RADIOFREQUENCY RADIATION, LEGISLATIVE OMISSIONS AND THE PRINCIPLE OF PRECAUTIONARY[*].

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1. Introduction.

Globalization and information society have an increasing impact on people life. Technological infrastructures, like 5G[1], are necessary to fuel the new digital economy, thank to which soon every single aspect of our day to day life will be connected and everything will be smart, not only phones, but also vehicles, houses, cities. The Internet of Things (IoT), Internet of Beings (IoB) and the analysis of big data will align with artificial intelligence (AI) and biometric systems: we will live in a smart planet[2]. This is likely to increase the quality of life and life expectancy[3].

However, the advantages offered by such new technology come with some challenges, including those related to health and environment protection.

Under a legal and regulatory point of view, we are witnessing a lack of regulation, being legislators and regulators reacting slowly or not reacting at all, thereby determining legislative discriminations among citizens of the EU member States or a regulatory

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[1] The fifth generation of wireless networks 5G, also commonly referred to as IMT- 2020, represents an evolutionary process of previous generations of wireless networks (i.e. 2G, 3G, and 4G): OECD, *The Road to 5G Networks. Experience to Date and Future Developments*, OECD Digital Economy Papers, No. 284, July 2019, p. 8, where the characteristics of the five generations of wireless networks are described.

[2] See Communication from the Commission, *A Digital Single Market Strategy for Europe*, COM(2015) 192 final, 6 May 2015, Point 1. See also Communication from the Commission, *Completing a trusted Digital Single Market for all - The European Commission's contribution to the Informal EU Leaders' meeting on data protection and the Digital Single Market in Sofia on 16 May 2018*, COM(2018) 320 final, 15 May 2018, *passim*.

[3] See European Parliament Resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics, in *OJ 27 July 2018 (C 252)*.

vacuum, in a sector characterised by its fast-moving nature. Those discrepancies among member States concern different primary goods, among which the health and the environment protection.

This paper aims at identifying possible remedies to the inertia of multilevel legislator and regulator, waiting for a more comprehensive and organic regulation.

2. Potential effects on health of increases in electromagnetic radiation.

Health and environment protection within the new digital economy is of paramount importance, especially with regards to electromagnetic radiation.

Over the last few years, there has been growing concern about the possibility of adverse health effects resulting from exposure to radiofrequency electromagnetic fields, such as those emitted by wireless communication devices[4].

In fact, with rapidly increasing applications for wireless devices targeting populations of all ages, exposures to the associated radiofrequency radiation (RFR) are increasing in number and diversity[5]. Radiation sources include communications devices such as mobile (cell) or cordless phones, laptops and tablets, baby monitors, wearable devices and associated infrastructure (e.g. routers, antennae on towers, and distributed antennae systems that can employ directional couplers or wireless amplifiers to enhance accessibility)[6].

However, scientists have not yet reached a unanimous consensus on the consequences for human health and for the environment deriving from such increase of RFR exposures[7].

In 2011 (from May 24-31), a Working Group of 31 scientists from 14 countries met at the International Agency for Research on Cancer (IARC)[8] in Lyon, France, to assess the

[4] M.L. Paul, *Wi-fi is an important threat to human health*, in *Environmental Research*, 164, 2018, p. 405 ff.; F. Fonderico, *Tutela dall'inquinamento elettromagnetico e amministrazione «precauzionale»*, in *Riv. it. dir. pubbl. com.*, 2004, p. 907.

[5] A. B. Miller, L. L. Morgan and I. Udasin, D. Lee Davis, *Cancer epidemiology update, following the 2011 IARC evaluation of radiofrequency electromagnetic fields (Monograph 102)*, in *Environmental Research*, 167, 2018, 673 ff., esp. p. 673.

[6] *Op. loc. cit.*

[7] F. Fonderico, *Tutela dall'inquinamento*, cit., p. 907.

[8] The International Agency for Research on Cancer is part of the World Health Organization (WHO). IARC coordinates and conducts both epidemiological and laboratory research into the causes of human cancer. See https://www.who.int/ionizing_radiation/research/iarc/en/.

potential carcinogenic hazards from exposure to radiofrequency electromagnetic fields[9].

The topic of the IARC Monograph is the evaluation of the carcinogenicity of radiation in the radiofrequency (RF) range (30 kHz to 300 GHz) of the electromagnetic spectrum[10]. As has been pointed out in the Monograph, this type of radiation is emitted by devices used in wireless telecommunication, including mobile phones, and by many other sources in occupational and general environmental settings. Exposures are ubiquitous in more developed countries and rapidly increasing in developing countries, in particular with respect to the use of mobile phones[11].

As for the conclusion of its evaluation, the IARC Working Group classified RFR (30 kHz to 300 GHz) as a possible human carcinogen (Group 2B)[12].

On 27 May 2011, the Council of Europe adopted a Resolution[13] on the dangers to public health of electromagnetic fields, calling for the lowering of exposure limits.

From 2011, many epidemiologic studies, in particular two experimental mega-tests on laboratory animals, rats and mice, have been carried out and the relative results recently published. Those results indicate the potential that RFR (30 kHz to 300 GHz) cause cancer of the same type[14].

In a recent (November 2018) study[15], potential risks from exposures to associated radiofrequency radiation (RFR) have been analysed, and in particular:

- increased risks of cancer of the brain, of vestibular nerve and of salivary gland are associated to the use of cell phones;

[9] These assessments were published as Volume 102 of the IARC Monographs, *Non-Ionizing Radiation, Part 2: Radiofrequency Electromagnetic Fields*, 2013.

[10] For the purposes of the Monograph, radiofrequency (RF) electromagnetic radiation are taken as extending from 30 kHz to 300 GHz, which corresponds to free-space wavelengths in the range of 10 km to 1 mm: see IARC Monographs, *Non-Ionizing Radiation*, cit., p. 38.

[11] IARC Monographs, *Non-Ionizing Radiation*, cit., p. 33.

[12] IARC Monographs, *Non-Ionizing Radiation*, cit., 419, esp. point 6.3.

[13] Parliamentary Assembly, Resolution 1815 on *The potential dangers of electromagnetic fields and their effect on the environment*. Such Resolution is available at http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994&lang=en.

[14] See F. Belpoggi, Ramazzini Institute, Hearing of 26 February 2019 before the IX Parliament Commission (Transport, mail and telecommunications) of the Italian Parliament, within the preliminary investigation on new telecommunication technologies, with particular reference to the transition towards 5G and to the management of big data.

[15] A. B. Miller, L. L. Morgan, I. Udasin and D. Lee Davis, *Cancer epidemiology update*, cit., 673 ff. On risks from exposure to radiofrequency radiation many studies exist, among which see L. Falcioni *and others*, *Report of final results regarding brain and heart tumors in Sprague-Dawley rats exposed from prenatal life until natural death to mobile phone radiofrequency field representative of a 1.8 GHz GSM base station environmental emission*, in *Environmental Research*, 165, 2018, 496 ff.; M.L. Pall, *Wi-Fi is an important threat to human health*, in *Environmental Research*, 164, 2018, 405 ff.

- nine studies (2011-2017) show an increased risk of brain cancers due to mobile-phone use;
- four case-control studies (2013-2014) found an increased risk of brain of vestibular nerve;
- concerns for other cancers: breast, vestibular schwannoma/acoustic neuroma, parotid gland tumors, hematopoietic malignancies, testicular cancer, and even colorectal cancer, all tumors on sites of the body with close contact with RFR "hotspots".

In the light of the above, the Authors conclude that, on one side, the epidemiological studies reported since the 2011 IARC Working Group meeting are adequate to consider RFR as a probable human carcinogen (Group 2A). However, on the other side, they believe that those studies must be supplemented with the recently reported animal data as performed at the Ramazzini Institute and the U.S. National Toxicology Program as well as by mechanistic studies. These experimental findings together with the epidemiology reviewed in the study are – according the same Authors – sufficient to upgrade the IARC categorization of RFR to Group 1, carcinogenic to humans[16].

In 2016, the world's largest study (25 million US dollar) carried out by the National Toxicology Program (NTP)[17] was published. This study shows statistically significant increase in the incidence of brain and heart cancer in animals exposed to EMF below the ICNIRP (International Commission on Non-Ionizing Radiation Protection) guidelines followed by most countries. These results support results in human epidemiological studies on RF radiation and brain tumor risk.

In Italy, the relationship between exposure to RFR and disease causation has been proved by Courts' case-law[18], in situations of multiple and cumulative exposures, comparable to an ubiquitous hyper-connection, like that of 5G technology. Such case-law has, therefore, shown that exposure to RF radiations emitted by mobile phones affects human health and,

[16] A. B. Miller, L. L. Morgan, I. Udasin and D. Lee Davis, *Cancer epidemiology update,* cit., 681. See also L. Falcioni *and others*, *Report of final results*, cit.

[17] *Report of Partial Findings from the National Toxicology Program Carcinogenesis Studies of Cell Phone Radiofrequency Radiation in Hsd: Sprague Dawley® SD rats (Whole Body Exposures)*, 16 May 2016. The study is available at https://www.biorxiv.org/content/10.1101/055699v3. The National Toxicology Program (NTP) is an interagency program established in 1978 to coordinate toxicology research and testing across the U.S. Department of Health and Human Services: see https://ntp.niehs.nih.gov/about/org/index.html.

[18] See Italian Supreme Court (Corte di cassazione), labour division, judgment 12 October 2012, No. 17438. Court of Florence (Tribunale di Firenze), first division (civil), judgment 24 June 2017, No. 391; Court of Ivrea (Tribunale di Ivrea), first division (civil), judgment 30 March 2017, No. 96.

specifically, mobile-phone use causes cancer.

