, (§§ 3-4); and finally, on the basis of the previous discussion, it will argue for a different and more precise interpretation of art. 22 of GDPR in order for people interacting with AI-based decision-making tools to take advantage of a full protection, thus better realizing the main goal of building an anthropocentric technological development (§§ 5-6)[7].

Automatic Decision making in art. 22 of GDPR

In the last few years, the General Data Protection Regulation has been one of the most studied and discussed pieces of regulation in the European legal field: not only has it impacted almost in every economic and social sector but, as technology has improved more and more, the interpretative challenges have increased accordingly.

As far as fully automatic decision-making (ADM) is concerned, the GDPR offers the main discipline in art. 22, which has been discussed thoroughly in the academic literature. For the sake of the discussion proposed here, it is useful to recall at least the main points of that framework[8].

Art. 22, § 1 of the GDPR, states that The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her. Although framed as a right of the data subject, scholars agree that – in accordance with the *privacy by design* principle - the

[6]AI Act, art. 3, italics bold added.

[7]The goal of developing a safe, trustworthy, human centric technological innovation is always explicitly stated in the EU official documents, see, for instance, HLEG (2019), European Commission (2020), AI Act, *Recital 1*.

[8]For a full discussion, see Sarra (2020b); Larus, Hankin, Carson, Christen, Craga, Grau, Kirchnet, Knowles, McGetttick, Tamburri, & Werthner (2018); Brkan (2019); Mendoza & Bygrave (2017); Veale & Edwards (2018); Bygrave (2021); Bygrave (2019); De Hert & Papakonstantinou (2016).

provision should be read as stating a prohibition directed primarily to the data controller. [9]

This restrictive approach does not exclude significant exceptions in which cases ADM can be legitimate, but some extra safeguard measures should be adopted to protect the data subject's rights.[10]

It is worth noting that fully automatic decision-making is not prohibited *per se* but only since it implies a modification of the legal situation concerning the recipient or "similarly significantly" affects him or her.

Let us call this level of application "the threshold": automatic decision-making is prohibited only when it goes above the threshold.

So, as far as the GDPR approach to ADM is concerned, the framework is pretty clear, at least theoretically: in principle, they are prohibited as long as they are a) fully automated; b) produce legal effects or; b1) affect the data subject (the threshold) similarly and significantly.

Interpretative issues are related to each and every one of the points highlighted. Let us briefly discuss them:

a) Fully automated

It is generally acknowledged that for a decision to be not solely based on automatic data treatment, the human intervention should be relevant. In other words, the human being who intervenes should have the competence and the authority to change the decision when this is the case. It is worth noting that this point is not explicitly stated in Article 22, but is the result of the interpretation given to the text since the first discussions about the new GDPR[11].

Sometimes Article 22 has been criticised mainly because it endorses quite a limited vision of the role of humans in complex decision-making systems. In fact, in order to exclude the complete automation of the procedure, this interpretation asks for a human presence in the final stage of the processing, before the decision is actually implemented, with the authority to confirm or change the output reached by the machine. As a consequence, a substantial human intervention in previous stages appears to be irrelevant, which is debatable[12].

Moreover, it was noticed that in those cases in which intelligent systems *outperformed* human abilities[13], the human being involved would more likely be inclined to confirm the decision taken by the machine, either because the

[9]This principle states that "the controller shall, both at the time of the determination of the means for processing and at the time of the processing itself, implement appropriate technical and organisational measures, such as pseudonymisation, which are designed to implement data-protection principles" (GDPR, Art 25), see Preece (2018); Wagner (2020).
[10]Art. 22, § 2- 3, GDPR.
[11]ART29WP (2018), at 21.
[12]It is true, however, that in complex systems it may not be clear when an automation actually can be considered started: if you go back enough in a process, chances are that a human acting somewhat emerges here and there. So, making relevant *any* form of human intervention in *any* phase of a complex procedure ending in a decision above "the threshold" could delude the purpose of the prohibition in art. 22 GDPR.
[13]Veale & Edwards (2018) at 400.

judgement may be affected by the so called *automation bias*[14], or simply because it could be extremely difficult for her/him to justify the specific reasons why the decision taken by so an accurate tool needs, in a certain, specific case, to be changed[15].

b) and b1) *The Threshold*

For the prohibition set forth in art. 22 GDPR to apply, the decision taken by the machine must have a significant impact on the data subject in a way that either produces a formally representable modification of his legal condition (b) or significantly affects the recipient condition, even though there is no legally binding obligation on the subject who decides (b1). Examples of this last situation are online recruiting and automatic refusal of credit application as indicated in *Recital 71*. Of course, these examples are far from offering a clear interpretation of this part of Article 22, § 1 for a secure application without controversy. In fact, if the principle is the prohibition of automatic decisions which "significantly affects" the recipient, there can be cases similar to the ones indicated as examples that could not necessarily be above this threshold. For example, a credit application for buying unnecessary costly gadgets just for entertainment. This paves the way for a case-by-case consideration.

