Draft legal act

Draft legal act for the ECI: Stop (((5G))) - Stay Connected but Protected
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Created by Europeans for Safe Connections

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Because of the many hazards arising from 5G we call for a moratorium on the deployment of 5G, including 5G from space satellites, until its adverse effects on health, the environment and digital rights have been fully investigated.

The deployment of 5G constitutes an experiment on humanity and the environment, since there are no studies that prove RF EMF to be safe and 5G has not been tested on health and environmental impacts before being put on the market.

This request is in line with

- the 2020 Consensus Statement of UK and International Medical and Scientific Experts and Practitioners on Health Effects of Non-Ionising Radiation https://phiremedical.org/wp-content/uploads/2020/11/2020-Non-Ionising-Radiation-Consensus-Statement.pdf
- https://www.emfscientist.org/
- https://www.5gspaceappeal.org/
- http://www.5gappeal.eu/
- https://stop5ginternational.org/
- https://www.bbilan.org/hhti-declaration

ENACT REGULATION TO PROTECT ALL LIFE FROM RADIO FREQUENCY AND MICROWAVE RADIATION

Proposal 1

Enact exposure limits to RF EMF based on **all health and biological effects**, not only thermal, to protect humans – especially children, pregnant women, patients, the elderly, those injured by and sensitive to this radiation and those using electromedical devices or implants; apply **the precautionary principle**

Explanation

In many cases, duration of exposure from a mixture of sources of RF EMF is 24/7/365. Existing exposure limits [i] cannot protect living beings due to the following factors not taken into account:

- **the frequency, the level, duration and type of exposure** (Irish STATUTORY INSTRUMENTS No. 337 of 2016 [ii] page 7, point 7b),
- wave characteristics (**modulation, power-density, polarization, pulsation, directionality and beam concentration, harmonics and heterodyning**),
- **duration of exposure, distance** from sources of radiation, complex **combination** of multiple radiation sources,
- **potential for Time-Dependant Sensitization** in exposed organisms producing effects at decreasing intensities,
- the **amplifying effects** of different types of radiation as well as **peak** values,
- pulse frequencies must be considered separately from the fundamental frequency (Current EU legislation is based on the time integral of the EMF field intensity and does not take into account high pulse waveform of EMF modulated field. These can be extremely high in terms of signal propagation, while the time integral of the EMF limit is very small. Pulsed EMFs are usually much more biologically active than non-pulsed [1] [2])

RF EMF have negative effects as they interfere with biological, chemical and electrical systems in human organisms at lower intensities than current exposure limits allow. WHO EMF Project Report 2021 [iii] confirms that RF EMF induces oxidative stress in cells, which can lead to mitochondria DNA damage and adverse effects on other biological processes and organs. It has been proven both in vitro and in vivo via several peer-reviewed studies that RF EMF opens up CA+(calcium voltage gated channels)[3] [4] [5] in cell membranes causing **calcium reflux** into the cells that starts multiple

1 Pall 2018: Wi-Fi is an important threat to human health; https://www.sciencedirect.com/science/article/pii/S0013935118300355

2 Panagopoulos, 2019: Comparing DNA damage induced by mobile telephony and other types of man-made electromagnetic fields; Mutation research 781; https://www.sciencedirect.com/science/article/abs/pii/S1383574218300991

3 Panagopoulos et al. 2015: Polarization: A Key Difference between Man-made and Natural Electromagnetic Fields, in regard to Biological Activity; https://europepmc.org/article/MED/26456585

pathogenic processes within the body (oxidative stress[6], cellular signalling and cell metabolism, reproduction[7] [8] [9], fetal development[10], nervous system[11] [12], blood and cardiovascular systems, immune systems[13], etc.). 1998 ICNIRP guidelines[vii] confirm 'microwave hearing' and 'retinal damage' (page 14). Workplace Directive 2013/35/EU [iv] states 'stimulation of muscles, nerves or sensory organs' (Article 2). Continuous exposure to RF EMF maximizes the risk of persistent and continuous oxidative stress and, consequently, makes humans vulnerable to **all** health risks.