In a judgment of January 2019, the Regional Administrative Court of Lazio[19], based on Article 10 of Law 22 February 2001, No 36[20], ordered to three "silent" Administrations[21] to inform people – through an information campaign and an environmental education – about mode use indications and the health and environmental risks associated to the use of cell phones (especially mobile phones and cordless).

The obligation by public authorities to ensure that people exposed on scientifically uncertain risks are duly informed have been stated by the European Court of Human Rights (ECHR)[22]. Such obligation to inform the public on matters of environmental and public safety is grounded on Article 8 of the European Convention of Human Rights, as well as on Article 2 of such Convention, as the failure to provide the public with the relevant information infringes its right to respect for its private and family life and its right to life[23]. According to the ECHR, "*although the object of Article 8 is essentially that of protecting the individual against arbitrary interference by the public authorities, it does not merely compel the State to abstain from such interference*". In fact, the ECHR clarifies that "*in addition to this primarily negative undertaking, there may be positive obligations inherent in effective respect for private or family life*"[24]. The ECHR considered in breach of Article 8 the case of public authorities that failed to inform local inhabitants of the hazards of the industrial activity concerned, the safety measures taken, the plans made for emergencies and the procedure to be followed in the event of an accident[25]. According to the ECHR, the national authorities must take "*the necessary steps to ensure effective protection of the [applicants'] right to respect for [their] private and family life under Article 8*"[26].

Moreover, for the purposes of Article 2, the ECHR has stated that the positive obligation

[19] Third-*quater* Division, judgment 15 January 2019, No 500.
[20] Framework Law on protection from electric, magnetic and electromagnetic exposures.
[21] The Ministry of Environment, the Ministry of Health, and the Ministry of Education, University and Research.
[22] See, among others, ECHR, section I, judgment 5 December 2013, 52806/09 and 22703/10, *Vilnes and Others v. Norway*.
[23] See, inter alia, ECHR, Grand Chamber, judgment 19 February 1998, 14967/89, *Guerra and others v. Italy*. On this case see, among others, V. Zeno-Zencovich, sub *Article 8*, in *Commentario alla Convenzione europea per la tutela dei diritti dell'uomo e delle libertà fondamentali*, edited by S. Bartole, B. Conforti, G. Raimondi, Padova, 2001, 310. See also, F. Bestagno, sub *Article 2*, in *Commentario breve alla Convenzione europea dei diritti dell'uomo*, edited by S. Bartole, P. De Sena and V. Zagrebelsky, Padova, 2012, p. 36 ff.
[24] See ECHR, Grand Chamber, judgment 19 February 1998, 14967/89, *Guerra and others v. Italy*, par. 58; ECHR, Chamber, judgment 9 October 1979, 6289/73, *Airey v. Ireland*, par. 32; ECHR, Plenary, judgment 13 June 1979, 6833/74, *Marckx v. Belgium*, par. 58.
[25] See ECHR, Grand Chamber, judgment 19 February 1998, 14967/89, *Guerra and others v. Italy*, par. 60.
[26] See ECHR, Chamber, judgment 9 December 1994, 16798/90, *López Ostra v. Spain*, par. 55.

to take all appropriate steps to safeguard life "*entails above all a primary duty on the State to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life*"[27]. Among the different preventive measures adoptable by public powers, the ECHR is of the opinion that "*particular emphasis should be placed on the public's right to information, as established in the case-law of the Convention institutions*", and further specifies that "*this right, which has already been recognised under Article 8 (see Guerra and Others, cited above, p. 228, § 60), may also, in principle, be relied on for the protection of the right to life*"[28]. The ECHR has also specifically stated on health damages (leukaemia) from radiation exposures in breach of Article 2[29]. In such case, the ECHR concluded that it was no causal link between the exposure to radiation and the health damage suffered from the concerned individuals[30]. Different conclusions would probably be reached by the ECHR today with regards to the causal link between cancers and RFR exposures, as shown by the Italian case-law above mentioned. Also more recently, the Court of Monza[31] found the causal link between a cancer of the vestibular nerve and RFR exposures[32].

Concerns on the matter have been recently expressed also by some European Union Committees.

In particular, the EU Scientific Committee on Health, Environmental and Emerging Risks (SCHEER)[33] has recently stated that, "*the expansion of broadband with shorter wavelength radiofrequency radiation highlights the concern that health and safety issues remain unknown. Controversy continues with regard to harm from current 2G, 3G and 4G wireless technologies. 5G technologies are far less studied for human or environmental effects*"[34]. Given that smart city is conceived under the implementation of the multilevel digital

[27] ECHR, Grand Chamber, judgment 30 November 2004, 48939/99, *Öneryildiz v. Turkey*, par. 89.
[28] ECHR, Grand Chamber, judgment 30 November 2004, 48939/99, *Öneryildiz v. Turkey*, par. 90.
[29] ECHR, Chamber, judgment 9 June 1998, 23413/94, *L.C.B. v. The United Kingdom*.
[30] ECHR, Chamber, judgment 9 June 1998, 23413/94, *L.C.B. v. The United Kingdom*, para. 31-41. On this case, see F. Bestagno, sub *Article 2*, cit., p. 46.
[31] Judgment published on 13 March 2019.
[32] In this case, the cancer concerns a Linate and Malpensa airports employee.
[33] Pursuant to Commission Decision 7 August 2015 *on establishing Scientific Committees in the field of public health, consumer safety and the environment*, C(2015) 5383 final, SCHEER "*shall draw the Commission's attention to specific or emerging problems which may pose a potential risk to consumer's safety, public health or the environment*" (Article 3, point 6). Moreover, such a Scientific Committee "*shall provide the Commission with scientific opinions on risk assessment in the cases laid down by Union law*" (Article 3, point 1). Furthermore, SCHEER "*shall provide the Commission services, on request, with scientific advice on questions of particular relevance to public health, consumer safety and environmental risks*" (Article 3, point 2).
[34] SCHEER, *Statement on emerging health and environmental issues*, 20 December 2018, point 4.4, p. 14.

agenda, this may be a crucial point, also in the light of the principle of precautionary.

3. Radiofrequency radiation, legislative omissions and the principle of precautionary.

3.1. Recent initiatives in Europe: an overview.

Although the European Court of Human Rights has clearly stated that positive obligations to take all appropriate steps to safeguard life exist, and entail above all a primary duty on the State to put in place a legislative and administrative framework aiming at providing effective deterrence against threats to the right to life[35], in some European Countries, among which Italy, legislators and regulators are inert with regards to the radiofrequency radiation issue, thereby bringing about a proliferation of bottom-up initiatives, both by individuals and associations[36].

By contrast, public policies in this field are much stronger in other European States. For instance, in Belgium, where in July 2018 the Government concluded an agreement with three telecom operators to relax the strict radiation standards in Brussels, the Ministry of Environment, Céline Fremault, has recently (April 2019) stated that "*according to the Region, it is now impossible to estimate the radiation from the antennas required for the [5G] service*"[37].

The same Minister outlined that such technology cannot be implemented if the radiation standards, which must protect the citizen, are not respected, 5G or not, stressing that "*[t]he people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave*

[35] ECHR, Grand Chamber, judgment 30 November 2004, 48939/99, *Öneryildiz v. Turkey*, par. 89.

[36] One of the most recent one is the Conference held at the (Smart City) Milan on 30 and 31 March 2019, and organized by the *Associazione italiana elettrosensibili* (Italian Association for the Electrosensitive), at the presence of, among others, the well-known Swedish neuroscientist Professor Olle Johansson, who, at the down of the dawn of the new Millennium, noted that "*It is […] politically impossible to say anything that remotely threatens the mobile phone industry, the golden goose that brings so much prosperity to industry and government. But, mobile phones might one day become a BSE (mad cow) crisis*": L. Södergren, O. Johansson, *Commentary: Mobile Telephones - Will the Golden Goose Become the Mad Cow?*, in *Journal of Australian College of Nutritional & Environmental Medicine*, Vol. 20, No. 2, August 2001, pp. 29-30.

[37] See *Radiation concerns halt Brussels 5G development, for now*, available at http://www.brusselstimes.com/brussels/14753/radiation-concerns-halt-brussels-5g-for-now?fbclid=IwAR23yJIxF5A8T_DQqCHbOlnVD2mrDwl61GYC1UFQHHPWc3VMuveHqfguuq4.

anything to doubt"[38].

The telecommunication operators' projects aim at increasing the radiation threshold limits from current 6 V/m to 14,5 V/m[39], without providing any preliminary study on health risks for humans due to permanent exposures to RFR.

Also in Germany, the *Bundesamt für Strahlenschutz* (*BfS*), the German Federal Office for Radiation Protection, after having stated that the effects of higher frequencies due to 5G "*have not yet been well researched*", it announces further research, advising a prudent expansion of 5G[40].

However, over the last years, Germany has dealt with such a problem, also raising it before European institutions. For instance, on 13 November 2007, the German member of the EU Parliament, Hiltrud Breyer, addressed a parliamentary written question to the EU Commission, on "*Harmful effects of wireless local area networks (WLANs) on human beings*"[41].

After having stressed that "*[e]lectromagnetic radiation from wireless local area networks (WLANs) has increased dramatically in recent years because of the growing demand for such networks*", Mrs Breyer asked the Commission, among other things, whether, following the new scientific knowledge, the limits should be strengthened in order to protect EU citizens from the effects of electromagnetic radiation and whether the further extension of WLANs in the Member States should be placed under review. The Commission answered mentioning, *inter alia*, the findings presented by the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) in its March 2007 scientific opinion, that "*did not point out a need for a revision of the applicable standards*"[42].