As anticipated, the general prohibition has three exceptions indicated in §2: one being the case of a Regulation by the EU or a member state (lett. b); the other two are situations which are in the hands of the parties, the data subject and the data controller (lett. a, c), namely, the decision is necessary for entering, or performance of, a contract between the data subject and a data controller (a); the decision is authorised with the data subject's consent (c).

As we can see, the exceptions are not all on the same level, and that is the reason why I presented them, separating the cases in which the automation is authorised by a legal act (by the EU or Member State) from the others, emphasizing the fact that the latter ones are under the parties' control. In other words, and this is noteworthy, the GDPR allows the parties to decide by themselves to use ADM tools – even above the threshold - in their relationship.

This is an important acknowledgment of their autonomy, although the complexity of our contemporary society demands a high level of awareness and accountability in taking those kinds of decisions.

c) *The Extra Safeguard Measures*

For all the exceptional cases, some "safeguard measures" to protect the rights and the legitimate interests of the data subject must be implemented.

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[14]The *automation bias* is the systematic tendency to over-rely upon the output of a system, ignoring or underestimating one's experienced assessments. See Tsamados, Aggarwal & Cowls (2021) at 4; Goddard, Roudsari & Wyatt (2012); Mosier & Skitka (1999); Skitka, Mosier & Burdick (2000).

[15]Sarra (2020a).

Notably, in cases a) and c) - those left to the parties' autonomy - this is a specific obligation of the data controller. Whereas, in the case of a statutory authorization, this requirement must be fulfilled by the regulatory act authorizing the automatic decision[16].

Furthermore, the measures provided for should aim to protect the "rights, freedoms and legitimate interests" of the data subject[17].

As we can see, this is quite a demanding requirement, whose object is also very wide spanning from "rights" to "freedoms", to "legitimate interests". The *ratio legis* seems to lay in the aim to charge the data controller (or the EU/member State Legislator) with the responsibility to take full care of the data subject who is supposed to be the part more exposed to the potential damaging consequences of ADM. On this point we will see a different approach in the AI Act, which will be a reason for concern.

The minimum safeguard measures the data controller should implement are indicated in art. 22, §3, GDPR, and they take the form of some extra rights: to request a human intervention; to express one's opinion; and to contest the decision.

The list of rights is quite longer in *Recital 71*, which offers a first hermeneutical aid to read art. 22. In fact, it includes also the right to "specific information to the interested party", and to obtain "an explanation of the decision". Both are supposed to give the data subject a deeper and more specific understanding of what happened than the *ex-ante* information s/he had received in compliance with the information duties provided for in art. 13 and 14.

The fact that the actual formulation of art. 22, GDPR gives a shorter list of minimal safeguard measures raised a doctrinal dispute about the existence in the GDPR of a *right to* (full) *explanation* of algorithmic decisions[18], as well as on the way in which those extra rights are supposed to work together.[19] This, however is not the issue at hand.

Instead, it is more interesting to reflect upon the comprehensive view endorsed by the GDPR about human intervention.

Therefore, in the framework of art. 22 GDPR, the human participation to a decision taken by a machine is relevant in at least two ways.

If a qualified human intervenes before the decision is taken or implemented, that is *not* a fully automated decision, and it falls outside art. 22. To reiterate: this is *not* stated in the GDPR, it is the way in which art. 22, §1 has been interpreted so

[16]It is worth noting that there is a significant difference between art. 22 and *Recital 71*. The former requires the UE or member State to provide for adequate safeguard measures without prescribing anything more on point, thus letting the legislator decide the quality and quantity of those protective measure. On the other hand, *Recital 71* gathers all the exceptions together stating that "in any case" some minimal safeguards should be provided for, namely the right to "specific information to the data subject and the right to obtain human intervention, to express his or her point of view, to obtain an explanation of the decision reached after such assessment and to challenge the decision". Given the acknowledged hierarchical primacy of EU law on member States, following one or the other formulation can have internal constitutional consequences.