"*High frequency electromagnetic fields (GSM signals)* ***affect gene*** *expression levels in tumor suppressor p53-deficient embryonic stem cells*" [14]

"*The research established that while the current digital society will continue investment into 5G network technology, caution must be applied* ***not to deploy 5G network under ultra-high frequency above 20 GHz*** *due to its adverse health effects.*" [15] It is known that high-frequency EMF affects the sweat glands (which may serve as helical antennas) and may have indirect effects on many organs in the body. [16] [17]

Also proven by several peer-reviewed studies, long-term, below-ICNIRP limits exposure causes both single and double bond breakage of DNA. International Agency for Research of Cancer (IARC) classified RF-EMF as a "Class 2B" [v] (a possible human carcinogen) in 2011 and in 2019 instructed research groups to focus on RF-EMF as a causal agent in their upcoming monographies.

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4 Scheler 2016: Polarisation: Ein wesentlicher Faktor für das Verständnis biologischer Effekte von gepulsten elektromagnetischen Wellen niedriger Intensität; https://www.emfdata.org/de/dokumentationen/detail?id=103

5 Eberhardt and Halgamuge 2011: Reply to Comment on "Behavior of Charged Particles in a Biological CellExposed to AC-DC Electromagnetic Fields"; https://www.academia.edu/1133361/Reply_to_Comment_on_Behavior_of_Chto_AC_DC_Electromagnetic_Fields_and_on_Comparison_Between_Two_Models_of_Interaction_Between_Electric_and_Magnetic_Fields_and_Proteins_in_Cell_Membranes

6 BERENIS - Swiss expert group, Newsletter Special Issue January 2021; https://www.bafu.admin.ch/bafu/en/home/topics/electrosmog/newsletter-of-the-swiss-expert-group-on-electromagnetic-fields-a.html

7 Adel Zalata et al: In vitro effect of cell phone radiation on motility, DNA fragmentation and clusterin gene expression in human **sperm**

8 Pooja Negi & Rajeev Singh, 2021: Association between reproductive health and nonionizing radiation exposure; Electromagnetic Biology and Medicine, https://www.tandfonline.com/doi/full/10.1080/15368378.2021.1874973

9 Gautam et al 2021: Impact of nonionizing electromagnetic radiation on male infertility: an assessment of the mechanism and consequences; International Journal of Radiation Biology, https://www.tandfonline.com/doi/full/10.1080/09553002.2020.1859154

10 Hozefa A Divan et al 2008: **Prenatal** and postnatal exposure to cell phone use and behavioral problems in children

11 Federico Bertagna et al: Effects of electromagnetic fields on **neuronal ion channels**:a systematic review

12 Pall 2016: Microwave frequency electromagnetic fields (EMFs) produce widespread neuropsychiatric effects including depression; Journal of Chemical Neuroanatomy, https://www.sciencedirect.com/science/article/pii/S0891061815000599

13 Yang et al 2013: Reactive oxygen species in the immune system; https://pubmed.ncbi.nlm.nih.gov/23617726/

14 Czyz et al 2004: High frequency electromagnetic fields (GSM signals) affect gene expression levels in tumor suppressor p53-deficient embryonic stem cells; PMID: 15114639; https://pubmed.ncbi.nlm.nih.gov/15114639/

15 Matthew et al 2021: Chemical Polarization Effects of Electromagnetic Field Radiation from the Novel 5G Network Deployment at Ultra High Frequency; Health and Technology; https://www.researchgate.net/publication/342013918_Chemical_Polarization_Effects_of_Electromagnetic_Field_Radiation_from_the_Novel_5G_Network_Deployment_at_Ultra_High_Frequency

16 Belyaev, 2019: Main Regularities and Health Risks from Exposure to Non-Thermal Microwaves of Mobile Communication; 14th International Conference on Advanced Technologies, Systems and Services in Telecommunications (TELSIKS), https://ieeexplore.ieee.org/document/9002324

17 S. Kim and I. Nasim, 2020: Human Electromagnetic Field Exposure in 5G at 28 GHz; IEEE Consumer Electronics Magazine; https://ieeexplore.ieee.org/document/9090831

There is a common consensus that this will most probably lead to a re-evaluation of category, more severe than 2B.