In the Netherlands, Parliament asks for independent investigation on 5G health risks. Given the possible dangers stemming from the installation of new antennas on a large scale, some political parties urged the Health Council of the Netherlands to carry out an independent investigation into 5G radiation. Member of parliament Laura Bromet has declared that it is

[38] Our translation. See *Radiation concerns halt Brussels 5G development*, cit.**:** "*The people of Brussels are not guinea pigs whose health I can sell at a profit. We cannot leave anything to doubt*"**.**

[39] Electric field strength is expressed by in units of volts per meter (V/m).

[40] See http://www.bfs.de/SharedDocs/Stellungnahmen/BfS/EN/2019/0320-5G.html.

[41] E-5563/07, in OJ 13 July 2010 (C 189).

[42] Parliamentary questions E-5563/07, Answer given by Mr Kyprianou on behalf of the Commission, 16 January 2008, available at http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2007-5563&language=EN.

still unknown the dangers of 5G to public health and added that "*We have to take people's concerns seriously and investigate this*"[43].

In Switzerland, on 16 June 2017, the Parliament adopted a new Federal Act on the protection from risks of non-ionising radiation and acoustic stimuli (LRNIS) and, more recently, the Federal Council, in its session of 27 February 2019, adopted the Order concerning the above mentioned Act (O-LRNIS), with the aim of improving health protection[44].

Moreover, other important initiatives have been undertaken at Cantonal level. On 26 March 2019, the *Grand Conseil* of Canton of Vaud adopted a Resolution[45]. On the ground of the precautionary principle, the Resolution calls for a ban on 5G transmitter installation at least until the Federal Office for the Environment (FOEN) has completed its study into the effects of the new 5G technology.

In such a Resolution it is pointed out that 5G technology has been object of "warnings" by scientific bodies, like the *Fédération des médecins suisses* (FMH) and *Medecins en faveur de l'environnement* (MfE), while it has not been object of any debate, either public or political. Similar initiatives have been undertaken in other cantons as well, like Geneva and Valais[46].

Also in the U.S., during the Senate Commerce, Science, and Transportation Committee hearing of 7 February 2019 on the future of 5G wireless technology and their impact on the American people and economy, senator Richard Blumenthal (D-CT) raised concerns with the lack of any scientific research and data on the technology's potential health risks. Blumenthal blasted the Federal Communications Commission (FCC) and the Food and Drug Administration (FDA) – government agencies jointly-responsible for ensuring that cellphone technologies are safe to use – for failing to conduct any research into the safety of 5G technology, and instead, engaging in bureaucratic finger-pointing and deferring to industry. During an exchange with wireless industry representatives, Blumenthal asked them whether they have supported research on the safety of 5G technology and potential links between radiofrequency and cancer, and the industry representatives conceded they

[43] See https://www.jrseco.com/nl/tweede-kamer-bezorgd-over-gezondheidsrisicos-van-straling-5g-netwerk/.
[44] The mentioned Federal Act and the Order enter into force on 1 June 2019: https://www.edi.admin.ch/edi/it/home/dokumentation/comunicati-stampa.msg-id-74125.html.
[45] No. 19/RES/026.
[46] Canton of Geneva has adopted a moratorium for standard of 5G mobile phones: see http://www.aefu.ch/20/actuel/. Moreover, the Parliament of Valais will pronounce on this matter.

have not[47].

In Italy, conversely, to make the technology 5G fully operating, the radiation threshold limits would be increased from current 6 V/m to 61 V/m, with a million new antennae to be installed, without conducting preliminary studies on health risks due to higher RFR exposures[48].

However, we have to note that legislative and regulatory omissions in this field are not enforceable[49]. Moreover, it is evident that bottom-up movements are not sufficient to protect goods of utmost importance and having constitutional basis. In this respect, legislators play an essential and irreplaceable role, as the assessment on the most appropriate means to attain a given end belong exclusively to legislators[50].

The public sector should take on an active role, starting from proper planning policies, and not a mere marginal role, within the logic of the so-called "enabling" State or "adaptive" State[51].

Nevertheless, until the inertia of legislators persist, and taking into account that domestic administrations (including the Italian ones[52]) had failed to take steps to provide information about the environmental and health risks associated to radiofrequency radiation exposures, jurists (especially those of courts) are called upon to fill the regulatory gap, within the multilevel legal order consistency.

Such a legal order provides jurists with a range of tools, that vary depending of the domestic

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[47] See https://www.jrseco.com/u-s-senator-blumenthal-raises-concerns-on-5g-wireless-technologys-potential-health-risks/.

[48] See M. Martucci, *Elettrosmog, una nuova sentenza lo riconosce come concausa di tumori. E intanto Bruxelles blocca il 5G*, 4 April 2019, available at https://www.ilfattoquotidiano.it/2019/04/04/elettrosmog-una-nuova-sentenza-lo-riconosce-come-concausa-di-tumori-e-intanto-bruxelles-blocca-il-5g/5083102/. Market operators consider the current limit placed on power density (i.e. "exposure limits to electromagnetic fields") as "quite low", with the consequence that it represents one of the main regulatory issues that hinders the rollout of new antennas and the full implementation of 5G: see OECD, *The Road to 5G Networks*, cit., 38-39, where it is also pointed out that several regulators in Europe are looking into how to modify current power density regulations so as to ensure that every European Union country can deploy 5G in a timely manner while giving due consideration to the reasons they were imposed. The solution proposed by those regulators would be the harmonisation of power density regulations with the relevant stakeholders (therein, p. 39).

[49] For instance, it is not enforceable the inertia of competent administrations in issuing the ministerial decree pursuant to Article 12 of Law No 36/2001.

[50] This is the view of a well established Italian constitutional case-law: see, *ex multis*, Constitutional Court, judgment 14 June 2001, No 190; Constitutional Court, judgment 15 February 1980, No 20; Constitutional Court, judgment 7 March 1964, No 14.

[51] On "*adaptive regulator*" see R.S. Whitt, *Adaptive Policymaking: Evolving and Applying Emergent Solutions for U.S. Communications Policy*, in 61 *Fed. Comm. L.J.*, 2009, 483 ff., spec. 522; S. Ranchordás, *Does sharing mean caring? Regulating innovation in the sharing economy*, in 16 *Minn. J.L. Sci. & Tech.*, 2015, p. 414 ff.

[52] As shown by the Regional Administrative Court of **Lazio,** judgment No 500/2019, cit.

legal system at stake. However, there are some principles that are of general application in the RFR field in relation to the protection of health. The most important one is the principle of precautionary.

In this regards, it is worth noting that some local bodies (and specifically *Roma Capitale*, namely the Municipality of Rome) have, in the light of the principle of precautionary, recently passed a Resolution, that aims at imposing on relevant market operators, within the installations of mobile antennas, the observation of exposure limits, laying down that "*any localization shall tend to the minimization of human exposure to electromagnetic wave in sensitive places*"[53]. The power of intervention of local bodies is based on Article 8, par. 6, Law No 36/2001, which allows local administrations to identify criteria for the localization of mobile antennas[54]. Such criteria may take the form of bans (for instance, the ban to place antennas over specific buildings, such as hospitals, schools, etc.), or may envisage imposition of specific and predetermined distances[55].

3.2. The principle of precautionary.

At international level, the first "codification" of the precautionary principle dates back to the World Charter for Nature adopted by the UN General Assembly in 1982, which imposes a comprehensive assessment about negative effects of specific activities, requesting to refrain from them in case of danger. Afterwards, other documents were adopted: the International Conference on the Protection of the North Sea of 25 November 1987, the Convention for the protection of the Marine Environment of the North-East Atlantic signed in Paris in 1992, the Rio Declaration on the Environment and Development of 1992 and, in the same year, the codification of the principle at stake within Article 174 of the

[53] Article 4 of *Regulation for localization, installation and modification of mobile antennas* (*Regolamento per la localizzazione, l'installazione e la modifica degli impianti di telefonia mobile*), approved with Decision of *Roma Capitale* Assembly No 26 of 14 May 2015. Our translation.
[54] See F. Fonderico, *Tutela dall'inquinamento*, cit., p. 914.
[55] The Regulation issued by *Roma Capitale* in 2015 has been challenged before the Italian Court, by the relevant market operators, who believe that some provision of such Regulation would be in breach of the Italian Telecommunication Code (Legislative Decree 1 August 2003, No 259) and of the framework law No 36/2001, cit., and it would hinder the planning activities of networks development. The Council of State, Sixth Division, Order 27 March 2019, No 2033 has requested the European Court of Justice a preliminary ruling concerning the limits set by the Regulation with regards to the placing of facilities and networks, as referred to the internal dispute (point 4.1 of the Order).

Maastricht Treaty on the European Union[56].

Precaution is a general principle of Union law. It was originally codified in Article 174 EC Treaty (currently Article 191 of the Treaty on the Functioning of the European Union – TFEU), within the specific EU policy on the environment[57]. According to Article 191, par. 2, TFEU, "*Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay*". Article 191 TFEU strikes a delicate balance between economic development and the environment[58].

Another legal basis of the principle at stake is Article 114, par. 5, TFEU (formerly Article 95 EC Treaty), according to which "*if, after the adoption of a harmonisation measure by the European Parliament and the Council, by the Council or by the Commission, a Member State deems it necessary to introduce national provisions based on new scientific evidence relating to the protection of the environment or the working environment on grounds of a problem specific to that Member State arising after the adoption of the harmonisation measure, it shall notify the Commission of the envisaged provisions as well as the grounds for introducing them*".

Articles 191 and 114 were the legal bases upon which a large number of measures of secondary legislation (regulations and directives) were adopted[59].

