

**NEW CHALLENGES OF THE URBAN MOBILITY IN THE AREA
OF DIGITALIZATION: FROM SHARING MOBILITY TO
“VEHICLE TO GRID”**

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INDEX

- 1. FOREWORD**
- 2. TOWARDS AN INTERCONNECTED AND SMART URBAN MOBILITY: RISKS AND OPPORTUNITIES OF THE CURRENT DIGITAL TRANSITION**
- 3. SHARING AND ELECTRIC URBAN MOBILITY SERVICES IN RECENT ADMINISTRATIVE CASE LAW**
- 4. RECENT REGULATORY MEASURES ON SMART GRIDS AND RECHARGING OF ELECTRIC VEHICLES: THE “VEHICLE TO GRID” PROJECT**
- 5. CONCLUDING REMARKS**

1. FOREWORD

In recent years the urban dimension has acquired, and will increasingly acquire, a crucial importance in overcoming the modern challenges launched by the ecological and

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digital transition, due to the consistent depopulation of the planet's rural areas². This process arises significant issues at the center of the legal debate, such as those relating to the synergic interaction between the activities of public authorities and the initiatives of private actors in a more articulated and complex context.

Within this evolving scenario urban mobility represents one of the most important sectors for responding to pressing needs for digitalization and sustainable growth of the cities, also in the view of achieving the targets established in this regard in the Italian “National Recovery and Resilience Plan” (hereafter, NRRP)³.

Moving from this perspective, the work analyzes the most recent developments of the aforementioned sector, firstly highlighting the relevant normative and jurisprudential

² According to the 2019 United Nations World Urbanization Prospects (available in www.population.un.org), more than 70% of European citizens today live in urban areas and by 2050 the percentage will grow to reach 80% of citizens. On the main challenges linked to the profound changes taking place within the urban context, see S. SASSEN, *Cities in a world economy*, Thousand Oaks, Sage, 2018. On the role of cities in achieving a more sustainable development of national territories, see J.B. AUBY, *Le Droit de Ville. Du fonctionnement juridique des villes au droit à la Ville*, Paris, LexisNexis, 2013; R. CAVALLO PERIN, *Beyond the municipality: the city, its rights and its rites*, in *Italian Journal of Public Law*, 2013, 307 ff.; F. DI LASCIO-F. GIGLIONI (eds.), *La rigenerazione dei beni e spazi urbani. Contributo al diritto delle città*, Bologna, Il Mulino, 2017; C. IAIONE, *The right to the co-city*, in *Italian Journal of Public Law*, 1, 2017, 80 ff.; P. CHIRULLI-C. IAIONE (eds.), *La co-città. Diritto urbano e politiche pubbliche per i beni comuni e la rigenerazione urbana*, Naples, Jovene, 2018; F. GIGLIONI, *Le città come ordinamento giuridico*, in *Ist. fed.*, 1, 2018, 29 ff.

³ This Plan is the investment and reform package, available in www.governo.it, presented by Italy to the EU Commission on 30 April 2021, and approved by the EU Commission on 22 June 2021, to relaunch the national economy, strongly affected by the effects of the pandemic from Covid-19, and to promote a more green and digital development, in line with the priorities of intervention indicated in the European Union's Next Generation EU funding programme. About the definition of urban mobility as «the ease with which people can move between destinations in urban areas with the help of the transport network and services available», see the report of the EU Court of Auditors of 3 March 2020, *Sustainable Urban Mobility in the EU: without the commitment of the Member States, no substantial improvements can be made*, 6, available in www.eca.europa.eu.

indications formulated in the Italian legal system on the field of interconnected and sharing mobility. Starting from these observations, the survey will examine, secondly, the interesting “vehicle to grid” initiative, as an operational project that responds to the objective of promoting greater electrification of urban mobility exploiting the opportunities offered by digital technologies.

Finally, some critical considerations will be made about the role of local authorities in guiding the transformation of the mobility sector not only in line with the modern transition targets, but also in a more balanced and more inclusive way.

2. TOWARDS AN INTERCONNECTED AND SMART URBAN MOBILITY: RISKS AND OPPORTUNITIES OF THE CURRENT DIGITAL TRANSITION

Mobility is certainly one of the areas most involved in the digital transition that is gradually changing the way public services are organized within the cities, bringing several positive effects in terms of efficiency and quality of the public offer⁴.

⁴ As remarked in EU Commission, *Europe 2020. A strategy for smart, sustainable and inclusive growth*, COM (2010) 2020, 3 March 2020, to modernise and to decarbonise the transport sector is one of the seven flagship initiatives for the growth of the Union, to be achieved through «a mix of measures, e.g. infrastructure measures such as early deployment of grid infrastructures of electrical mobility, intelligent traffic management, better logistics, pursuing the reduction of CO2 emissions for road vehicles, for the aviation and maritime sectors including the launch of a major European “green” car initiative which will help to promote new technologies including electric and hybrid cars through a mix of research, setting of common standards and developing the necessary infrastructure support». With regard to the recent digital transformation of urban dimension, see, among others, G. SGUEO, *Is gamification making cities smarter?*, in *Ius Publicum Network Review*, 1, 2018; L. FOLLIOU-LALLIOT, P. MCKEEN, *Procurement and smart cities: exploring examples on both sides of the Atlantic*, in *Ius Publicum Network Review*, 2, 2018; R. CAVALLO PERIN, *L’ordinamento giuridico delle città*, in *Munus*, 2, 2019, 365 ff.; R. CAVALLO PERIN-G.M. RACCA, *Smart Cities for an Intelligent Way of Meeting Social Need*, in J.B. Auby (ed.), *Le futur du droit administratif. The future of administrative law*, Paris, LexisNexis, 2019, 431 ff.; M. DEMICHELIS, *Innovazioni nell’uso degli spazi pubblici post-pandemia: il caso italiano nel contesto europeo*, in *DPCE online*, 2, 2020, 2463 ff.; D. BEVILACQUA,

One emblematic example of this is represented by the possibility for citizens to know, in real time, by accessing a special telematic platform, the availability, the departure time and the route of the means of local transport; this innovation has greatly amplified the circulation options of the users, who are currently able to choose with greater awareness the itinerary most suited to their needs. Another significant example of the concrete benefits deriving from a more digitalized mobility context is the possibility for local authorities to collect and to examine data relating to the daily use of public services, from which it is possible to draw extremely useful information to identify habitual movements of citizens and, as a result, to intervene through an overall remodulation of the transport offer.