[17]Roig (2018).

[18]Wachter, Mittelstadt & Floridi (2017); ART29WP (2018) at 25; Goodman & Flaxman (2017); Brkan (2019); Sarra (2020a); Malgieri & Comandé (2017); Edwards & Veale (2017).

[19]See for a full discussion at Sarra (2020b)

far. The main concern that led to this was the fear of an easy circumvention of the prohibition, by simply putting an employee to merely read the output of the machine without being entitled to any modification. But this interpretation has a shortcoming: it relies on the mere *presence* of a qualified human to exclude the full automation and not on a specific activity or participation in the decision-making process. In other words, the decision can *actually* be totally taken by the machine and still not be qualified as fully automated *just* because a qualified human was somewhat there even though s/he acted as a rubber-stamper[20].

On the other hand, a qualified human may intervene after the decision is taken and implemented if invoked by the data subject. In this case, the human intervention is supposed to be a *safeguard measure*. Thus, even though there are no mandatory prescriptions about what the intervening human is supposed to do, s/he should take care of the rights, freedoms and legitimate interests of the data subject.

As such, this is just one of the minimal rights to be acknowledged to the data subject and it shares its defensive potential with others, in particular with the right to contest the decision. The importance of such a right has been highlighted in the recent literature so that some authors have argued for the existence of a *contestability by design* principle in the GDPR[21].

Now, let us turn to the Human Oversight Principle in the AI Act.

The Human Oversight Principle (HOP)

The HOP is regulated in art. 14 of the AI Act, and is included in Chapter III, Section 2, which provides for the requirements for high-risk artificial intelligence systems. This means that it is strictly mandatory only for those kinds of AI systems[22]. However, the *Ethics Guidelines for Trustworthy AI* released by the High-Level Experts Group on Artificial Intelligence set up by the European Commission in 2019, considers the principle of human oversight as one of the seven main general requirements directly derived from the four principles for a trustworthy AI[23]. As such, from an ethical point of view, it should be implemented in all AI systems.

That document defines three main ways to practically shape the HOP: the Human In The Loop model (HITL), Human On The Loop (HOTL) and Human In Command (HIC)[24].

Apparently, the AI Act approach on the subject seems to endorse a fusion of the HOTL and HIC models: HOTL refers to the capability for human intervention

[20]Wagner (2019).
[21]Almada (2019); Mulligan, Kluttz & Kohli (2020); Alfrink, Keller, Kortuem & Doorn, (2023) with a review of the relevant literature.
[22]AI systems are classified as "high-risk" if they meet the requirements stated in art. 6. In general, high-risk systems are supposed to pose a significant risk of harm to the health, safety and fundamental rights of natural persons.
[23]The four principles are: respect for human autonomy, prevention of harm, fairness and explicability. See HLEG (2019) at 12.
[24]HLEG (2019) at 16.

during the design cycle of the system and monitoring the system's operation. HIC refers to the capability to oversee the overall activity of the AI system and the ability to decide when and how to use the system in any particular situation[25].

According to art. 14 of the AI Act, AI HR systems should be designed and developed in such a way to be overseen by natural persons in order to prevent or minimise the risk to health, safety or fundamental rights during use or reasonably foreseeable misuse of the AI system; the implementation should be commensurate to the risks, context, and level of autonomy of the system. By means of appropriate measures identified by the provider of the system, the deployer should assign the human oversight to a competent natural person enabled to monitor, understand the capacities and limitations of the system, to remain aware of the danger of "automation bias", to correctly interpret the output, to *decide not to use the AI System or to override or reverse the output,* to intervene in the operation or stop the system. Finally, in case of remote biometric identification, no action should be taken unless the output is confirmed by two competent natural persons[26].

Therefore, whatever the function of the system, whatever the output, there must always be a human monitoring, whose position and purpose seems to be very similar (and, actually, even wider) to the ones the current interpretation of art. 22 GDPR refers to in order to qualify a human intervention as able to exclude the complete automation of the decision. The line in italics above, in particular, seems to hit the precise point of what it takes for a human to be competent enough to avoid the application of art. 22.

To state the point clearer, in case of a decision taken by an AI HR system based solely on personal data, the requirements set forth by art. 14 AI Act seem to systematically prevent the application of art. 22 GDPR.