At the EU level, it is also important to mention Articles 9 TFEU[60] and 168 TFEU (formerly Article 152 EC Treaty), laying down that "*[a] high level of human health protection shall*

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[56] A. Longo, F. M. Distefano, *Il ruolo del principio di precauzione nella tutela del bene ambiente fra diritto amministrativo e penale*, in *Federalismi.it*, No. 16/2019, 5. See also L. Marini, *Il principio di precauzione del diritto internazionale e comunitario*, Padova, 2004; F. de Leonardis, *Il principio di precauzione*, in *Studi sui principi del diritto amministrativo*, edited by M. Renna, F. Saitta, Milano, 2012, p. 413 ff., *passim*.

[57] In general, on the EU precautionary principle, also from an historical perspective, see, among others, R. Caranta, *The precautionary principle in Italian law*, in *Precautionary principle and administrative law: national and international reports*, edited by M. Paques, Brussels, 2007, 199 ff.; R. Ferrara, *I principi comunitari della tutela dell'ambiente*, in *Dir. amm.*, 2005, 526 ff.; E. Follieri, *Decisioni precauzionali e stato di diritto. La prospettiva della sicurezza alimentare*, in *Riv. it. dir. pubbl. com.*, No. 6/2016, 1495 ff.; A. Bonomo, *Europa e ambiente: profili pubblicistici*, in *La tutela multilivello dell'ambiente*, edited by F. Gabriele, A. M. Nico, Bari, 2005, 101 ff.; G. Cordini, *Origini e svolgimenti del diritto ambientale comunitario*, in *Dir. e gestione dell'ambiente*, 2003, 299 ff. More recently, see A. Longo, F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 3 ff.

[58] R. Caranta, *The precautionary principle*, cit., p. 201.

[59] *Op. loc. cit.*

[60] According to which "*In defining and implementing its policies and activities, the Union shall take into account requirements linked to the promotion of a high level of employment, the guarantee of adequate social protection, the fight against social exclusion, and a high level of education, training and protection of human health*".

be ensured in the definition and implementation of all Union policies and activities" (par. 1, first alinea), as well as the Communication issued in 2000 by the European Commission on the precautionary principle[61]. In such Communication the Commission observes that "*A number of recent events has shown that public opinion is becoming increasingly aware of the potential risks to which the population or their environment are potentially exposed*". Moreover, it states that "*Enormous advances in communications technology have fostered this growing sensitivity to the emergence of new risks, before scientific research has been able to fully illuminate the problems*". It further observes that "*Decision-makers have to take account of the fears generated by these perceptions and to put in place preventive measures to eliminate the risk or at least reduce it to the minimum acceptable level*"[62].

The aim of the Communication "*is to inform all interested parties, in particular the European Parliament the Council and Member States of the manner in which the Commission applies or intends to apply the precautionary principle when faced with taking decisions relating to the containment of risk*"[63].

However, only in 2002 a legal definition of the precautionary principle embedded in a community act was introduced[64]. Article 7, par. 1, Regulation 178/2000[65] lays down that "*In specific circumstances where, following an assessment of available information, the possibility of harmful effects on health is identified but scientific uncertainty persists, provisional risk management measures necessary to ensure the high level of health protection chosen in the Community may be adopted, pending further scientific information for a more comprehensive risk assessment*".

A significant contribution to the development of the principle at stake derives from the EU case-law. Also in its Communication of 2000, the Commission observed that "*Like other general notions contained in the legislation, such as subsidiarity or proportionality, it is*

[61] Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000. See N. McNelis, *EU Communication on the Precautionary principle*, in *Jour. Int. Economic Law*, 2000, 545; F. Trimarchi, *Principio di precauzione e "qualità" dell'azione amministrativa,* in *Riv. it. dir. pubbl. com.*, No. 6/2005, 1679 ff.; M. Antonioli, *Precauzionalità, gestione del rischio e azione amministrativa*, in *Riv. it. dir. pubbl. com.*, No. 1/2007, p. 61 ff.

[62] Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000, par. 1.

[63] Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000, par. 2.

[64] A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 5.

[65] Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

for the decision-makers and ultimately the courts to flesh out the principle. In other words, the scope of the precautionary principle also depends on trends in case law, which to some degree are influenced by prevailing social and political values"[66]. Indeed, the precautionary principle has been at issue in a number of judgments by both the Court of justice and the Court of first instance[67].

In Italy, the precautionary principle was first mentioned in the already mentioned Law No 36/2001, on electromagnetic pollution[68], even if a precautionary approach was already taken by the Ministry of Environment with Decree 10 September 1998, No 381, on *Regolamento recante norme per la determinazione dei tetti di radiofrequenza compatibili con la salute umana* (Regulation on provisions to set limits of radiofrequencies compatible with human health)[69], as well as by the Ministry of Health with Order 22 November 2000 on *Non idoneità alla donazione di sangue di coloro che hanno soggiornato per oltre sei mesi nel Regno Unito nel periodo dal 1980 al 1996*[70]. The legislator has then made reference to it in other pieces of legislation[71], including Article 301 of Legislative Decree 3 April 2006, No 152 on *Testo Unico in materia Ambientale* (consolidated text in environmental matters), and then in Article 3-*ter* of the same Decree No 152/2006[72], where a direct reference to Article 191 of TFEU is made. The precautionary principle represents one of the fundamental pillars of the administrative activity, by virtue of Article 1, Law 7 August 1990, No 241, regulating the general law on administrative procedure[73].

With specific regards to rediofrequency radiation, at the EU level, in 1994 a Parliament Resolution called upon the application of the precautionary principle to reduce exposures to electromagnetic fields[74]. More significantly, in 1999 the Council approved a Recommendation on the limitation of exposure of the general public to electromagnetic

[66] Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000, par. 3.
[67] For an overview of such cases see R. Caranta, *The precautionary principle*, cit., p. 204 ff.
[68] R. Caranta, *The precautionary principle*, cit., 218. More specifically, on this piece of legislation see F. Merusi, *Dal fatto incerto alla precauzione: la legge sull'elettrosmog*, in *Foro amm.*, 2001, 221, as well as G. Manfredi, *L'irresistibile diritto alla salute e la tutela dall'inquinamento elettromagnetico*, in *Urb. app.*, 2001, p. 164.
[69] F. Fonderico, *Tutela dall'inquinamento*, cit., p. 910.
[70] O.J. No 275 of 24 November 2000. See M.G. Stanzione, *Principio di precauzione, tutela della salute e responsabilità della P.A. Profili di diritto comparato*, in *www.comparazionedirittocivile.it*, September 2016, 3.
[71] M.G. Stanzione, *Principio di precauzione*, cit., p. 1 ff.
[72] See A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 4 ff.
[73] Article 1 of such law makes reference to the EU principles, which include the precautionary principle. This view is largely shared in the legal literature: see, among others, M. Antonioli, *Precauzionalità*, cit., p. 66 ff.; E. Follieri, *Decisioni precauzionali*, cit., p. 1526; F. Trimarchi, *Principio di precauzione*, cit., p. 1677.
[74] See F. Fonderico, *Tutela dall'inquinamento*, cit., p. 910.

fields (0 Hz to 300 GHz)[75]. It indicates that "*[i]t is imperative to protect members of the general public within the Community against established adverse health effects that may result as a consequence of exposure to electromagnetic fields*"[76]. In the same Recommendation, the Council outlines that the Member States "*should take note of progress made in scientific knowledge and technology with respect to non-ionising radiation protection, taking into account the aspect of precaution, and should provide for regular scrutiny and review with an assessment being made at regular intervals in the light of guidance issued by competent international organisations, such as the International Commission on Non-Ionising Radiation Protection*"[77].

We already mentioned above that recently SCHEER has – after having stated that due to the expansion of broadband with shorter wavelength radiofrequency radiation – highlighted the concern that health and safety issues remain unknown. There is an ongoing debate with regard to harm from current 2G, 3G and 4G wireless technologies, and this debate concerns more specifically 5G technologies, that are far less studied for human or environmental effects[78].

Over the last twenty years, potential risks from exposures to radiofrequency radiation (RFR) have been identified. For instance, the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR)[79] made a scientific assessment, which "*is critical of the fact that insufficient data is available to establish the long-term harmful consequences of exposure to electromagnetic radiation*"[80].

Also the European Environment Agency (EEA) has concerns about the harm to public health caused by exposure to electromagnetic fields, which it compares with the dangers of the discovery of asbestos, nicotine and leaded petrol. In this context it has examined over 2000 studies. It questions the safety of the current public limits and criticises the negligent safety measures protecting against electromagnetic radiation[81].

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[75] Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz), 1999/519/EC. This Recommendation is still in force.
[76] Whereas 4.
[77] Whereas 19.
[78] SCHEER, *Statement on emerging health and environmental issues*, cit., point 4.4, 14.
[79] Pursuant to Commission Decision 7 August 2015 *on establishing Scientific Committees in the field of public health, consumer safety and the environment*, cit., SCHER and SCENIHR merged, in order to achieve efficiency, consistency, and to avoid duplication of efforts (see especially whereas 2 of the 2015 Commission Decision). Currently, only the Scientific Committee on Health, Environmental and Emerging Risks (SCHEER) operates.
[80] See the EU parliamentary written question to the EU Commission by Hiltrud Breyer, cit.
[81] See again the EU parliamentary written question to the EU Commission by Hiltrud Breyer, cit.

Nonetheless, the multilevel digital agenda (within which smart cities have been imagined) has not taken into account of (nor promoted) any regular independent scientific evaluation on technological risks for humans and the environment, although deep concerns by the medical/research scientific Community have been expressed[82]. Rather, it has been shown that studies on the health impact of electromagnetic radiation in the past have often been influenced by industry[83]. In order to fulfill its function, scientific advice on health-related matters must be based on the principles of excellence, independence and transparency, as stated in the EU case-law[84].