Indeed, new opportunities for improving the quality of everyday life may arise from the exploitation of the most advanced digital technologies, such as those related to artificial intelligence (hereafter, AI).

A clear example is the use of AI systems that allow the smart synchronization of traffic lights. This tool seems to be relevant not only to reduce urban traffic, perceived mostly in large cities, but also to limit air pollution deriving from the long queues of vehicles⁵.

Moreover, the most recent applications of AI systems in public transport make it possible to discuss the introduction of automated vehicles, with their different levels of autonomy. In fact, despite the existing prejudice regarding the phenomenon⁶, the use of

From sustainable development to Green New Deal, in Ius Publicum Network Review, 1, 2021; V. VAIRA, Innovation and local governance: the government-as-a-platform approach, in Ius Publicum Network Review, 2, 2021.

⁵ See C. COGLIANESE-D. LEHR, *Regulating by robot. Administrative decision making in the machine learning era*, in *The Georgetown Law Journal*, 105, 2017, 1161, who note that: «*the City of Los Angeles has installed sensors in all of its streets that continuously feed data into a machine-learning system that automatically determines when traffic signals should turn red or green to optimize traffic flow*».

⁶ In this field, in fact, the principal prejudice concerns the possibility of creating a scenario in which the role of the human controller is reduced to a minimum.

vehicles without drivers can help to guarantee the continuity and the speed of transport services in the cities, to ensure the mobility for people who are not able to drive and, at least in the future, to reduce risks of road accidents⁷.

However, while those just mentioned represent only some significant applications of modern technologies, the recent spread of a new paradigm of local mobility should be remarked.

From this perspective, the positive effects arising from the smart mobility initiatives should be mentioned, which can really promote the development of the city context not only through the combined use of digital tools and data, but also through the effective participation of citizens in the exercise of public functions⁸.

⁷ EU Commission, *Towards Automated Mobility: an EU Strategy for Mobility of the Future*, COM (2018) 283 final, 17 May 2018, in www.eur-lex.europa.eu. In this regard, see F. GASPARI, *Smart city. Agenda urbana multilivello e nuova cittadinanza amministrativa*, Naples, Editoriale Scientifica, 2018, 96, who highlights that the development of intelligent transport systems would contribute to progressively improving road safety; A. SQUAZZONI, *Soluzioni innovative nella mobilità: nuove sfide per il diritto dei pubblici poteri*, in *Smart mobility, smart cars e intelligenza artificiale: responsabilità e prospettive*, (D. CERINI-A. PISANI TEDESCO eds.), Turin, Giappichelli, 2019, 63 ff.

⁸ As it is known, the concept of “smartness”, from which it is possible to derive the expressions “smart city” and “smart mobility”, includes all (and only) those initiatives aimed at improving the quality of life through the combined use, on the one hand, of modern technologies and, on the other, of the active participation of the community. Consequently, as it was noted, the concept of “smartness” is not comparable to that of “digitalization”; in fact, in addition to the use of digital tools, there must be cooperation between public authorities and private entities or individuals to meet the social and economic needs of the community. For a reconstruction of the concepts of smartness and of smart city, see R.G. HOLLANDS, *Will the real smart city please stand up?*, in *City*, 3, 2008, 303; E. GLAESER, *Triumph of the City: how our greatest invention makes us richer, smarter, greener, healthier and happier*, London, Penguin Books, 2011; M. DEAKIN (ed.), *Creation of smarter cities*, London-New York, Routledge, 2013; C. GARGIULO-V. PINTO-F. ZUCARO, *EU Smart city governance*, in *Journal of land use, mobility and environment*, 6, 2013, 356; C. RATTI, *Smart city, smart citizen*, Milan, Egea, 2013; K.R. KUNZMANN, *Smart cities: a new paradigm of urban development*, in *CRIOS*, 1, 2014, 9; E. CARLONI-M. VAQUERO, *Le città intelligenti e l'Europa. Tendenze di fondo e nuove strategie di sviluppo urbano*, in *Ist. fed.*, 4, 2014; G. OLIVIERI-V. FALCE, *Smart cities e diritto dell'innovazione*, Milan, Giuffrè, 2016; G. ANTONELLI-G. CAPPIELLO, *Smart Development in Smart*

The advantages of such an approach have been highlighted in several acts of European level, which state the need to encourage a greater combination of the different public and private transport options in the urban scenario. On these occasions, the European institutions stressed that the progressive changes in users' habits require the adoption of a more flexible, collaborative and smart mobility approach, which should be able to exploit also the private sector activities⁹.

In particular, the satisfaction of new social needs should involve the interaction between the various transport services available in urban areas, with the aim of achieving a single, coordinated and accessible on-demand system, according to the logic of the “cover of the last mile” typical of the operating model known with the expression “Mobility as a Service”¹⁰.

Communities, London, Routledge, 2017; G.F. FERRARI (ed.), *La prossima città*, Milan, Mimesis, 2017; A. VANOLO, *Politica e cittadinanza nella smart city. Alcune riflessioni sugli immaginari della città intelligente*, in *Riv. geogr. it.*, 1, 2017, 1 ff.; F. GASPARI, *Smart city. Agenda urbana multilivello e nuova cittadinanza amministrativa*, cit., 49 ff.; J.B. AUBY, *Il diritto amministrativo di fronte alle sfide digitali*, in *Ist. fed.*, 3, 2019, 626 ff., who stresses that in smart cities private services increasingly integrate existing public services and citizens can potentially become more informed and active.