Adult Workers:

Directive 2013/35/EU [iv] recognizes Non-thermal RF EMF effects as a known workplace health risk, although workplace guidelines are still based on 6 minutes, which does not represent normal workplace exposure. Adult workers have legally binding RF EMF directives recognising detrimental effects of exposure intensities less than worldwide RF EMF limits on the physical and mental health of employees.

We ask the EU Commission to actively enforce Directive 2013/35/EU by implementing RF EMF risk assesment in all workplaces. Mental health is a global issue. The EU Commission have an opportunity to demonstrate leadership by promoting RF EMF Risk assessments to help reduce stress and anxiety in the workplace.

Practical notes on workplace exposure are in Explanation of Proposal 7.

General Public:

The EU Commission does not extend this legal recognition to the general public. Radiation protection must be provided equally to all, to people at home and in public spheres, not only at workplaces. This is discrimination against the general public as compared to employees at a workplace.

Children:

Parliamentary Assembly Resolution 1815 [vi] in point 8.1.1. states: "*all reasonable measures to reduce exposure to electromagnetic fields, especially to radio frequencies from mobile phones, and particularly the exposure to* ***children and young people*** *who seem to be most at risk from head tumours*".

The EU Commission does not provide recognised non-thermal [18] EMF protection for children, neither in schools nor in homes or public places. The health of the children is neglected whereby they are discriminated against (Art. 21 of CFR) and it is a breach of the TEU, UNCRC.

Children are not little adults[19]:

- The thickness of the skull acts as a barrier to radiation absorbtion. Since children have smaller heads and much thinner skulls than adults, they have less protection [20] and receive a proportionally greater intracranial peak tissue dose.

18 Martin Pall, 2015: How to Approach the Challenge of Minimizing Non-Thermal Health Effects of Microwave Radiation from Electrical Devices: "*22 additional scientific published reviews have each reviewed various types of non-thermal microwave effects in humans and/or experimental animals in various contexts, as have 26 studies in a recently published book. It can be seen from this that there is a widely held consensus in much of the scientific community that various non-thermal effects of microwave EMFs are well documented*"; https://www.researchgate.net/publication/283017154_How_to_Approach_the_Challenge_of_Minimizing_Non-Thermal_Health_Effects_of_Microwave_Radiation_from_Electrical_Devices

19 WHO document Children are not little adults addresses the importance of ensuring a healthy environment for children and protecting them from environmental threats. It provides explanations that due to the increased and unique vulnerability of children are their risks of environmental hazards different from those of adults. https://www.who.int/ceh/capacity/Children_are_not_little_adults.pdf

20 Aaron Skaist, 2019: The Effects of RF-EMF on the Child Brain; https://touroscholar.touro.edu/cgi/viewcontent.cgi?article=1218&context=sjlcas

- Cell phones and wireless radiation can go deeper into their brains also because children have a shorter distance [21] from their skull to their brain center. Research shows that children can absorb up to ten times the radiation in the bone marrow of their skulls [22] than adults.
- Children have a higher content of water in their cerebral tissues, and also in their bodies. This makes their bodies more conductive so they absorb more of this wireless energy radiation [23] to their tissues because of their unique physiology.
- Children have smaller bodies and shorter arms. They hold cell phones, tablets, and wireless devices closer to their faces, brain [18], bodies. Children thus receive a much higher cumulative exposure than adults, when using similar devices. [24]
- They have a rapid rate of growth and development and incomplete myelination [25] of the brain, which make children uniquely susceptible to the effects of radiation. Scientists who expose animal brains to even small amounts of microwaves find damaged brain cells and more dead cells. Research shows that disruption of brain development [26] at an early age can cause significant neurological changes later on in life.
- Children have more active stem cells [27]in their bodies, that are present in higher density, especially in the first stages of development. Research [28] shows that stem cells are often more sensitive and reactive to low levels of microwave radiation than other cells. Stem cells are critical for children's development but are also impacted the most by wireless! [29] [30]
- Regulations are not based on a child's head but on a proportions of a head of mature man.