To date, no specific multilevel planning (or agenda) assessing risks caused by higher RFR exposures exists. As a consequence, European Council strategies (in particular, Lisbon of 2000 and "*Europe 2020*" of 2010), as well as the digital agenda[85], as defined by the EU Commission in 2010[86] together with all the subsequent and related acts by the Commission should be deemed as unlawful, as they ignore (or do not pay the required attention to) such assessment[87].

Within this scenario, it is necessary to identify the tools that the multilevel legal order put at disposal of legal operators (such as jurists, especially those of courts).

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[82] See for instance "*The 5G appeal*" to the European Union, through which on 13 September 2017 more than 180 scientists and doctors from 36 countries warn about the danger of 5G, which will lead to a massive increase in involuntary exposure to electromagnetic radiation. The scientists urge the EU to follow Resolution 1815 of the Council of Europe, asking for an independent task force to reassess the health effects: see https://www.5gappeal.eu/.

[83] One of the most known cases in this regard is the 2004 European REFLEX study conducted on behalf of the EU by 12 institutions for a total budget of 3 million Euros. The results show that even at a SAR value of 1,3W / kg (representative of many mobile phones) significant biological damage is done in human cells and especially to the DNA. The Reflex study was accused of scientific fraud, especially by industry-related Prof. Alexander Lerchl, professor at a private university in Bremen. In 2010, the allegations turned out to be all false and the Reflex study was cleared of all blame. The IARC Committee of the World Health Organization (WHO) dealing with radiofrequency radiation and cancer, refused Lerchl as a member because of conflicts of interest. The IARC explained that his membership would not contribute to a balanced commission because a large part of his work was merely aimed at undermining publications showing health effects: see https://www.jrseco.com/eu-reflex-study-shows-dna-damage-caused-by-radiation-from-wireless-devices-and-mobile-phones/. The wrongfully accused lab assistant of the REFLEX team sued Prof. Alexander Lerchl for libel and won: see http://kompetenzinitiative.net/KIT/KIT/elisabeth-kratochvil-verklagt-professor-alexander-lerch/. The independence of research on possible biological effects of radio frequency fields for the type of signals emitted by cell phones has been challenged also by the U.S. senator Richard Blumenthal during the hearing of 7 February 2019 on the future of 5G wireless technology and their impact on the American people and economy, cit.

[84] Court of first instance, judgment 11 September 2002, T-13/99, *Pfizer* par. 159.

[85] Terms like "strategy" and "agenda" are, under a semantic point of view, to be meant as synonyms of planning, which is a typical concept in administrative law.

[86] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A Digital Agenda for Europe*, COM (2010) 245 final/2 of 26 August 2010.

[87] See F. de Leonardis, *Tra precauzione, prevenzione e programmazione*, in *Dal diritto dell'emergenza al diritto del rischio*, edited by L. Giani, M. D'Orsogna, A. Police, Napoli, 2018, p. 49 ff., esp. 69.

First of all, general prevention measures cannot be adopted, as they imply a scientific certainty[88]. Therefore, only *ad hoc* measures, in which the risk is assessed case-by-case, in absence of (and awaiting for) an appropriate administrative planning[89]. In this regards, case-law has clarified that the risk assessment in a specific measure is only a remedy, meaning that if the risk is not assessed by the planning, it must be assessed in the specific authorizing measure[90]. In this regards, some scholars have observed that the precautionary principle may find application to guide the public administration in the exercise of its discretionary power[91], on the ground of Article 1, Law No 241/90.

Recourse to the (general and binding[92]) precautionary principle[93] entails an anticipation of precautionary measures to the phase in which scientific knowledge is not yet certain[94] and technological risks cannot be scientifically excluded[95].

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[88] See G. Manfredi, *Note sull'attuazione del principio di precauzione in diritto pubblico,* in *Dir. pubb.*, 2004, p. 1075 ff., esp. P. 1086. M. Cecchetti, *Principi costituzionali per la tutela dell'ambiente*, Milano, 2000, p. 174.

[89] In this respect, F. de Leonardis, *Tra precauzione, prevenzione e programmazione*, cit., pp. 52-53, clarifies the difference between the two principles (precautionary and prevention). Although historically the precautionary principle represents a specification of the prevention principle, they are based on different premises, as while the former applies to situations characterised by uncertainty, the latter finds application in cases where a scientific certainty (or a much less uncertainty) exists.

[90] See for instance Italian Council of State, Fourth Division, judgment 4 June 2004, No 35059.

[91] M. Clarich, *Manuale di diritto amministrativo,* Bologna, 2017, p. 161; F. de Leonardis, *Il principio di precauzione nell'amministrazione di rischio*, Milano, 2005, p. 57 ff.; A. Zei, *Il principio di precauzione: programma, regola, metodo*, in *Un diritto per il futuro*, edited by R. Bifulco and A. D'Aloia, Napoli, 2008, p. 724; Id., *Principio di precauzione*, in *Dig. disc. pubbl.*, Agg., 2008, II, 674; V. Cerulli Irelli, *Lineamenti del diritto amministrativo*, Torino, 2017, p. 265; M.P. Chiti, *Il rischio sanitario e l'evoluzione dall'amministrazione dell'emergenza all'amministrazione precauzionale*, in *Riv. it. dir. pubbl. com.*, 2006, p. 7 ff.; F. Fracchia, *Lo sviluppo sostenibile. La voce flebile dell'altro tra protezione dell'ambiente e tutela della specie umana*, Napoli, 2010, p. 31 ff.

[92] On the bindingness of such principle see, among other decisions, Regional Administrative Court of Trentino Alto Adige, Trento, First Division, 25 March 2010, No 93; Regional Administrative Court of Lazio, Third-*quarter* Division, 20 March 2006, No 2001; Regional Administrative Court of Lazio, Second-*bis* Division, 23 June 2006, No 2056.

[93] In general, the precautionary principle has been widely analysed. Among the others, see *Trattato di diritto dell'ambiente*, edited by R. Ferrara and M.A. Sandulli, Milano, 2014, I, p. 135 ff.; C.E. Foster, *Science and the Precautionary Principle in International Courts and Tribunals: Expert Evidence, Burden of Proof and Finality*, Cambridge, 2013; M. Lee, *EU Environmental Law: Challenges,Change and Decision Making*, Oxford, 2005, p. 97 ff.; European Environmental Agency, *Late lessons from early warnings: science, precaution, innovation*, Second Part, Copenhagen, 2013, and http:// www.eea.europa.eu/publications/late-lessons-2. For other references see note No. 57, *supra*

[94] P. Thieffry, *Le contentieux naissant des organismes génétiquement modifiés: précaution et mesures de sauvegarde*, in *Rev. trim. droit europ.*, 1999, p. 81 ff., esp. 83; T. Marocco, *Il principio di precauzione e la sua applicazione in Italia e in altri Stati membri della Comunità europea*, in *Riv. it. dir. pubbl. com.*, 2003, p. 1233 ff., esp. 1233.

[95] Cfr. ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, par. 69. After the BSE cases, the precautionary principle found a remarkable systematisation (also in terms of its conditions of application) in two cases of the Court of first instance both dated 11 September 2002, T-13/99, *Pfizer*, and T-70/99, *Alpharma*. See J.L. da Cruz Vilaça, *The Precautionary Principle in EC Law*, in *European Public Law*, Volume 10, Issue 2, 2004, p. 369 ff.

Such principle plays an essential role within the adoption of administrative measures (especially those restrictive) safeguarding health and environment as fundamental goods, and it represents a criterion in the adoption of discretionary measures by public administrations in sectors where scientific uncertainty exists[96].

However, according to a scholar, given that the precautionary principle in the EU does not represent a criterion for the attribution of administrative powers, also in the Italian legal order it would not be able to derogate to the principle of legality (rule of law)[97].

The precautionary principle entails a general obligation to prevent dangerous situations concerning environment and health, obligation imposed on public and private persons, as well as on who realizes potential dangerous activities and on authorities that oversight on the observation of the relevant regulation. More specifically, it is mandatory to act preventively not only in case of imminent threat of environmental damage, but also when a suspect of such threat can be identified. Therefore, the mere suspect of a imminent threat justifies a preventive intervention[98].Moreover, to date, the above-mentioned anticipation of precautionary measures seems to bring about discriminations with regards to the protection of health[99], because, lacking a common European Union approach, that anticipation facilitates the adoption of different measures depending on the Member State(s) under consideration: for example the restrictive measures on 5G adopted by the Belgian Administration as opposed to the Italian information campaigns, above mentioned.

A comprehensive and scientifically-supported agenda to deal with RFR related matters (above all with regards to the 5G technology) should therefore be adopted at EU level. In this respect, together with Articles 191 and 114 TFEU, the legal basis may be Article 168 TFEU, that – in the definition and implementation of all Union policies and activities –

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[96] F. de Leonardis, *Il principio di precauzione nell'amministrazione di rischio*, cit., 57. See also notes No. 57 and 93, *supra*.

[97] E. Follieri, *Decisioni precauzionali*, cit., p. 1495.

[98] F. de Leonardis, *La bonifica ambientale*, in *Trattato di diritto dell'ambiente*, vol. II – *Discipline ambientali di settore*, edited by P. Dell'Anno and E. Picozza, Assago, 2013, p. 312. See also Court of Bologna, Order 31 July 2006, in *Danno resp.*, No. 12/2007, p. 1249 ff., as well as, before Law No 36/2001 on electromagnetic pollution, Italian Supreme Court (Corte di cassazione), Third division, judgment 27 July 2000, No 9893, in *Danno resp.*, 2001, p. 37. The subsequent case-law by other courts complied with such decision. On such case-law see M.G. Stanzione, *L'incidenza del princioio di precauzione sulla responsabilità civile negli ordinamenti francese e italiano*, in *www.comparazionedirittocivile.it*, June 2016, p. 23 ff.