⁹ On this subject, see EU Commission, *European strategy for low emission mobility*, COM (2016) 501 final, 20 July 2016, par. 2.1; EU Commission, *Europe on the move. An agenda for a socially equitable transition to clean, competitive and interconnected mobility for all*, COM (2017) 283 final, 31 May 2017, par. 3.1; EU Committee of the Regions, *Smart Cities: new challenges for a fair transition to climate neutrality. How to implement SDGs in practice?*, 2020/C 39/17, 9 October 2019, par. 39-41; EU Commission, *Strategy for Sustainable and Intelligent Mobility: Putting European Transport on a Good Track for the Future*, COM (2020) 789 final, 9 December 2020, par. 35 ff., all available in www.eur-lex.europa.eu. For a careful reconstruction of the most important European initiatives in the field of urban mobility, see. F. GASPARI, *La regolazione della mobilità sostenibile e I limiti del Green Deal dell'Unione europea*, in *Munus*, 1, 2020, 67 ff.

¹⁰ The concept is first expressed in the EU Commission Working Group, *The implementation of the 2011 White Paper on Transport “Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system” five years after its publication: successes and challenges*, SWD (2016) 226 final, 1st July 2016,

As a result, by fostering the spread of this model, it would be possible to contribute either to the overall improvement of the mobility sector at local level, due to the multiplication of opportunities for passengers to travel, or to the achievement of the well-known sustainable development goals set out at international level, by discouraging the use of private cars and encouraging, at the same time, the introduction of innovative solutions. In other words, for facing the emergence of a heterogeneous and dynamic demand, the reaction of economic and institutional actors should entail the organization of a truly flexible and continuous transport supply¹¹.

From these considerations it seems possible to note that the smart mobility paradigm includes and supports the spread of those innovative forms of transport conventionally placed in the broad and varied category of the so-called “sharing economy”¹².

38, in *www.europarl.europa.eu*, in which the “Mobility as a Service” is defined as: «a mobility distribution model in which a customer’s major transportation needs are met by services integrating transportation infrastructure, transportation services, information and payment services, and others more. This approach is possible thanks to the increased use of ICT in transport, the removal of barriers between different transport modes and their users, as well as the emergence of new collaborative economy solutions». In this regard, see T.F. GIUPPONI, *Le frontiere del trasporto pubblico locale, tra competenze amministrative e situazioni giuridiche soggettive. Verso un “diritto alla mobilità”?*, in E. CASTORINA (ed.), *Servizi pubblici, diritti fondamentali, costituzionalismo europeo*, Naples, Editoriale Scientifica, 2016, 893 ff.; L. AMMANNATI, *Diritto alla mobilità e trasporto sostenibile. Intermodalità e digitalizzazione nel quadro di una politica comune dei trasporti*, in *Federalismi.it*, 4, 2018, 17 ff.; F. GASPARI, *La regolazione della mobilità sostenibile e I limiti del Green Deal dell’Unione europea*, cit., 88 ff.

¹¹ The need to invest in experimental projects aimed at improving the efficiency of urban transport systems, according to the outlined model of “Mobility as a Service”, is now emphasized by the Italian NRRP (see Mission 1, Component 1.1, Funding 1.4).

¹² On the phenomenon of collaborative economy, see J. RIFKIN, *L’era dell’accesso. La rivoluzione della new economy*, Milan, Mondadori, 2000; D. MCLAREN-J. AGYEMAN, *Sharing Cities. A Case for Truly Smart and Sustainable Cities*, Cambridge (MA), MIT Press, 2015; C. IAIONE, *Le politiche pubbliche al tempo della sharing economy. Nell’età della condivisione il paradigma del cambiamento è la collaborazione*, in *Le politiche della condivisione. La sharing economy incontra il pubblico* (E. POLIZZI-M. BASSOLI eds.), Milan, Giuffrè, 2016, 65 ff.,

As it is known, the introduction of new mobility services connected to the collaborative economy raised peculiar critical issues in the Italian legal system. Some of these services, such as car sharing, carpooling, bike and scooter sharing, rapidly spread, within their significant benefits in terms of reducing urban traffic and air polluting; others, such as those offered by companies which provide ride sharing services, are still struggling to establish themselves, because of the very important authorization problems raised by traditional working categories¹³.

For what much interest in this work, it is possible to note that all the various applications of sharing economy in the mobility sector are based on the idea of sharing and of temporary use of resources and capabilities. For this reason, as suggested by the mentioned acts of European level, all the sharing mobility solutions should find a suitable space within the flexible and integrated scenario of modern cities¹⁴.

who proposes to distinguish between those forms of sharing economy linked to individual access to goods or services on demand from those forms of sharing economy linked to the topic of urban commons; Id., *Sharing economy e diritto dell'innovazione. Il caso della mobilità urbana*, in *Munus*, 1, 2019, 187 ff.

¹³ The most striking example is the well known case of the non-scheduled transport services offered by the American company Uber, whose business activity were expressly traced within the transport sector by European Court of Justice - ECJ, 20 December 2017, Case C-434/15, *Asociación Profesional Elite Taxi v. Uber System Spain SL*, in www.curia.europa.eu. On this point see, *ex multis*, E.C. RAFFIOTTA, *Trasporti pubblici locali non di linea e nuove tecnologie: il caso Uber nel diritto comparato*, in *Munus*, 1, 2016, 75 ff.; G. PIZZANELLI, *Innovazione tecnologica e regolazione incompiuta: il caso dei servizi di trasporto non di linea*, in *Munus*, 1, 2016, 97 ff.; M. MIDIRI, *Nuove tecnologie e regolazione: il «caso Uber»*, in *Riv. trim. dir. pubbl.*, 3, 2018, 1017 ff.; D. TEGA, *La Corte di giustizia qualifica i servizi offerti da Uber*, in *Federalismi.it*, 3, 2018; A. PALLADINO, *I servizi di trasporto pubblico non di linea all'esame dei nuovi paradigmi della mobilità urbana e della sharing economy*, in *Munus*, 2, 2018, 651 ff.; C. IAIONE, *Sharing economy e diritto dell'innovazione. Il caso della mobilità urbana*, in *Munus*, 1, 2019, 206 ff.