Therefore, this leads to the conclusion that high-risk AI systems can never be used to produce fully automated decisions in the sense of Article 22 GDPR itself.

At first glance, this conclusion may sound quite soothing. After all, HR systems are those supposed to endanger the safety, health and fundamental rights most, so the continuous human monitoring is a way to assure the recipients that someone is taking care of them.

However, the disapplication of art. 22 GDPR comes also with the impossibility to resort to the whole protection designed in that article, which includes – on the one hand – some peculiar safeguard measures, and - on the other – a much wider set of sensible aspects of the receiver to be taken into account.

Moreover, as we saw earlier, in art. 22 GDPR the possibility to use fully automated decision-making systems may depend on (the European or the member state Legislator or) the parties themselves, leaving to their autonomy the evaluation of the situation in terms of advantages, effectiveness of the safeguard measures as implemented by the data controller and so on.

When nothing of that sort applies anymore, is the recipient enjoying at least the same level of protection? Is the parties' autonomy still empowered?

[25]*Ibid.*
[26]See art. 14 AI Act.

Comparing the Levels of Protection

Subsequently, when it comes to using ADM systems processing personal data the AI Act endorses the position that high-risk AI systems can take decisions, even so invasive as to be above the threshold, and following the current interpretation of art. 22 GDPR, we should conclude that the HOP is to be considered a sufficient safeguard measure, since all the others prescribed by art. 22 GDPR, at this point are no longer available.

There are at least two points that need to be highlighted here.

First, what the natural person in charge of the human oversight is responsible for, according to art. 14 of the AI Act, is far less than what is supposed to be protected by the safeguard measures that must be set up following art. 22 GDPR.

In fact, in the first case, the human in command is supposed to be present to prevent or minimise risks to safety, health and fundamental rights in general that may be compromised during the use of the system or its foreseeable misuse[27].

Of course, we may easily presume that this provision, although stated in general terms, includes the consideration of those aspects even with reference to a specific recipient of an automated decision when this is the case.

Now, safety, health are fundamental rights, so the formula used in the AI act can be reduced without restricting the cognitive and normative content, to fundamental rights, while these are indeed basic rights.

But this is quite different from what art. 22 GDPR prescribes: there the aim of the measures is to safeguard "the rights, freedoms and legitimate interests" of the data subject[28].

Thus, the formula used in the GDPR is wider in scope and content and more precisely tailored towards the recipient of the decision.

And since one of the safeguard measures that can be invoked by the data subject is a human intervention, we can conclude that, following the discipline of ar. 22 GDPR, the recipient of an automated decision may, theoretically, enjoy a full assessment of its personal condition as determined by the machine with a natural person specifically devoted to this[29].

Instead, the formulation of art. 14 AI Act seems to indulge in a more formal, legalistic approach, where the human is there to assure a kind of general compliance.

But there is more, and this is the second point.

Art. 22 GDPR, assures also a right to express one's opinion which is not that very protecting but also a right to contest the decision which has been taken quite

[27]Art. 14, §2, AI Act.

[28]Art. 22, §§2 and 3, GDPR.

[29]Art. 22 GDPR does not prescribe any specific behaviour to the intervening human, and this is something that raised some concerns about the actual protective capacity of the measure, see Sarra (2020a). However, since it is repeatedly asserted that the goal of all the measures is the safeguard of rights, freedoms and legitimate interests of the data subject, it is to be expected, at least theoretically, that this is the range of concerns that the natural person called upon should handle.

seriously in the recent literature[30]. The main reason for the re-evaluation of the right to contest is exactly the need to enforce the *ratio legis*, that is the protection of "rights, freedoms and legitimate interests" of the data subject. A contestation is more than a mere opinion, it is a defensive act which includes some requirements in order to be effective. One of those is the right to receive specific information about how it happened that the case was decided in a certain way. One cannot effectively contest something one knows nothing about, and this may raise the stake of the obligations of the data controller quite a bit[31].

The reassessment of the right to contest the decision has been seen as the correct interpretative way to resolve the doubts about the existence in the GDPR of a *right to explanation* of the decision, which although acknowledged in *Recital 71*, is not mentioned in art. 22.

Curiously enough, the AI Act provides for a right to explanation (art. 86) but not a right to contest.

The fact is that after the approval of the GDPR, the attention to the value of explicability of automated decisions has increased considerably, with suggestions coming not only from the academia with the discussions cited, but also from national courts and European institutions along their way to building the current normative framework.