[99] Such discrimination are prohibited by the EU law, pursuant to the general principle of equality laid down in Article 18 of TFEU, which, according to the EU case-law, has direct effect: ECJ, judgment 22 November 2005, C-144/04, *Mangold*, para. 77-78. On this provision see D. Edward, R. Lane, *European Union Law*, Cheltenham (UK), Northampton (MA), 2013, p. 422 ff.

ensures, "*[a] high level of human health protection*" (par. 1, first alinea). More specifically, Union action "*shall be directed towards improving public health, preventing physical and mental illness and diseases, and obviating sources of danger to physical and mental health*" (par. 1, second alinea). Pursuant to Article 168, par. 2, second alinea, "*Member States shall, in liaison with the Commission, coordinate among themselves their policies and programmes in the areas referred to in paragraph 1*". In this perspective, the Treaty recognizes to the Commission a wide power, being it legally authorized to take, "*in close contact with the Member States* [also on the basis of the principle of subsidiarity] *any useful initiative to promote such coordination*"[100].

The competence of the Union in the field of public health has been widely extended over time. From the reading of Article 168 of the Treaty, public health, from pure supporting, encouragement and coordination competence, was transformed into a real legislative competence, with the introduction of the power to adopt binding measures to set high levels of quality and security of organs and substances of human origin[101]. However, as far as RFR is concerned, the Commission may task a high-level group of experts (e.g. SCHEER and/or IARC) to scientifically assess, in an independent and objective way, whether exposure to RF radiation (especially, but non only, those emitted by mobile phones) affects human health. Also the European Court of Justice, within the scientific evaluation of risks for human health, has always given great importance to results of the most recent and trustworthy works and research by international and EU scientific Committees[102].

In this regards, the European Commission has pointed out that *"[w]hen decision-makers become aware of a risk to the environment or human, animal or plant health that in the event of non-action may have serious consequences [they] have to obtain, through a structured approach, a scientific evaluation, as complete as possible, of the risk to the*

[100] As has been recalled by the European Court of Justice, the EU Commission "*enjoys a wide measure of discretion, particularly as to the nature and extent of the measures which it adopts*", and therefore "*the Community judicature must, when reviewing such measures, restrict itself to examining whether the exercise of such discretion is vitiated by a manifest error or a misuse of powers or whether the Commission did not clearly exceed the bounds of its discretion*": ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, cit., par. 39. ECJ, judgment 25 January 1979, case 98/78, *Racke v Hauptzollamt Mainz*, par. 5.

[101] G. Guerra, *La strategia europea in materia di sanità: esame del programma pluriennale d'azione per la salute 2014-2020*, in *Politiche sanitarie*, No. 4, 2014, p. 212 ff., esp. 212. See also C. Curti Gialdino, *Codice dell'Unione Europea operativo. TUE e TFUE commentati articolo per articolo*, Napoli, 2012, p. 1373.

[102] See, *ex multis*, ECJ, judgment 10 December 1985, C-247/84, *Motte*, par. 24; ECJ, judgment 28 January 2010, C-333/08, *Commission v. France*, par. 92; ECJ, 9 September 2003, C-236/01, *Monsanto Agricoltura Italia and o.*, par. 113.

environment, or health, in order to select the most appropriate course of action"[103].

In this view, EU law lays down that a precautionary decision should always be based on "*available scientific and technical data*" (Article 191, par. 3, TFEU), with the consequence that technical bodies should always be consulted[104].

Precautionary measures may not be adopted by administrations (i.e.: the EU Commission) whether reliable data were not available. However, in such case, and as *extrema ratio*, it would be possible to adopt a precautionary measure as long as the effectiveness of the measure at stake is limited in time and provided that scientific studies are simultaneously undertaken[105].

Such approach was followed by the EU Commission[106] (and judged as lawful by the European Court of Justice) in case *National Farmers Union*[107]. In this case, the precautionary measures adopted by the Commission concerning the ban on exports of bovine meat were not regarded as a "*manifestly inappropriate measure*"[108], as the Commission made preliminary technical assessments. In fact, as pointed out by the European Court, "*the recitals in the preamble to the decision, read as a whole, show that the Commission was prompted to adopt the provisional measures by concerns as to the risk of transmissibility of BSE to humans, after examining the measures adopted by the United Kingdom and consulting the Scientific Veterinary Committee and the Standing Veterinary Committee*"[109].

In this case, the EU judges confirmed the lawfulness of the precautionary measure, having found specific elements (*recte*: objective, precise and consistent evidence) with regards to the causal link. In the 1998 *National Farmers Union* case the European Court requires that the risk justifying the precautionary measure is reasonable and ascertained by a specific

[103] Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000, point 6.1.
[104] F. de Leonardis, *Tra precauzione, prevenzione e programmazione*, cit., p. 63.
[105] F. de Leonardis, *Tra precauzione, prevenzione e programmazione*, cit., p. 64. See also Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000, point 6.3.5.
[106] Commission Decision 96/239/EC of 27 March 1996 *on emergency measures to protect against bovine spongiform encephalopathy*.
[107] ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, cit.
[108] ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, cit., par. 71.
[109] ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, cit., par. 71. Moreover, as specified in par. 3 of the judgment, the decision was adopted by the Commission "*following the issue on 20 and 24 March 1996 of two statements by the Spongiform Encephalopathy Advisory Committee ('SEAC'), an independent scientific body which advises the United Kingdom Government, concerning the existence of a possible link between bovine spongiform encephalopathy ('BSE') and Creutzfeldt-Jakob disease*".

investigation.

The European Union case-law hence allows the adoption of precautionary measure in cases in which health, environment and consumer security risks exist, even if such measures have to comply with the general principle of proportionality[110].

With regards to electromagnetic radiations, the proportionality test[111] would therefore be necessary. As a consequence, the precautionary principle, interpreted as a general rule enshrined in European law, gives precedence to health (and similar) concerns over economic interests in cases of uncertainty[112]. Such a principle has recently made substantially reference to the Italian Administrative case-law, when it talks about the need of balancing the different and opposite interests at stake[113]. The same approach is followed by the Italian Constitutional Court, with regards to polluting emissions[114] and, to some extent, also in relation to the electromagnetic pollution[115], although the Court has not made

[110] See Communication from the Commission on the precautionary principle, cit., point 6.3.1. The principle of proportionality, which is one of the general principles of EU law, requires that measures adopted by EU institutions do not exceed the limits of what is appropriate and necessary in order to attain the objectives legitimately pursued by the legislation in question. When there is a choice between several appropriate measures recourse must be had to the least onerous, and the disadvantages caused must not be disproportionate to the aims pursued: see, *ex multis*, ECJ, judgments 13 November 1990, case C-331/88, *Fedesa and Others*, par. 13; 5 October 1994, joined cases C-133/93, C-300/93 and C-362/93, *Crispoltoni*, par. 41; 23 September 2003, case C-192/01, *Commission/ Denmark*, par. 45; 3 July 2003, C-220/01, *Lennox*, par. 76.

[111] Proportionality means "*tailoring measures to the chosen level of protection*": Communication from the Commission on the precautionary principle, cit., 3. In general, on the proportionality principle see M. Dony, *Droit de l'Union européenne*, Bruxelles, 2010, 93 ff.; P. Kent, *European Union Law*, London, 2003, pp. 30-31.

[112] See ECJ, order 12 July 1996, C-180/96, *UK* v. *Commission*; Court of first instance, judgment 16 July 1998, T-199/96, *Bergaderm & Goupil* v. *Commission*; Court of first instance, judgment 26 November 2002, Joined Cases T-74/00, T-76/00, T-83/00, T-84/00, T-85/00, T-132/00, T-137/00 and T-141/00, *Artegodan a. O.* v. *Commission*, par. 184; Court of first instance, judgment 11 September 2002, T-70/99, *Alpharma*, par. 356. See also Communication from the Commission on the precautionary principle, cit., 4.

[113] Council of State, Sixth Division, Order No 2033/2019, cit., point 5.2. Among the different and conflicting primary interests, the Italian Administrative High Court mentions the fundamental rights and freedoms of natural persons, as guaranteed by the European Convention for the Protection of Human Rights and Fundamental Freedoms and general principles of Union law (see Article 1, par. 3-*bis*, Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 *on a common regulatory framework for electronic communications networks and services (Framework Directive)*, as introduced by Directive 2009/140/EC. However, Directive 2002/21/EC will be repealed, with effect from 21 December 2020, by Directive 2018/1972 of 2018 establishing the European Electronic Communications Code, cit., as laid down in Article 125 of the latter Directive. Similarly to Article 1, par. 3-*bis* of Directive 2002/21/EC, Article 100 of the 2018 Directive lays down that "*National measures regarding end-users' access to, or use of, services and applications through electronic communications networks shall respect the Charter of Fundamental Rights of the Union (the 'Charter') and general principles of Union law*"), the right of information, the right of making and receiving phone calls (and data communication), on one side, and the protection of the environment, of the health and the proper urban planning, on the other side.

[114] See Constitutional Court, judgment 16 March 1990, No 127.

[115] See, among others, Constitutional Court, judgments 7 October 2003, No 307; 7 November 2003, No 331, that primarily concern the allocation of powers between the State and the Regions. However, in such cases, the Constitutional Court, differently from its judgment No 127/90, requires a balancing between the fundamental right to health *ex* Article 32, Constitution – ensured through measures limiting polluting emissions – and the pursuing of national interests, among which those of energy development and of telecommunication development through

direct reference to precautionary as a leading principle of the EU law[116].