¹⁴ On this point, see T. BONETTI, *Il trasporto pubblico locale nel prisma della mobilità sostenibile*, in *Dir. amm.*, 3, 2020, 584-585, who states that an important contribution for the redefinition of the traditional local transport services in a more integrated and sharing way can be given by the adoption of the Sustainable Urban Mobility Plan (SUMP). According to the Guidelines approved in 2014 by the Directorate General for Mobility and Transport of the EU

However, in addition to the benefits deriving from the transition of the urban transport system in a truly smart sense, the adoption of the new paradigm can lead to face relevant risks, which must be taken into account in order to safeguard other important interests of the community.

First of all, a significant risk is to exclude, from the list of potential users, people who do not have enough ICT knowledge to access the new offer. In fact, if interaction with the telematic platforms offering transport services requires certain abilities in the use of information and communication technologies, people unable to handle digital devices – but in some cases (i.e., bike sharing services and some forms of micro-mobility) the same reasoning could be applied to people with reduced mobility – could be deprived of the benefits of the new system¹⁵. Therefore, for these categories it would be necessary to provide quite simple digital solution and, at the same time, to continue offering traditional services within the local dimension.

A second serious risk is to amplify the economic and social gap between the different cities of the same country, as well as the gap between the various parts of the same city. In fact, as it was noted, the creation of an increasingly digitalized transport system could arise some practical difficulties, both in terms of accessibility to services for lower income social categories and in terms of replicability of the infrastructures, material and intangible,

Commission, updated in 2019, available at www.eltis.org/mobility-plans/sump-guidelines, «a Sustainable Urban Mobility Plan is a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles».

¹⁵ See L. SENN, *La governance delle città intelligenti e il ruolo di cittadini e city users*, in *Smart city. La città si reinventa* (L. SENN ed.), Milan, Ediplan, 2015, 21 ff., who points out that the person who takes advantage of the new mobility opportunities offered by the smart mobility and smart city must, in turn, take on a more active role; this circumstance may determine a shift towards the user of the “intelligent” character commonly referred to the urban context.

especially in the suburbs or in isolated areas. To face these obstacles and to avoid the aforementioned process of depopulation of rural areas, it would be necessary to promote mobility solutions adapted to the characteristics of the territories concerned, in which, as it is tragically known, it is difficult to ensure even a quality Internet connection.

Furthermore, the transition to a more articulated and digitalized local transport system cannot but raise new problems closely related to the eligibility and the control of the innovative services. From this point of view, an unregulated and unsupervised development of smart initiatives could affect other interests that are found within the city context, such as urban order, public safety and reasonable public land use. These are very important aspects of the current legal debate, which will be analyzed in more detail below, looking at some relevant statements of the most recent administrative case law.

3. SHARING AND ELECTRIC URBAN MOBILITY SERVICES IN RECENT ADMINISTRATIVE CASE LAW

To understand the complexity of the evolutionary path that is going through the field of urban mobility, it seems appropriate to briefly examine the interesting issues addressed by the Italian administrative case law with reference to the recent experimentation, on the national territory, of some sharing and electric mobility services¹⁶.

¹⁶The mentioned experimentation found its legal discipline in the Article 1, par. 102, of Law no. 145 of 30 December 2018, through which the circulation of vehicles with electric propulsion was authorized within the Italian cities. In particular, the modalities of its implementation were defined by the Decree of the Italian Ministry of Infrastructure and Transport of 4 June 2019 on “Experimentation of the road circulation of devices for electric micro-mobility” (available in www.mit.gov.it), with the aim to contain the level of air pollution and to improve the air quality of cities.

The leading case is represented by the judgment of the Lombardy Regional Administrative Court of July 2020, which concerned an authorization procedure to operate in the sector of rental of environmentally sustainable urban transports – such as scooters, hoverboards, segways – within the municipality of Milan¹⁷. In this case, after having taking part in a selection notice, a company contested the denial of the municipality to grant the authorization on the basis of two main reasons, which can be summarized as follows.

The first reason of appeal referred to the legal nature of the procedure managed by the local authority, which should be qualified, in the view of the company, as a real public service concession procedure¹⁸. As a result, this fact should have led the City of Milan to organize a formal public competition between all the enterprises interested to provide the transport service.

The second reason of appeal referred to the choice of the local administration to adopt a purely chronological criterion for the granting of authorizations in favor of individual economic operators. According to the company, in fact, this criterion should be considered inadequate to guarantee the respect of a high standard of quality of mobility services towards citizens and therefore it should be declared illegitimate.

¹⁷ See TAR Lombardy, Milan, sec. III, 3 July 2020, no. 1274, in www.giustizia-amministrativa.it, with the comment note of M.F. TROPEA, *Micromobilità elettrica in sharing e pubblico servizi in senso oggettivo nella recente giurisprudenza*, in *Riv. giur. eur.*, 2, 2020, 9 ff.

¹⁸ The same approach was shared, subsequently, from TAR Piedmont, Turin, sec. II, 3 December 2021, no. 1110, in www.giustizia-amministrativa.it, according to which the selection procedures aimed at identifying economic operators interested in carrying out experimental mobility services in free floating mode and using bicycles and innovative means of electric propulsion in the municipality of Verbania must be qualified as “public service concession” and, as a result, they must respect the rules laid down in Legislative Decree no. 50 of 18 April 2016 (Italian Public Procurement Code). On the concept of “public service concession”, see, at least, R. CAVALLO PERIN, *La struttura della concessione di servizio pubblico locale*, Turin, Giappichelli, 1998.

On this occasion administrative judges expressed some interesting observations on the new scenario the introduction of sustainable and technologically advanced forms of mobility is helping to shape in the cities.

In the first place, the Lombardy Regional Administrative Court excluded that the mentioned transport service can be qualified as a public service¹⁹.