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21 Salles et al 2006: Electromagnetic absorption in the head of adults and children due to mobile phone operation close to the head; Electromagnetic Biology and Medicine, https://pubmed.ncbi.nlm.nih.gov/17178592/

22 Miller et al 2019: Risks to Health and Well-Being From Radio-Frequency Radiation Emitted by Cell Phones and Other Wireless Devices; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6701402/

23 Fernández et al 2018: Absorption of wireless radiation in the child versus adult brain and eye from cell phone conversation or virtual reality, Environmental Research, Volume 167, 2018, Pages 694-699, ISSN 0013-9351, https://doi.org/10.1016/j.envres.2018.05.013

24 Belpomme et al 2018: Thermal and non-thermal health effects of low intensity non-ionizing radiation: An international perspective; Environmental Pollution, https://www.sciencedirect.com/science/article/pii/S0269749118310157

25 Arain et al 2013: Maturation of the adolescent brain; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3621648/

26 Bhargav et al 2015: Effect of Mobile Phone-Induced Electromagnetic Field on Brain Hemodynamics and Human Stem Cell Functioning: Possible Mechanistic Link to Cancer Risk and Early Diagnostic Value of Electronphotonic Imaging; https://www.researchgate.net/publication/305157931_Effect_of_Mobile_Phone-Induced_Electromagnetic_Field_on_Brain_Hemodynamics_and_Human_Stem_Cell_Functioning_Possible_Mechanistic_Link_to_Cancer_Risk_and_Early_Diagnostic_Value_of_Electronphotonic_Imagi

27 Williams et al 2006: Children are not little adults: just ask their hematopoietic stem cells; PMCID: PMC1578611; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1578611/

28 Belyaev, I.Y. et al. 2009. Microwaves from UMTS/GSM mobile phones induce long-lasting inhibition of 53BP1/gamma-H2AX DNA repair foci in human lymphocytes. Bioelectromagnetics 30: 129–141; https://onlinelibrary.wiley.com/doi/abs/10.1002/bem.20445

29 Igor Belyaev et al 2009: Microwaves from Mobile Phones Inhibit 53BP1 Focus Formation in Human Stem Cells More Strongly Than in Differentiated Cells: Possible Mechanistic Link to Cancer Risk; https://www.researchgate.net/publication/40907376_Microwaves_from_Mobile_Phones_Inhibit_53BP1_Focus_Formation_in_Human_Stem_Cells_More_Strongly_Than_in_Differentiated_Cells_Possible_Mechanistic_Link_to_Cancer_Risk

30 Igor Belyaev 2005: Non-thermal Biological Effects of Microwaves; https://maisonsaine.ca/wp-content/uploads/2015/10/belyaev2005.nonthermalbiologicalefects1.pdf

Pregnant women:

Published research has found impaired communication skills, memory and learning deficits, congentital heart disease and behavioral problems associate with prenatal exposures.[31]

Maternal cell phone use during pregnancy may be associated with an increased risk of behavioral problems, particularly hyperactivity/inattention problems, in the offspring.[32]

Fetal Development

For newborns whose mothers used their mobile phones for more than 30 minutes/day there was an association with significantly lower fetal development scores.[33]

The elderly and the infirm:

Their immune system is compromised and cocktail effect with other diseases may occur. Exposure to RF EMF may contribute to worsening their condition: "*RF-EMR studies indicate increased specific vulnerabilities in the young (fetus to adolescent), the elderly, and those with cancer.*"[34]

Those injured by and sensitive to RF EMF:

"*In population-based surveys, the prevalence of EHS has ranged from 1.5% in Sweden to 13.3% in Taiwan.*"[35]

"*...data strongly suggest that EHS is a neurologic pathological disorder which can be diagnosed, treated, and prevented. Because EHS is becoming a new insidious worldwide plague involving millions of people, we ask the World Health Organization (WHO) to* ***include EHS as a neurologic disorder in the international classification of diseases***."[36]