In such a context, a breach of the principle of proportionality will occur if the measure adopted by the competent authority is manifestly inappropriate regard being had to the legitimate objective which the competent institution is seeking to pursue[117] or in case it is shown that other, less onerous, measures exist and would have allowed the objective pursued by such measure[118].

In the light of current scientific uncertainty on this matter, and taking into account the case-law that has found a causal link between RFR exposures and severe damages of human health, information campaigns (as those concerning the Italian Administrations, above mentioned) does not seem to be deemed as an appropriate measure.

As the principle of precautionary obliges to adopt any cautionary measure given all possible damages, it is necessary to set the limits beyond which, on a precautionary basis, emissions are not lawful. Such limits mark the measure beyond which the right to health cannot be compressed[119]. Such a conclusion needs to be supported under a scientific (and then also legal/legislative) point of view[120]. However, even if emissions are below the tolerance threshold, set by the legislator or by the public administration, where – afterwards – suspects about the dangerousness for human health are identified, judges can ascertain that a breach of the right to health has occurred in as much as scientific studies can "cover" this decision[121].

Likewise, the Italian administrative case-law[122]considers the precautionary principle as a

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the building and implementation of plants and networks. On those cases see, more extensively, M.G. Stanzione, *Principio di precauzione*, cit., p. 14 ff.

[116] A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 23; M.G. Stanzione, *Principio di precauzione*, cit., p. 8.

[117] Court of first instance, judgment 11 September 2002, T-13/99, *Pfizer* par. 412; ECJ, judgments 13 November 1990, case C-331/88, *Fedesa and Others*, par. 14.

[118] Court of first instance, judgment 11 September 2002, T-13/99, *Pfizer* par. 451.

[119] Council of State, Sixth Division, Order No 2033/2019, cit., point 5.2.

[120] See J.L. da Cruz Vilaça, *The Precautionary Principle in EC Law*, cit., p. 380 ff.

[121] Italian Constitutional Court, judgment No 127/1990, cit., according to which "*il giudice presume, in linea generale, che i limiti massimi di emissione fissati dall'autorità siano rispettosi della tollerabilità per la salute dell'uomo e per l'ambiente. In ipotesi, però, che seri dubbi sorgano, particolarmente in relazione al verificarsi nella zona di manifestazioni morbose attribuibili all'inquinamento atmosferico, egli ben può disporre indagini scientifiche atte a stabilire la compatibilità del limite massimo delle emissioni con la loro tollerabilità, traendone le conseguenze giuridiche del caso*". The same precautionary rationale can be found in another case decided by the same Court (judgment 19 June 2002, No 282).

[122] Regional Administrative Court of Veneto, Second Division, Order 29 July 1999, No 927, confirmed in appeal by the Supreme Administrative Court (Council of State, Order 28 September 1999, No 1737). See also Regional Administrative Court of Veneto, Second Division, 13 February 2001, No 236, in *Foro amm.*, 2001, 1259; Council of State, judgment 29 May 2009, No 7023.

tool aiming at ensuring the safeguard of the human health before the uncertainty deriving from the clear identification of the causal link between damages to the health and electromagnetic radiation exposure, assuming the most dangerous situation for the human health as existing[123].

In such cases, the application of the precautionary principle allows to derogate to the legislative provisions setting emission thresholds, as deemed as not adequate or proportionate to the end of safeguarding human health, according to Article 32 of the Italian Constitution [124].

Awaiting for a specific and appropriate multilevel legislative/regulatory solution – which must however comply with the precautionary principle, as general principle of international (and EU) law[125] –, the EU Court, which a specific preliminary ruling was recently requested to according to Article 267 of TFEU[126], should deal with the mentioned balancing of interests taking a more appropriate approach for RFR (and 5G), in the light of the *National Farmers Union*, the *Pfizer* and the *Artegodan* cases.

Within such perspective, and based on Article 168, par. 2, TFEU[127], the EU Commission may (*recte*: shall) adopt precautionary measures[128], also limited in time (which may consist, for instance, in banning the mobile phones (including cordless) use in public urban spaces, in schools, and in all places of high RFR exposures[129]), and, at the same time, undertake a scientific study/investigation by entrusting independent experts[130].

In this respect, on 17 July 2018 a parliamentary written question on "*5G radiation and health risks*"[131] by Nicola Caputo (S&D) was addressed to the EU Commission. In particular, Mr Caputo asked the Commission "*whether it intends to set up a European task force of independent and impartial scientists on electromagnetic fields to examine the health risks*".

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[123] See A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., 24. See also M.G. Stanzione, *Principio di precauzione*, cit., p. 23 ff.
[124] See A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 24.
[125] See Communication from the Commission on the precautionary principle, cit., point 4, p. 10.
[126] Council of State, Sixth Division, Order No 2033/2019, cit.
[127] By analogy to Directives 90/425 and 89/662, drafted in very wide terms, inasmuch as they authorise the Commission to adopt all the "necessary measures" (in relation to the scope of those Directives: ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, cit., par. 33.
[128] The same obligation bears upon domestic administrations.
[129] As specifically recommended by the Council of Europe in its 2011 Resolution, cit. 1
[130] Such an approach is consistent with the indication provided by the European Commission in its Communication on the precautionary principle, cit., point 6.3.1.
[131] Parliamentary question E-003975/2018.

In its answer[132], the European Commission states that "*Under Article 168 of the Treaty on the Functioning of the European Union, the primary responsibility for protecting the public from potential harmful effects of electromagnetic fields remains with the Member States, including the choice of measures to be adopted based on age and health status*".

The power to act granted to the Commission does not represent a mere right or faculty[133], given that the (competent) public authorities "*are obliged to maintain a high level of protection of human health*", and the precautionary principle is one of the tools allowing those authorities to comply with that obligation[134]. Such obligation results from, on one side, the political (and legal) responsibility[135] pursuant to Article 168 of the Treaty and, on the other side, the EU case-law, according to which "*[w]here there is uncertainty as to the existence or extent of risks to human health, the institutions may take protective measures without having to wait until the reality and seriousness of those risks become fully apparent*"[136].

Recourse to the precautionary principle is relevant only in the event of a "*potential risk*", that is based on scientific data evaluation "*even if this risk cannot be fully demonstrated or quantified or its effects determined because of the insufficiency or inclusive nature of the scientific data*"[137].

The power of intervention granted to the Commission is very broad, as indicated in the EU case-law. In the *Pfizer* case, the Court states that "*under the precautionary principle the Community institutions are entitled, in the interests of human health to adopt, on the basis of as yet incomplete scientific knowledge, protective measures which may seriously harm*

[132] Answer given by Mr Andriukaitis on behalf of the European Commission on 6 September 2018.

[133] However, such provision is generally interpreted as meaning that the EU exercises only actions which support, coordinate or complement Member States' measures, though the Commission has been granted broad coordination and initiative powers, pursuant to par. 2 of Article 168. See M. Migliazza, *Sub* Art. 168, in *Commentario breve ai Trattati dell'Unione europea*, directed by F. Pocar, M.C. Baruffi, Assago, 2014, p. 1040.

[134] ECJ, judgment 11 July 2013, C-601/11 P, *France v. Commission*, par. 139. A general obligation for the EU institutions to act in order to prevent specific potential risks, without reference to the conditions within which such obligation is to be fulfilled, was recognised in *Artegodan*, as stemming from the precautionary principle: Court of first instance, judgment 26 November 2002, Joined Cases T-74/00, T-76/00, T-83/00, T-84/00, T-85/00, T-132/00, T-137/00 and T-141/00, *Artegodan a. O.* v. *Commission*, par. 184, according to which "*the precautionary principle can be defined as a general principle of Community law requiring the competent authorities to take appropriate measures to prevent specific potential risks to public health, safety and the environment*".

[135] See European Commission in its Communication on the precautionary principle, cit., point 5.

[136] ECJ, judgment 5 May 1998, C-157/96, *National Farmers Union*, cit., par. 63, as well as par. 61. The same principle was affirmed by the Court also in other judgments: see, among others, 10 April 2014, C-269/13 P, *Acino AG v. Commission*, par. 57; 9 September 2003, C-236/01, *Monsanto Agricoltura Italia and o.*, par. 111, as well as, 26 May 2005, C-132/03, *Codacons and Federconsumatori*, par. 61, and 12 January 2006, C-504/04, *Agrarproduktion Staebelow*, par. 39.

[137] Communication from the Commission on the precautionary principle, cit., point 5.1.

legally protected positions, and they enjoy a broad discretion in that regard"[138].

It must be however noted that with regards to the implementation of the digital agenda (and the 5G technology, in particular), the Commission is, *ex facto*, in a paradoxical situation, such to (probably) determine its inertia. In fact, it was the Commission that in 2010 enacted the digital agenda, and it is the same Commission that, pursuant to Article 168 of the Treaty should verify and challenge its work, lacking of the independent scientific studies/investigations required by the principle of precautionary. And therefore: *quis custodiet ipsos custodes*?

A possible legal solution in facing this inertia may consist in bringing, by Member States or EU institutions, an action before the Court of Justice to have the infringement (omission *ex* Article 168, par. 2, TFEU) by the Commission established, and inasmuch as the requirements of such action, as laid down in Article 265 of TFEU, are met[139].

In this respect, some scholars have pointed out that the judicial control by the Court would in such cases be necessary also (and above all) whether the power to act by the Commission is meant as mere faculty, due to the absence of a political control over discretionary acts[140].