Adhering to a consolidated doctrinal approach, the administrative judges remarked that the qualification in terms of public service of a given economic activity requires a specific choice by the competent administrative authority to provide for the satisfaction of a social need to which the market is not able to respond adequately. On the contrary, through the publication of the selection notice, the municipality of Milan did not express the political intent to meet the mobility demands of its citizens, but it only introduced certain restrictions to the normal development of free competition in the market, which are justified by the need to protect other important public interests at stake in the urban context²⁰. As the Regional

¹⁹ On the concept of public service see, among others, A. DE VALLES, *I servizi pubblici*, in *Primo trattato completo di diritto amministrativo* (V.E. Orlando ed.), VI, Milan, Società editrice libraria, 1924; G. MIELE, *Pubblica funzione e servizio pubblico*, in *Arch. giur.*, 1933, 172 ff.; U. POTOTSCHNIG, *I pubblici servizi*, Padua, Cedam, 1964; F. MERUSI, *Servizio pubblico*, in *Noviss. dig. it.*, XVII, 1970, 215 ff.; S. CATTANEO, *Servizi pubblici*, in *Enc. dir.*, XLII, Milan, 1990; P. CIRIELLO, *Servizi pubblici*, in *Enc. giur.*, XXVIII, Rome, 1992; R. CAVALLO PERIN, *Comuni e provincia nella gestione dei servizi pubblici*, Naples, Jovene, 1993; G. PERICU-A. ROMANO-V. SPAGNUOLO VIGORITA (eds.) *La concessione di pubblico servizio*, Milan, Giuffrè, 1995; L.R. PERFETTI, *Contributo ad una teoria dei pubblici servizi*, Padua, Cedam, 2001; R. VILLATA, *Pubblica amministrazione e servizi pubblici*, in *Dir. amm.*, 3, 2003, 493 ff.; G. PIPERATA, *Tipicità e autonomia nei servizi pubblici locali*, Milan, Giuffrè, 2005; F. LIGUORI, *I servizi pubblici locali*, Turin, Giappichelli, 2007; V. ITALIA (ed.), *I servizi pubblici locali*, Milan, Giuffrè, 2010; P. COSSALTER, *The emergence of the principle of neutrality and the guarantee of the free organisation of local public services*, in *Ius Publicum Network Review*, 2, 2021.

²⁰ The same reasoning is later developed by TAR Lombardy, Milan, sec. III, 10 June 2021, no. 1416, in www.giustizia-amministrativa.it. On this occasion, the administrative judges stated, firstly, that the rental activity must be classified as a normal business activity subject to free competition; secondly, they clarified that public restrictions on market entry must be considered exceptional and justifiable only if addressed to the protection of an overriding reason relating to the public interest, as provided for in the Article 9 of Directive 2006/123/EC of the

Administrative Court has asserted, the need to regulate the rental transport activities is arisen because of the increase in the number of subjects delivering the service in free floating mode²¹. Hence the intention of the local authority to prevent the rental activities from being conducted in a dangerous and disorderly manner, in order to avoid any negative effects on the road traffic system, urban order and public land use²².

Secondly, the administrative judges addressed the issue of the lawfulness of the assessment criteria established by the local administration for the purpose of granting the economic authorizations.

European Parliament and of the Council of 12 December 2006 on services in the internal market. In this regard, see also Italian State Council, sec. V, 15 March 2022, no. 1811, in www.giustizia-amministrativa.it, stressing the need to ensure the conduct of a comparative public procedure among all the economic operators interested in offering the rental services; TAR Lazio, Rome, sec. II, 24 March 2022, no. 3370, in www.giustizia-amministrativa.it, which stated that this comparative procedure is not referable either to the category of “public procurement” (as there is no economic burden for public administrations) or to the category of “public concession” (as the purpose of the selection is not to choose a specific contractor, but rather to allow economic operators to offer the service on the market). Indeed, according to this judgment, the selection procedure here in exam takes place outside the scope of the European Directive on public procurement and should be assimilated to the category of “public conventions”, as public bodies contract with any economic operator that satisfy the selection requirements, without identifying one or more successful tenderers.

²¹ The provision of the service in “free floating” mode creates an important advantage for the user, since the latter can park the vehicle at any point into the urban area, without being obliged to store it in the parking station at the end of use (as it happens, instead, in the “station based” mode). As underlined in the mentioned judgment of TAR Piedmont, Turin, no. 1110/2021, the dynamics of the service is the following: the means of transport can be released anywhere within a predefined urban perimeter and the use takes place from the point of release of the previous user; moreover, recovery and allocation services are ensured by the economic operators holding the authorizations.

²² Although related to the service of bike sharing, similar issues are examined by C. ALVISI-A. CLARONI, *Problemi di governo della sharing economy nel settore delle locazioni turistiche del bike sharing*, in *Ist. fed.*, 4, 2019, 940 ff. The authors note that the free floating mode risks undermining the needs for the protection of the city’s environment, as if a large number of bicycles in a state of wear were abandoned for a long time on public land.

On this point it was noted that the adoption of competitive market restrictions must always be followed by the introduction of parameters able to ensure the respect of a minimum standard of quality of services. As a result, this condition cannot be satisfied by a public selection based solely on the date of submission of applications by the companies interested in offering transport services, which is a purely random and unlawful criterion.

Far from identifying alternative criteria for the selection²³, the Regional Administrative Court emphasized the key role of local authorities in driving the digital transformation of the urban mobility, which involves and closely combines public and private dimension²⁴. From this perspective, in the absence of public control over the various

²³ This choice is particularly appreciable, given the largely discretionary nature of the administrative evaluation. In this regard, it is interesting to remark the selection criteria used by the municipality of Florence in a recent public notice, considered lawful by the mentioned judgment of the Italian State Council, no. 1811/2022: the submission of applications for multiple mobility services; the size of the fleet of mobility devices; the extension of the operational area of the service; the previous or simultaneous management of similar services in other municipalities. On this point, see also TAR Lazio, Rome, no. 3370/2022, in www.giustizia-amministrativa.it, stressing that the use of the chronological criterion is a reasonable criterion for the selection of applications where mobility devices offered by economic operators are compliant with certain quality standards.