The Austrian Medical Association has developed a guideline for differential diagnosis and potential treatment of unspecific health problems associated with electrosmog. [37]

"*In Sweden, electrohypersensitivity (EHS) is an officially fully recognized functional impairment (i.e., it is not regarded as a disease). Survey studies show that somewhere between 230,000-290,000 Swedish men and women report a variety of symptoms when being in contact with electromagnetic field (EMF) sources.*" [38]

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31 https://ehtrust.org/science/pregnancy-wireless-and-electromagnetic-fields/

32 Birks et al 2017: Maternal cell phone use during pregnancy and child behavioral problems in five birth cohorts; https://www.sciencedirect.com/science/article/pii/S0160412016307383

33 Boileau et al 2020: Mobile phone use during pregnancy: Which association with fetal growth?; https://www.sciencedirect.com/science/article/abs/pii/S2468784720301963

34 Redmayne, 2015: Radiofrequency exposure in young and old: different sensitivities in light of age-relevant natural differences; https://pubmed.ncbi.nlm.nih.gov/26613328/

35 Hedendahl et al 2015: Electromagnetic hypersensitivity--an increasing challenge to the medical profession; https://pubmed.ncbi.nlm.nih.gov/26372109/

36 Belpomme et al 2020: Electrohypersensitivity as a Newly Identified and Characterized Neurologic Pathological Disorder: How to Diagnose, Treat, and Prevent It; https://pubmed.ncbi.nlm.nih.gov/32168876/

37 Guideline of the Austrian Medical Association (ÖÄK) for the diagnosis and treatment of EMFrelated health problems and illnesses (EMF syndrome); http://freiburger-appell-2012.info/media/EMF%20Guideline%20OAK-AG%20%202012%2003%2003.pdf

38 Johansson 2006: Electrohypersensitivity: state-of-the-art of a functional impairment; https://pubmed.ncbi.nlm.nih.gov/17178584/

Those who use electromedical devices or implants:

The American Food&Drug Agency provides Pacemaker Wearers with a list of precautions.

The review Electromagnetic interference in cardiac electronic implants shows that the factors influencing electromagnetic interference are not sufficiently characterized and radiation limit values for patients cannot be derived yet.

The study Are patients with cardiac implants protected against electromagnetic interference in daily life and occupational environment? shows that electromagnetic interferences are associated with potential risk in "device patients".

The impact of the internet of Things on implanted medical devices including pacemakers, and ICDs[39]:

"*As the number of radio frequency emitters increases under this new paradigm public health and safety must also be taken into account. This paper explores the electromagnetic* ***interference on implantable cardiac rhythm management devices*** *caused by RFID interrogators.*"

5G Deployment: State of play in Europe, USA and Asia [vii] is undergoing an in depth analysis at the request of the **ITRE** Committee. Among findings is: "*Long-term technology research is essential. One key problem is the unusual propagation phenomena, especially controlling and measuring RF EMF exposure...*"

Legal arguments for our proposal are:

- Article 3 of the TEU where it says, "*The Union's aim is to promote peace, its values and* ***the well-being of its peoples***." and "*It shall combat social exclusion and discrimination, and shall promote social justice and protection, equality between women and men, solidarity between generations and* ***protection of the rights of the child***."
- Article 4 of the TFEU that includes "***common safety concerns in public health matters***" among the 11 shared competences
- Article 168 of the TFEU where it says, "*A high level of human health protection shall be ensured...*" and "*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.*"
- Article 191 of the TFEU that includes "***protecting human health***" among Union policy objectives.
- Article 153 of the TFEU where it says, "*improvement in particular of the working environment to protect workers' health and safety*"
- Article 21 of the CFR where it says, "*Any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political*

39 https://ieeexplore.ieee.org/document/6555533

*or any other opinion, membership of national minority, property, birth, disability, **age** or sexual orientation shall be prohibited.*"