A notable example of a court decision endorsing the need for explicability is the Italian maximum administrative authority, in 2019, recognising that, in the context of assessing the legitimacy of administrative action that has made use of complex algorithmic tools, the "knowability of the algorithm must be guaranteed in all aspects: from its authors to the procedure used for its elaboration, to the decision-making mechanism, including the priorities assigned in the evaluation and decision-making procedure and the data selected as relevant. This is in order to be able to verify that the criteria, prerequisites and outcomes of the robotised procedure conform to the prescriptions and purposes established by law or by the administration itself upstream of that procedure, and so that the modalities and rules on the basis of which it was set up are clear - and consequently open to review"[32].

Conversely, the already cited *Ethics Guidelines for Trustworthy AI* endorses the principle of explicability meaning "that processes need to be transparent, the capabilities and purpose of AI systems openly communicated, and decisions – to the extent possible – explainable to those directly and indirectly affected. Without such information, a decision cannot be duly contested"[33]. Please note that both

[30]Besides the literature already cited on point see also Vaccaro, Xiao, Hamilton & Katahalios (2021); Lyons, Velloso & Miller (2021); Alfrink, Kellet, Yurrita Semperena, Bulgin, Kortuem & Doorn (2024).

[31]Pagallo (2018).

[32](Italian) C.d.S., 8472/2019.

[33]HLEG (2019) at 13. The document also acknowledges that "an explanation as to why a model has generated a particular output or decision (and what combination of input factors contributed to that) is not always possible. These cases are referred to as 'black box' algorithms and require special attention. In those circumstances, other explicability measures (e.g. traceability, auditability and transparent communication on system capabilities) may be required, provided that the system as a whole respects fundamental rights. The degree to which explicability is needed is

these documents correctly relate the explicability principle to revision and contestation.

Eventually, the right to explanation was introduced in the AI Act.

So, ironically, none of the safeguard measures explicitly prescribed by art. 22 GDPR are included in the AI Act, while the most dubious one is!

But even in this case, although the wording of art 86 makes clear reference to that of art. 22 GDPR, the protection acknowledged seems to be quite poor if compared to both the formulation of the right to explanation adopted by scholars in their discussion about art. 22, and the explanatory needs included – dynamically – in the right to contest.

First of all, the right to explanation as provided for by art. 86 AI Act does apply to HR systems but not to all of them: AI systems intended to be used as safety components in the management and operation of critical digital infrastructure, road traffic, or in the supply of water, gas, heating or electricity are excluded.

Secondly, although it refers to decisions which produce legal effects or similarly significantly affect a person (the very same threshold we saw in art. 22 GDPR), it is granted in case of threat to health, safety and fundamental rights. In other words, the right to explanation can be invoked as a protection of the same extension of the HOP, which, as we saw, is narrower than the scope of the safeguard measures in art. 22 GDPR.

Moreover, the supposed explanation seems to have a fixed content and be limited to information about the role of AI and the main elements of the decision[34] which is more restricted than required by the principle of explicability as related to the need of contestability.

Lastly, it is residual as § 3 states that such a right is given only if it is not provided for by other EU laws, which, in the case of the GDPR, is a problem because the existence of a right to explanation is discussed.

In conclusion, even considering the right to explanation as formulated in the AI Act, it seems that in case of HR AI systems taking decision by personal data processing, *if* the Human Oversight Principle is able to prevent the application of art. 22 GDPR, the recipient is left with reduced protection.

A Different Interpretation

To briefly recap the main point discussed so far: Following the usual interpretation of art. 22 GDPR, the HO principle as implemented in the AI Act makes art. 22 GDPR inapplicable for AI HR Systems taking decisions above the "threshold" on the base of personal data processing.

highly dependent on the context and the severity of the consequences if that output is erroneous or otherwise inaccurate". Overall considered opacity is the product of a complex code, high-dimensionality of data and changing decision logic, see Burrell (2016); Mittelstadt, Allo, Taddeo, Wachte & Floridi (2016) at 6.

[34]art. 86, § 1.

In this scenario, the recipient would enjoy the benefit of a thorough human monitoring of the system and, in case of a decision threatening his/her health safety and fundamental rights, s/he would be entitled to a right to explanation in the terms mentioned above.

However, both the focus of the HOP and the conditions of application of art 86 AI Act are limited as is the content of the explanation s/he would receive.

On the other hand, s/he could not take advantage of the more articulated and demanding discipline of the safeguard measures provided for in art. 22 GDPR.