²⁴ On the rental of electric scooters within the Italian cities, the main legal discipline is set out in the Article 1, par. 75 ff., of Law no. 160 of 27 December 2019, as amended by Article 33-*bis*, par. 2, of Law Decree no. 162 of 30 December 2019 and Article 1-*ter* of Law Decree no. 121 of 10 September 2021, according to which the rental service can be activated only by a special resolution of the municipality council, in which must be provided: *i*) the number of licenses that can be activated; *ii*) the maximum number of devices in circulation; *iii*) the obligation to cover insurance for the performance of the service itself; *iv*) the methods of parking allowed for the devices concerned; *v*) any restrictions on movement in certain areas of the city. In this field, the administrative case law has already clarified that the obligation to wear a protective helmet for drivers under the age of eighteen cannot be extended to drivers over the age of eighteen by means of a local decision. This can be justified by the fact that road safety falls within the exclusive legislative competence of the Italian State. On this point, see TAR Tuscany, Florence, sec. I, 19 April 2022, no. 524, in www.giustizia-amministrativa.it; TAR Piedmont, Turin, sec. I, 9 June 2022, no. 552, in www.giustizia-amministrativa.it.

economic initiatives related to the mobility sector, it seems clear that the urban context may risk undergoing a dangerous development for the safety of all citizens²⁵.

4. RECENT REGULATORY MEASURES ON SMART GRIDS AND RECHARGING OF ELECTRIC VEHICLES: THE “VEHICLE TO GRID” PROJECT

If the considerations above expressed represent the complexity of the current urban mobility scenario, it is necessary to point out that the sharing paradigm is not the only element able to make traditional services really “smart”. From the point of view of the European institutions, smart mobility solutions should pass also through technologies which can ensure energy efficiency and integration of renewable resources, such as those infrastructures called “smart grids”²⁶.

²⁵ Thanks to the clarifications of the judgement of TAR Lombardy, Milan, no. 1274/2020, the municipality of Milan started a more careful monitoring of the fleet of vehicles used by the companies authorized to provide the local mobility services in sharing. After specific checks, some measures were taken to revoke the authorizations previously granted; as we can see from TAR Lombardy, Milan, sec. III, 15 January 2021, no. 75 and 78, in www.giustizia-amministrativa.it, these decisions are linked to the finding, in different mobility devices, of a series of discrepancies from the indications contained in the aforementioned Decree of 4 June 2019, such as those related to the operation of the automatic speed limiter.

²⁶ As it is known, the creation of an intelligent energy system is a precondition for achieving the ambitious objectives set out in the EU Green Deal of 11 December 2019. On this point, the EU Commission stated that the Member States’ transition towards climate neutrality cannot but require the use of advanced technological networks. This makes it necessary to take action to reach a «fully integrated, interconnected and digitalized market», in which there is «a more efficient integration into the energy system of renewable electricity production quotas, as well as of devices that allow an increasing storage and/or consumption of electricity (for example, electric vehicles)». See the report of the EU Commission, *Progress on the competitiveness of clean energy*, COM (2020) 953 final, 14 October 2020, par. 3.6, in www.eur-lex.europa.eu.

More specifically, the spread of the smart grids phenomenon at a supranational level has been strongly sustained by the European Regulation no. 2018/1999 on the governance of the Energy Union²⁷. This act, which is certainly innovative in a number of aspects²⁸, compelled Member States to establish strategies and concrete measures aimed at honoring the constraints assumed by the Paris “Agreement on the fight against climate change” and to indicate these tools punctually in the “Integrated National Energy and Climate Plan” (hereafter, INECP)²⁹.

Through the adoption of the Plan, Member States defined the stages and the instruments of the ecological transition process that they will implement within their territory, giving priority, in particular, to five specific macro-areas – a) energy security; b) internal energy market; c) energy efficiency; d) decarbonization; e) research, innovation and competitiveness – and introducing, among others, measures «aiming to increase the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation»³⁰. This clarification further confirms the institutions’ focus on the

²⁷ Regulation 2018/1999/EU of the *European Parliament and of the Council of 11 December 2018 on the governance of the Energy and Climate Action Union*. This act is one of eight measures elaborated within the last EU Energy Package proposed, in 2016, by the EU Commission, *Clean Energy for all Europeans* (also known as “Clean energy package” or “Winter package”). In this regard, see R. Miccù, *Lineamenti di diritto europeo dell’energia*, Turin, Giappichelli, 2019; F. VETRÒ, *Evoluzioni del diritto europeo dell’energia, transizione energetica e sistema istituzionale: il ruolo del GSE S.p.A.*, in *Dir. ec.*, 1, 2020, 501 ff.; Id., *Sviluppo sostenibile, transizione energetica e neutralità climatica*, in *Riv. it. dir. pubbl. com.*, 1, 2022, 70 ff.

²⁸ See Article 2 of the Regulation, which stated, for the very first time, the principle of “energy efficiency first”, that means «taking utmost account in energy planning, and in policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective end-use energy savings, demand response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of those decisions».

²⁹ See Article 3 of the Regulation.

³⁰ See Article 4 of the Regulation. Moreover, in order to foster the achievement of the energy sector digitalization, the EU Commission, *Energy for a climate neutral economy*, COM (2020) 299 final, in www.eur-lex.europa.eu,

technological adaptation of energy systems, as a fundamental step for the success of the Union's political strategies in this field.

With the adoption of the Italian INECP in 2019 and, afterwards, with the adoption of the NRRP in 2021, the need to involve the consumer, in a more direct manner, within the electric production process was pointed out³¹. According to the new energy idea, the user should not be only the receiver of the services available on the electric market, but he should also be an “active customer”, that means providing self-produced energy to the network and selling the energy in excess to public authorities or to other private users (the peer-to-peer exchange)³².

announced the adoption of a genuine «Action Plan for the Digitisation of the Energy Sector», specifically aimed at encouraging the deployment of smart meters, promoting demand management of energy services and ensuring the interoperability of data.