- Article 24 of the CFR where it says, "*Children shall have the right to such protection and care as is necessary for their well-being.*"
- Article 31 of the CFR where it says, "*Every worker has the right to working conditions which respect his or her health, safety and dignity.*"
- Article 35 of the CFR where it says, *"A **high level of human health protection** shall be ensured in the definition and implementation of all the Union's policies and activities."*
- Article 24 of the UNCRC where it says, *"States Parties recognize the right of the child to the enjoyment of the **highest attainable standard of health** and to facilities for the treatment of illness and rehabilitation of health. States Parties shall strive to ensure that no child is deprived of his or her right of access to such health care services."*
- Precautionary principle is explained in the chapter Precautionary principle.
- Our arguments against ICNIRP can be found in the chapter We Consider ICNIRP Flawed.

Proposal 2

Update Workplace Directive 2013/35/EU and Recommendation 1999/519/EC. These "*should be regularly reviewed and reassessed*"

Explanation

In the preamble section of the Recommendation 1999/519/EC, point (10) states: "...the framework should be regularly reviewed and reassessed in the light of new knowledge and developments in technology..."

As it was created in 1999 and has not been updated since, we consider it not up-to-date. For two decades wireless technologies and their uses have increased dramatically but no review of the Recommendation has taken place.

The EU Commission failed to act on **EU Parliament instructions** stated in Health concerns associated with electromagnetic fields; European Parliament resolution of 2 April 2009 on health concerns associated with electromagnetic fields [viii] Parliament sounded a note of caution regarding the European standards intended to protect citizens from microwaves. On the strength of a near total consensus (the resolution was adopted by 522 votes to 16), Parliament called on the Council to amend its Recommendation 1999/519/EC and set stricter exposure limits for all equipment which emits electromagnetic fields in the frequencies between 0.1 MHz and 300 GHz.

Regarding the **auditory effect**, in ANNEX II, point 8 states: "*...in order to limit and avoid auditory effects caused by thermoelastic expansion, **an additional basic restriction is recommended***." Since 1999, auditory effect limits have never been measured or reported on by any EU Regulator in any EU member state.

What is auditory effect?

- 1998 ICNIRP guidelines [ix], page 14: "*People with normal hearing can perceive pulse-modulated fields with frequencies between about 200 MHz and 6.5 GHz. The auditory sensation has been variously described as a buzzing, clicking, or popping sound, ...*"
- Non-binding guide to good practice for implementing Directive 2013/35/EU, page 87 [x]: "*The first indication of exposure to high frequency fields may be the sensation of warmth. ... It is also possible to 'hear' pulsed fields between 300kHz to 6Ghz, so clicking, buzzing or hissing noises may be heard by exposed workers.*"
- People can hear microwave fields that are pulsed, including pulsed low intensity EMFs [40]

40 Belyaev 2015: Biophysical mechanisms for nonthermal microwave effects. Electromagnetic Fields in Biology and Medicine. CRC Press, New York (2015), pp. 57

Upon updating Recommendation 1999/519/EC, the EU Commission must amend the following Directives/Regulations which refer to it accordingly:

- Directive 2013/35/EU [iv] protecting workers
- Directive (EU) 2018/1972 establishing the European Electronic Communication Code
- Regulation (EU) 2020/1070 specifying the characteristics of small-area wireless access points
- Regulation (EU) 2015/1998 about aviation security

Proposal 3

Workplace Directive 2013/35/EU and Recommendation 1999/519/EC "*must be based on the best available scientific data*". We demand limits are set to the **MOST PROTECTIVE AMONG ALL** scientific and empirical guidelines available, including

- Council of Europe Resolution 1815 point 8.2.1.
- Bioinitiative 2012 [xi]
- Building biology evaluation guidelines for sleeping areas [xii]
- EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses (page 19)

Explanation

There are many guidelines on exposure limits to RF EMF, but the EU Commission has decided that "*advice on this matter has been given by the International Commission on Non-Ionising Radiation Protection (ICNIRP)*" only (in the preamble section point 10); however We Consider ICNIRP Flawed.