The more restrictive position seems more consolidated in the EU case-law[141], even if the Court has clarified that each time the Treaty sets an objective to achieve, even if the Treaty gives a certain margin of discretion to the concerned institution as for the means for attaining it, the Court may declare that such institution has failed to comply with Article 265 if it refrains from taking all necessary measures to achieve it[142].

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[138] Court of first instance, judgment 11 September 2002, T-13/99, *Pfizer* par. 170.

[139] According to Article 265, alinea 1, TFEU, "*Should the European Parliament, the European Council, the Council, the Commission or the European Central Bank, in infringement of the Treaties, fail to act, the Member States and the other institutions of the Union may bring an action before the Court of Justice of the European Union to have the infringement established*". See M. Dony, *Droit de l'Union européenne*, cit., 297 ff.; P. Kent, *European Union Law*, cit., 54-55.

[140] See A. Tizzano, *Sub* Art. 175, in *Trattato istitutivo della Comunità Economica Europea. Commentario*, directed by R. Quadri, R. Monaco, A. Trabucchi, III, Milano, 1965, 1289 ff., esp. 1296 ff., who, interpreting extensively the action at stake, clarifies that scholars and the EU case-law have not reached unanimity with regards to its interpretation. For a deeper analysis of the debate see M. Dony, *Droit de l'Union européenne*, cit., 299 ff.

[141] See Court of first instance, judgment 11 July 2007, T-167/04, *Asklepios Kliniken v. Commission*, par. 80, as well as Court of first instance, judgment 15 September 1998, T-95/96, *Gestevisión Telecinco v. Commission*, par. 71.

[142] ECJ, judgment 22 May 1985, 13/83, C-13/83, *Parliament v. Council*.

4. Final remarks.

The advantages offered by the new digital technology come with some challenges, among which the protection of health and environment.

Those challenges have not been properly handled at the European Union and domestic (specifically Italy) levels, and large discrepancies exist among Member States.

The underlying problem, common to all the above-mentioned limits, is based on a balancing of conflicting interests. On one hand, the necessity that all may enjoy technology and the digital society – with the aim of fostering social and territorial cohesions (making the exercise of fundamental rights possible) and thereby overcoming or significantly reducing inequalities – entails the strengthening and further development of multilevel digitalization policies.

On the other hand, the different risks stemming from technology (for instance 5G), that can jeopardize primary goods (like health and environment), require to slow down the development of digitalization policies, at least until those risks can be deemed as acceptable[143]. This is also the recommendation stemming from a recent in-depth analysis prepared on behalf of the European Parliament. The report deems as an essential aim to increase "*long-term R&D efforts on 5G […] to understand multiple propagation unknowns (e.g. measuring and controlling RF EMF exposure with MIMO at mmWave frequencies)*"[144].

As has been pointed out by the EU Commission, judging what is an "acceptable" level of risk for society is an eminently political responsibility. Decision-makers faced with an unacceptable risk, scientific uncertainty and public concerns have a duty to find answers[145].

The duty of information of citizens – bearing upon public administrations – aiming at reducing risks associated to radiofrequency exposures is not sufficient to protect primary goods, like the human health, being public administrations required to prepare and implement action plans effectively suitable to prevent a breach of the right to health[146].

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[143] ECJ, judgment 11 July 2013, C-601/11 P, *France v. Commission*, par. 139.

[144] EU Parliament, Policy Department for Economic, Scientific and Quality of Life Policies - Directorate-General for Internal Policies, *5G Deployment. State of Play in Europe, USA and Asia*, April 2019, 6. This document was requested by the European Parliament's Committee on Industry, Research and Energy.

[145] Communication from the Commission on the precautionary principle, COM(2000) 1 final, 2 February 2000, point 5. On the political character of precautionary policies see F. Fonderico, *Tutela dall'inquinamento*, cit., 911.

[146] A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 24.

In this regards, the law cannot be limited to merely ratify the scientific knowledge, being rather called upon its not easy function of critic and of integration of the scientific knowledge in situations where possible causal links between potential factors of damages and injurious effects are not identifiable with specific scientific criteria[147]. The proper application of the precautionary principle is the implementation of an interdisciplinary relationship between law, science and economy[148].

For instance, as far as radiofrequency radiation exposures are concerned, the common approach taken by the telecommunication operators in their projects aims at increasing the radiation threshold limits and therefore the installation of new antennas in urban areas, without providing any preliminary study on health risks for humans due to permanent exposures to RFR. And this scenario sees a substantial "inertia" by multilevel legislators and regulators. In this regards, the multilevel digital agenda has not taken into account of (nor promoted) any regular independent scientific evaluation on technological risks for humans and the environment, although deep growing concerns by both the medical and the research scientific Communities have been expressed over time.

Awaiting for a specific and appropriate multilevel legislative/regulatory solution, a crucial role in dealing with the mentioned balancing of interests may be played by the EU Court of Justice and by the EU Commission (as well as by domestic courts and public administrations[149]), in the light of the multilevel case-law on protection of human health (at the EU level, especially the *National Farmers Union*, the *Pfizer* and the *Artegodan* cases).

Such case-law allows the adoption of precautionary measures in cases in which health, environment and consumer security risks exist, even if such measures have to comply with the general principle of proportionality. Such a principle the Italian Administrative case-law has recently made substantially reference to, when it requires a balancing of the different and opposite interests at stake[150].

In light of the current scientific uncertainty as regards to the limits beyond which RFR exposures bring about severe damages to human health, it is necessary to set those limits

[147] A. Longo and F. M. Distefano, *Il ruolo del principio di precauzione*, cit., p. 7.
[148] *Op. loc. cit.*
[149] In Italy, the public administration is the target of the precautionary principle: see Council of State, Fifth Division, 8 March 2017, No 1089; Regional Administrative Court of Piemonte, First Division, 22 January 2018, No 99.
[150] Council of State, Sixth Division, Order No 2033/2019, cit., point 5.2.

on a precautionary basis, as they mark the measure beyond which the right to health cannot be compressed. However, as clarified by the above-mentioned case-law of the Italian Constitutional Court, when emissions are below the tolerance threshold, set by the legislator or by the public administration, but afterwards suspects about the dangerousness for human health are identified, judges can ascertain that a breach of the right to health has occurred in as much as scientific studies can "cover" this decision.

Both the EU Court of Justice and the European Commission have the power to carry out the required balancing of interests: the former, within the specific preliminary ruling requested by the Italian Council of State on 27 March 2019 pursuant to Article 267 of TFEU; the latter, on the basis of Article 168 of TFEU[151].

In both cases the mentioned balancing of interests should lead to take a more appropriate approach for RFR (and 5G), in light of the above-mentioned case-law.

Abstract: Il lavoro analizza le nuove infrastrutture tecnologiche, come il 5G, necessarie per alimentare la nuova economia digitale basata sull'Internet delle Cose (IoT), con l'obiettivo di fornire una diversa prospettiva allo studio del tema. A tale riguardo, se è innegabile che la globalizzazione e la *information society* hanno un impatto positivo crescente sulla vita delle persone, è altrettanto vero che i vantaggi offerti dalle nuove tecnologie presentano anche molteplici criticità.

Sotto il profilo giuridico e regolatorio, legislatori e regolatori reagiscono lentamente o non reagiscono affatto, determinando così discriminazioni tra i cittadini degli Stati membri dell'Unione o un vuoto normativo, in un settore caratterizzato da un rapido sviluppo. Tali differenze tra Stati membri riguardano beni primari, tra cui la tutela della salute e dell'ambiente.

Il contributo cerca di individuare possibili rimedi all'inerzia del legislatore e regolatore multilivello, in attesa di una disciplina più completa e organica. A tale proposito, lo scritto analizza il rapporto tra intervento legislativo e azione amministrativa, con particolare attenzione dedicata al principio di precauzione.

Il principio di precauzione gioca un ruolo essenziale nell'ambito dell'adozione di provvedimenti amministrativi (specialmente quelli di natura restrittiva) per la tutela della salute e dell'ambiente come beni primari, e rappresenta un criterio per orientare la pubblica

[151] Domestic courts and public administrations have the same power, which is grounded on different legal sources.

amministrazione nell'esercizio del suo potere discrezionale, sulla base dell'art. 1, legge n. 241/90, in settori – tra cui le infrastrutture tecnologiche di quinta generazione o 5G e le radiazioni di radiofrequenza – dove esiste incertezza sul piano scientifico.

Abstract: The paper aims at analysing the new technological infrastructures, like 5G, necessary to fuel the new digital economy based on the Internet of Things (IoT), with the objective to give a diverse perspective to the study of such topic. In this respect, if it is undeniable that globalization and information society have an increasing positive impact on people life, it is nonetheless true that the advantages offered by such new technology come with some challenges.

Under a legal and regulatory point of view, legislators and regulators are reacting slowly or not reacting at all, thereby determining legislative discriminations among citizens of the EU member States or a regulatory vacuum, in a sector characterised by its fast-moving nature. Those discrepancies among member States concern different primary goods, among which the health and the environment protection.

The paper aims at identifying possible remedies to the inertia of multilevel legislator and regulator, waiting for a more comprehensive and organic regulation. In this regards, the relationship between legislative intervention and administrative action is analysed, focusing specifically on the general principle of precautionary.

The principle of precautionary plays an essential role within the adoption of administrative measures (especially those restrictive) safeguarding health and environment as primary goods, and it represents a criterion to guide the public administration in the exercise of its discretionary power, on the ground of Article 1, Law No 241/90, in sectors – including Radiofrequency radiation and 5G technology – where scientific uncertainty exists.

Parole chiave: radiazioni di radiofrequenza – 5G – tutela della salute – tutela dell'ambiente – omissioni legislative – principio di precauzione.

Key words: radiofrequency radiation – 5G – health protection – environment protection – legislative omissions – principle of precautionary.