³¹ In the Italian NPIEC the smart energy networks are considered as one of the main factors to increase the flexibility of the electricity market, within which it is necessary to achieve a greater connection between the traditional system and the recent phenomenon of distributed generation. In this perspective, see also the Italian NRRP, in which it is highlighted that electricity distribution infrastructures are an enabling factor for the energy transition, as they will be able to manage a radically different generation system from the past and distributed energy flows. For these reasons, part of the fundings provided by the NRRP will be specifically aimed at increasing the grid capacity to host and integrate additional distributed generation from renewable sources, including the implementation of smart grid interventions (Mission 2, Component 2.2., Funding 2.1).

³² According to the Article 2 of the Directive 2019/944/EU of the *European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU*, an “active customer” is «a final customer, or a group of jointly acting final customers, who consumes or stores electricity generated within its premises located within confined boundaries or, where permitted by a Member State, within other premises, or who sells self-generated electricity or participates in flexibility or energy efficiency schemes, provided that those activities do not constitute its primary commercial or professional activity». On this concept, see A.M. BENEDETTI, *Lo scambio dei ruoli ovvero l'utente che produce l'energia: la regolazione convenzionale dello «scambio sul posto»*, in *Regole e mercato delle energie rinnovabili* (G. NAPOLITANO-A. ZOPPINI eds.), Bologna, Il Mulino, 2013, 189 ff.; L. SENN, *La governance delle città intelligenti e il ruolo di cittadini e city users*, cit., 21 ff.; F. GIGLIONI, *La domanda di amministrazione delle reti intelligenti*, in *Ist. fed.*, 4, 2015, 1049 ff., which stresses that,

In compliance with this collaborative approach, the recent Italian Plans foster the spread of interesting measures, aimed at increasing the level of electrification of urban mobility. In this regard, it seems important to analyze the project called “vehicle to grid” or “intelligent charging”, which is based on the idea of using the accumulators of modern vehicles to create a system of bi-directional energy flows, between the electric grid and the vehicles themselves³³.

In particular, through the interconnection between renewable energy plants and the various recharging points located on the territory, the project aims to guarantee not only a better and more sustainable electric supply, but also a greater stability of the entire circuit, allowing to store the energy produced in excess into the vehicle accumulators, in periods of low demand, and giving it back to the electric network, in periods of high demand, even for domestic consumption (the so-called “vehicle to home” or “V2H”).

Although the Law no. 205/2017 started promoting the “vehicle to grid” technology³⁴, the criteria and the conditions for the implementation of the project found a

thanks to the use of smart grids, it is possible to create a social and institutional dynamic in which citizens and businesses are involved in processes of self-handling and self-management of goods and services; F. VETRÒ, *Sviluppo sostenibile, transizione energetica e neutralità climatica*, cit., 79 ff.

³³ More specifically, when the energy services involve injections of power from vehicle battery to the grid and back again, they are referred to “V2G”; otherwise, when the energy flows only from the grid to the vehicle battery, these services are referred to “V1G”. On this subject, see also the resolution of the EU Parliament, *A European strategy for energy system integration*, 2020/2241 (INI), 19 May 2021, in www.eur-lex.europa.eu, par. 34, in which is stressed, with regard to the objective of ensuring the balance of energy systems within the European Union, «the role that electric mobility can play as a form of smart integration of the power and transport sectors by unlocking flexibility capacities», that «the electrification of the transport sector has the potential to increase the Union’s energy strategic autonomy by reducing the need for imported fossil fuels» and «the storage and flexibility potential of the deployment of “vehicle to grid” technologies».

³⁴ See Article 1, par. 11, of Law no. 205 of 27 December 2017.

first definition only in the Decree of the Ministry of Economic Development of 30 January 2020. In this act the instrument was fostered through some specific solutions, such as that of ensuring the direct connection of the electric vehicle charging infrastructures to the market for distribution services, so that it becomes possible for drivers to sell the energy accumulated in their cars³⁵.

Another interesting initiative in this direction was launched by the Italian Authority for Energy, Networks and Environment (ARERA), which supported the recent start-up of experiments aimed at exploiting the potential benefits offered by the installation of smart meters into citizens homes, enabling people to enjoy the greater energy power available during the night or holidays for charging their electric vehicles³⁶.

This process is made possible by special AI devices, called “smart wall-boxes”, which can measure and decide for themselves the quantity of energy required to operate the reload. Therefore, these devices could really reduce the ordinary time and costs linked to this fundamental process, increasing the overall percentage of electric cars in the cities³⁷.

³⁵ See Articles 3 and 4 of the Decree, referred to the criteria and the ways to promote the spread of devices for the integration between electric vehicles and the electric grid, available in www.mise.gov.it, which entrusted ARERA with the task of: *i*) integrating its regulation acts to ensure that the minimum performance requirements for enabling energy services allow the participation of electric vehicles; *ii*) taking into account the characteristics of the recharging infrastructures, including domestic ones, and providing the coverage of additional costs associated with the setup of devices and systems necessary to the interaction between the vehicles and the electricity grid.

³⁶ On this subject, see also the recent report by the Focus Group on electric mobility of ARERA, *Market and characteristics of charging devices for electric vehicles*, April 2021, available in www.arera.it, which clarifies that the current offer of devices with the ability to manage bi-directional energy flows (V2G) is still limited; in particular, according to the report, this situation is due to the still incomplete development of the international technical regulation inherent to the V2G, the high costs of the components necessary to build the devices and the difficulties of introducing an appropriate remuneration model for those who decide to invest in these types of vehicles.

³⁷ See the resolution of ARERA, *Charging of electric vehicles in places not accessible to the public*, 541/2020/R/EEL, 15 December 2020, and the resolution of ARERA, *Initiation of proceedings for the*

However, in addition to these advantages some negative aspects of the smart and collaborative electric system must be highlighted.

On one hand, the management of users' data involved in the initiative stands out. For these considerations, it is possible to state that the success of the "vehicle to grid" project will depend also on the possibility to make this technology compliant with the GDPR principles, such as the principle of "privacy by design" and principle of "privacy by default"³⁸.