Parliamentary Assembly Resolution 1815 [vi] in point 8.1.2. states: "*reconsider the scientific basis for the present standards on exposure to electromagnetic fields set by the International Commission on Non-Ionising Radiation Protection, which have serious limitations, and apply ALARA principles, covering both thermal effects and the* ***athermic or biological*** *effects of electromagnetic emissions or radiation*".

To ensure the best attainable protection (although no radiation is the ideal goal, we understand it is not attainable), EU should consider the lowest limits among scientific guidelines put forward by experts who are independent of the telecommunication industry and without conflict of interest[41] :

- **RESOLUTION 1815** [vi]
  "*set preventive thresholds for levels of long-term exposure to microwaves in all indoor areas, in accordance with the precautionary principle, not exceeding 0.6 volts per metre, and in the medium term to reduce it to 0.2 volts per metre;*"
  (Note: 0.2 V/m = 100 µW/m^2)
- **BIOINITIATIVE** [xi]
  The BioInitiative 2012 Report has been prepared by 29 experts from ten countries. "*The great strength of the BioInitiative Report is that it has been done* ***independent*** *of governments, existing bodies and industry professional societies that have clung to old standards.*"
  (Note: No observable effect on humans 1µW/m^2)

41 Lennart Hardell and Michael Carlberg 2020: Health risks from radiofrequency radiation, including 5G, should be assessed by experts with no conflicts of interest; https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7405337/

- **INSTITUT FÜR BAUBIOLOGIE**
  The Building Biology Evaluation Guidelines are based on the precautionary principle. They are specifically designed for sleeping areas which are associated with long-term risks and represent the most sensitive window of opportunity for regeneration. Any risk reduction is worth aiming at. Nature is the ultimate standard.
  (Note: over 1000 µW/m^2 is extreme; 10-1000 µW/m^2 is high)

- **EUROPAEM**
  The EUROPAEM EMF guideline 2016 was drawn up by the EUROPAEM EMF - WORKING GROUP and approved by the EUROPAEM board on August 9, 2016. The EUROPAEM EMF guideline 2016 represents the current state of medical science.
  (Note:
  under 100 µW/m^2 for 2G-4G daytime exposure
  under 10 µW/m^2 for Wi-Fi daytime exposure
  under 10 µW/m^2 for 2G-4G night time exposure
  under 1µW/m^2 for Wi-Fi night time exposure)

Proposal 4

Ensure additional exposure guidelines are made by scientists with biomedical expertise and who are free from conflicts of interest: appoint a new panel or expand SCHEER's activities to assess RF EMF's bioactive parameters

Explanation

Because We Consider ICNIRP Flawed, we request for new guidelines and include them in a list mentioned in Proposal 3.

Thermal heating and short-term effects cannot constitute the basis of high level protection according to scientific facts in thousands of articles. The EU is obliged to take into consideration scientific facts due to article 114 of TFEU where "*The Commission...will take as a base a high level of protection, taking account in particular of any new development based on scientific facts.*"

We ask the EU Commission to **promote research into all the long-term and short-term effects** of exposure to electromagnetic fields **in all relevant bioactive parameters** through research programmes and to work towards an international consensus with regard to guidelines and recommendations for protective and precautionary measures.

The list of bioactive parameters to be assessed in order to ellaborate truly protective guidelines is in the first paragraph in Explanation of Proposal 1.

SCHEER [xiii]

The Scientific Committee on Health, Environmental and Emerging Risks was established by Commission Decision C(2015)5383. It took over the work of the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR). SCHEER has a standing mandate to **provide** an independent update of the scientific evidence available, including the **assessment of health risks** that may be associated with exposure to EMF. Several measures have been put in place to ensure the committees' independence and transparency.