This conclusion amounts also to a limitation of the parties' autonomy: as a matter of fact, art. 22, §2, a) and c) GDPR allow them to decide whether to waive the prohibition and take advantage of ADM or not. This decision is taken under the awareness that, in case the data controller has to warrant the safeguard measures particularly including a right to contest, the decision, in all, is needed to make it effective.

It may be noticeable that, as a consequence, the AI Act seems to modify the approach to the use of ADM: while art. 22 GDPR adopts a sort of *participatory model of rights protection* based around the contestability principle. In the scenario just presented, the receiver is left with a kind of paternalistic top-down approach, presuming that the human oversight – as implemented by the right to explanation set forth in art. 86 AI Act - is sufficient to guarantee the protection of the data subjects.

However, for the reasons just seen, this may not be the case.

But, all things considered, this conclusion is not inevitable. After all, it depends on an interpretation which raised no particular controversy at the time the GDPR was approved, and it is still repeated today although the normative landscape as well as the technological development have reached new levels of complexities.

As legal scholars, we need to think anew about how the single elements in this new socio-legal scenario interact with each other and direct our effort to offer a systematic framework in line with the fundamental principles at stake.

Although the GDPR and the AI Act are formally on the same hierarchical level as source of law, the latter states that the Union law on the protection of personal data should be applied in connection with the rights and obligations it lays down. Moreover, it acknowledges a general prominence to the GDPR by stating that its own application shall not affect it (art. 2, § 7). The only exceptions it makes, are not exceptions at all: the first one, art. 10, §5, gives the possibility to process special kinds of personal data for *bias* detection and correction, but it requires the application of all the conditions set forth in art. 9 GDPR and a lot more indicated in art. 10 itself.

As for art. 59 AI Act, the other apparent exception, it admits the further processing of personal data lawfully collected for other purposes in the context of so called "regulatory sandboxes". These are "controlled framework set up by a competent authority which offers providers or prospective providers of AI systems the possibility to develop, train, validate and test, where appropriate in real-world conditions, an innovative AI system, pursuant to a sandbox plan for a limited time under regulatory supervision" (art 3, n. 55). But, again, since the faculty of more

personal data processing is given under severe conditions, the first of which is that the AI system is developed for safeguarding substantial public interest, this can be easily seen as a special case of the legal base provided for in art. 6, § 1, lett. e) GDPR.

Therefore, apparently the AI Act endorses not only a general principle of mutual consistency between itself and the GDPR, but also a prominence of the latter.

As a consequence, in the absence of an explicit derogation, an interpretation that leads to the conclusion of a mutual exclusiveness of the regulations should be taken very cautiously and only when there is no other rational way to give sense to the framework.

Emphatically the current interpretation of art. 22, § 1, GDPR about what makes a decision based "solely on auromated pocessing" is untenable after the approval of the AI Act. In particular, it lacks the precision needed to make it work in accordance with the new Regulation on AI on behalf of the data subject receiving a decision elaborated by a high-risk AI System.

In other words, we need an updated interpretation of art. 22, §1, GDPR in order to reconcile it with the HOP in the AI Act, and to make both Regulations applicable, in the general cases when the decision is substantially determined by the machine.

The new interpretation should explicate the conditions under which the exercise of the human oversight is so focused as to exclude that the decision is "based solely on automatic processing", given that the mere general monitoring of the system and the abstract possession of the competence to do otherwise are not sufficient.

This may be done by interpreting the expression "solely based on automatic processing" in 22, §1, in a way that requires a specific and material involvement of the qualified human in order to avoid the prohibition.

And here is how it may sound:

> *A decision should be considered fully automated whenever it is taken by a machine, despite the presence of a qualified human monitoring the operation unless it is proven that such a qualified human has specifically and materially intervened in the individual decision-making process by significant acts that, if absent, would have led to a different decision.*

Conclusive Remarks

Let us see now the consequences of the proposed interpretation in terms of the complete discipline of ADM in light of both the GDPR and the AI Act.

First of all, in the ordinary course of action the implementation of the HOP would not prevent, by itself, the application also of art. 22 GDPR, assuming the HR AI system is used to process personal data. This would let the data subject enjoy the protection of both the GDPR and the AI Act as well, which is more in line with the principle stated in the AI Act of application without affecting the EU regulations on personal data.