On the other hand, another important issue in this scenario is represented by the risk of cyber attacks³⁹.

implementation of the provisions laid down by legislative decree 199/2021 and legislative decree 210/2021 in charging infrastructure for electric vehicles, 115/2022/R/EEL, 22 March 2022, both available in www.arera.it, which establish tariff measures and technical rules necessary to facilitate the connection of recharging points, with public or private access, to the electricity distribution network.

³⁸ See Article 25 of Regulation 2016/679/EU of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. In this respect, it would be necessary to allow users the access to and the control over data relating to their consumption, which should be exploited by economic operators for the unique purpose of providing more efficient and tailored services. Moreover, the concrete ways of telematic data exchange should also safeguard the business information of the economic operators and of the other actors involved in the distribution chain. On these profiles, see G. BELLANTUONO, *Comparing Regulatory Innovations for Climate Change: Smart Grid Policies in the USA and the EU*, in *Law, Innovation and Technology*, 6, 2014, 221 ff.; C. BOSCH, *Securing the smart grid: protecting national security and privacy through mandatory, enforceable interoperability standards*, in *Fordham Urban Law Journal*, 4, 2014, 1350; A. VENANZONI, *Smart cities e capitalismo della sorveglianza*, in *Forum di quaderni costituzionali*, 20 October 2019.

³⁹ On the recent European regulation about cybersecurity, see, among others, L. SALAMONE, *La disciplina del cyberspace alla luce della direttiva europea delle reti e dell'informazione*, in *Federalismi.it.*, 23, 2017; A. CONTALDO-D. MULA (eds.), *Cybersecurity Law*, Pisa, Pacini, 2020, 7 ff.; R. BRIGHI-P.G. CHIARA, *La cybersecurity*

As it is known, the transport and the energy systems are strategic sectors at social and economic level and, as a result, they can be easily a target of cyber threats. For this reason, it seems necessary that all the innovative solutions evaluated in the urban mobility are adequate to address the relevant challenges coming from cybersecurity, since ICT and AI applications need cybersecurity to be reliable.

5. CONCLUDING REMARKS

This brief analysis of the current trends in the field of urban mobility allows some final considerations about the role of local authorities in the context above outlined. As it has been noted, cities are undergoing unprecedented, profound economic and social changes, which are linked, on the one hand, to the strong demand for digitalization and better organization of public services and, on the other, to the affirmation of new ways of private collaboration in the performance of administrative tasks.

Looking at the mobility dimension, the survey highlighted the significant contribution of public authorities in the different transport systems that across the modern urban environment.

With regard to the traditional public mobility forms, it seems clear that public actions must provide more efficient, adequate and tailored services, using AI tools for analyzing passengers' data, as well as for planning and organizing the mobility strategies (as it is proved by the example of synchronization of traffic lights and the example of the use of automated vehicles). In addition, these digital tools can help public bodies to pursue air

come bene pubblico: alcune riflessioni normative a partire dai recenti sviluppi nel diritto dell'Unione Europea, in Federalismi.it, 21, 2021.

pollution reduction policies, by fostering the spread of clean energy powered means of transport and limiting the emissions caused by daily traffic⁴⁰.

Different observations should be made with reference to the various smart and private mobility forms, which are increasingly animating our cities. In this perspective, according to the mentioned logic of the “cover of the last mile” and the model of “Mobility as a Service”, local authorities should carry out a very delicate balance function between the protection of economic initiatives and of free competition in the market and the safeguard of other important public interests, such as those related to public security, proper road traffic and reasonable public land use⁴¹.

The role of local authorities within the process of electrification of urban mobility seems to be characterized in a similar way. In particular, in this context the action of the public authorities should be aimed at promoting, among others, the use of smart grids and the recent phenomena of self-production and self-consumption, involving public powers and citizens in a synergistic way, with a view to improving market efficiency and the use of energy from renewable sources.

However, as shown in the example of “vehicle to grid” project, the application of AI tools to develop a more sustainable and more collaborative mobility should be conducted facing the negative aspects of a decentralized electric circuit. This means for public

⁴⁰ EU Commission, *Strategy for Sustainable and Intelligent Mobility: Putting European Transport on a Good Track for the Future*, cit., par. 3, which states that: «By far, the most serious challenge facing the transport sector is to significantly reduce its emissions and become more sustainable. Given its high proportion of total EU greenhouse gas emissions, the EU’s goal of at least -55% greenhouse gas reduction target by 2030 and of climate neutrality by 2050 will be reached, only by introducing more ambitious policies to reduce transport’s reliance on fossil fuels without delay and in synergy with zero pollution efforts. The success of the European Green Deal depends on our ability to make the transport system as a whole sustainable».

⁴¹ As it was highlighted in the administrative case law mentioned in the par. 3 of this work.

administrations to ensure the security of the digital energy networks, the fair treatment of users' data and, last but not least, the convenience of the investment in electric cars.

Without these fundamental guarantees, local mobility could become a new area of contrast – and not of dialogue – between public and private interests, with the effect of undermining the citizens' trust in the digital transition and their effective inclusion in the current process of urban regeneration⁴².

Abstract. *The work analyzes the most recent developments of the urban mobility sector in the Italian legal system. After having examined the relevant normative and jurisprudential indications formulated on the field of sharing and electric mobility, the survey focuses on the interesting “vehicle to grid” initiative, as a project aiming at promoting greater electrification of the sector exploiting the opportunities offered by digital technologies. Finally, some critical considerations are made about the role of local authorities in guiding the current digital transition of urban mobility.*

⁴² In this regard, it should be noted that the themes of “Inclusion and Cohesion” are defined by Mission no. 5 of Italian NRRP, which provides, among others, for the financing of interventions for the regeneration of urban areas in order to reduce the situations of marginalization and social degradation, as well as for creating synergic urban planning with the aim of transforming vulnerable urban and extra-urban areas into smart and sustainable ones and filling infrastructural and mobility deficits (Mission 5, Component 2.2., Fundings 2.1 and 2.2).