Secondly, in that very same scenario, decisions above the threshold would face the general prohibition set forth in art. 22 GDPR, § 1, unless the data controller can give actual evidence of specific human steps taken in the path that led to the decision. Of course, this makes the burden of proof heavier for the data controller, but it is in line with the accountability principle which is at the core of the GDPR. As a consequence, the relative duties the data controller already has to comply should also include the accurate record of any specific human intervention during the ordinary course of application of the human oversight principle.

Thirdly, since the prohibition can be waived by the parties, this interpretation gives back to them (especially to the data subject) all the autonomy to evaluate and decide if they are to let the automation governing their relationships or not, instead of being forced to over rely on the efficiency of the person in charge of the HOP. This consequence is in line with the ethical principle of respecting human autonomy included in the *Ethical guidelines for trustworthy AI.*

Fourthly, in the ordinary case of a decision above the threshold taken by an HR AI system processing personal data, the HOP would not prevent the data subject from enjoying all the safeguard measures provided for in art. 22, § 3, GDPR.

However, in this case, the specific application of those measures undergoes a slight shift except, perhaps, for the "right to express one's opinion" which remains as defensively insignificant as it has always been. Instead, the "right to a human intervention" would take the form of a right to have the person in charge of the HO – since ex art. 14, AI Act, s/he is in the right position and has the due competence - to take specific care of the individual situation giving specific reasons in case of confirming the decision.

As for the "right to contest the decision", as we saw, it has an intimate link with the "right to explanation". As a matter of fact, this link goes in a double direction. On one side, the only way for such a right to have the sense it is supposed to have, meaning to be a safeguard measure for rights, freedoms and legitimate interests, is to guarantee the data subject access to specific information about how the decision was made. In this sense, the right to explanation is included in the right to contest and cannot be otherwise.

Conversely, since the contestation is a specific claim about why a decision should be changed, it is very focused on the individual case, thus giving a concrete measure to the amount of explanation needed. In other words, the quantity and quality of explanation to be given should not be measured in abstract or with reference to some objective technical standard, but it should vary according to the need to deal with the specific controversy[35].

But here, we are facing a problem:

As we saw the AI Act, while granting a (almost) general right to explanation in case of decision taken by the deployer based on the output of an HR AI system,

[35]See Sarra (2020b). This is the only way to make sense of the different wording between *Recital 71* and art. 22, §3, GDPR, and in the meantime to give proper value to the right to contest which is explicitly stated in both.

it also states that this right is residual: it can be invoked to the extent that it is not otherwise provided for under the EU Law[36].

Now, the GDPR provides that *indirectly:* in other words, as we have shown, the right to explanation is given as a pre-requisite for the right to contest to be effectively actionable. But this is, at the moment, a doctrinal reconstruction and has a drawback: the data subject is allowed an explanation as long as s/he exercises the right to contest. The existence of a right to explanation *per se* remains dubious.

In this situation, and in the scenario considered, that is an HR AI system taking a decision by processing personal data, can the data subject invoke the right to explanation ex art. 86 AI Act, without contesting the decision? In other words, does s/he have a right to explanation *quo talis?*

In answering this question, I would remain cautious between the boundaries of the *litera legis*, since we do not have any court specific decision on the subject as yet.

In my opinion, since art. 86, § 3 AI Act, states that the right there provided for is given "to the extent that" it is not otherwise provided for, and since the GDPR *does not* give such a right *per se*, I would conclude that the question should be answered positively, but the content of the explanation s/he would receive is strictly limited to that envisaged in art. 86, § 1.

But, since, because of this limitation, this is not supposed to act as a "safeguard measure" in the wide and deep sense of art. 22 GDPR, the data subject is entitled *also* to a deeper level of explanation in case s/he decides to contest the decision. In this case, the content of the explanation required is not fixed *a priori* but it would depend on the specific claims advanced.

To conclude this paper, it is worth reminding that a human-centric AI is a challenge at the moment. The complexities of the many regulations do not let us rely on some pre-ordered formula, but we need to be prepared for the many judicial controversies that we are about to see as soon as the AI Act will be fully applicable.

This paper is nothing but a drop in the ocean. It may be useful to alert about the interpretative work to be done. Perhaps, it may appear as a low-profile old school dogmatic work, and not the "epochal" warning about a coming revolution or the big announcement of the "age of the machines".

But when the wave comes, perhaps it will be better to rely more on solid levees built by low-profile craftsmen that on self-proclaimed prophets of a new era.

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