For more details we refer to:

- Parliamentary question P-000221/2020: 5G, International Commission on Non-Ionizing Radiation Protection (ICNIRP) and the independence of the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR) [xiv]
- And the answer given by Ms Kyriakides [xv]

Proposal 5

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Ensure the testing of wireless devices, antennas and their
operation assesses all biologically active parameters of RF
EMF
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Explanation

The U.S. Government Accountability Office (GAO) published the report Exposure and Testing Requirements for Mobile Phones Should Be Reassessed back in 2012, where it says: "*...actual **exposure depends on a number of factors** including how the phone is held during use...Some **consumers may use** mobile phones against the body, which FCC does not currently test...*"

The reality is, to this day, consumers' health is being put at risk by a grossly outdated and flawed methodology for testing wireless devices:

- SAM certification process is flawed
- The SAR parameter has not been measured at 0 mm from ear or body parts, as a spacer is inserted between the test figurine and the device.

The health and safety of the european public has been neglected, as people have not been informed about how to use wireless devices in the safest manner (minimum distance from ear/body, no warning against carrying phones in pockets or in close proximity to the body).

Parliamentary Assembly Resolution 1815 [vi] in point 8.2.2. states: "*undertake appropriate **risk-assessment** procedures for all new types of device prior to licensing*".

and "*in order to reduce costs, save energy, and protect the environment and human health, step up **research on new types of antenna**, mobile phone and DECT-type device, and encourage research to develop telecommunication based on other technologies which are just as efficient but whose effects are less negative on the environment and health*" in point 8.1.5

New safety regulations must include:

- Auditory/Sensory limits for all radio equipment devices instead of SAR limits
- Measurement at 0 mm from head, trunk, body surface and limbs for all radio frequencies emitted by devices (including 60Ghz and 5G bands) (Note: The newest regulation in France concerns measurement at limbs.)
- The rules and sanctions for manufacturers who do not comply
- Clearly printed instructions at the front page of manuals on how to safely use the devices
- Testing for different body proportion sizes
- Introduction of certificates such as "*safe for pregnant women*", "*safe for breasts/testes/eyes*"
- Prohibition against advertising any wireless devices for children
- All radio equipment emitting close to the head or body should display auditory/sensory effect levels (min & max), safe operating procedures and configurable auto-power off mode for radios not in use

    - mobile phones, tablets, notebooks, computers with Wi-Fi, wireless equipment for notebooks and computers, wireless routers, wireless modems, base stations
    - connected toys for children
    - smart wearables (connected watches, connected glasses, wireless headphones and headsets, connected body mounted cameras, virtual reality headsets, medical sensors, connected fitness trackers or belts, connected motorcycle helmets)
    - vehicles that are connected or have some radio equipment (antennas emitting RF EMF), smart bicycles,
    - radiocontrols used for connected children vehicles, drones, model making, smart bicycles
    - walkie-talkies and wireless baby monitors
    - etc.
- IoT devices (smart home equipment, wireless security monitors, controllers, etc ..) should display auditory/sensory effect levels (min & max), safe operating procedures and configurable auto-power off mode for radios not in use.

We ask the EU Commission to instruct BEREC to **create a database** of radio equipment devices that have passed/failed all procedures contained within Radio Equipment Directive 2014/53/EU.

Every time a device receives a software upgrade it must again pass all conformity and assessment testing. This is most important when the user functionality of a device changes e.g. if a device becomes a 'SMART device', it must be retested. For example, in France the national agency [xvi] conducts its own independent measurement analysis - a device is not put on the French market if it does not pass compliance testing.

Measurement criteria:

EUROPAEM's precautionary measures based on limit values must be taken into account. Dirty electricity - wired high-frequency noise and transients - must be covered by the regulations at both lower and higher frequencies than those regulated by current standards.

Frequencies that match the natural frequency of oxygen or other substances must be prohibited.

A precautionary strategy must be pursued: no roll-out or commissioning without impartial / balanced assessments of environmental and health consequences.

Legal arguments for our proposal are:

- Article 38 of CFR where "*Union policies shall ensure a high level of consumer protection.*"
- Article 114 of TFEU , §3 (APPROXIMATION OF LAWS) where "*The Commission... will take as a base a high level of protection, taking account in particular of any new development based on scientific facts. Within their respective powers, the European Parliament and the Council will also seek to achieve this objective.*"
- Article 169 of TFEU where "*In order to promote the interests of consumers and to ensure a* ***high level of consumer protection****, the Union shall contribute to protecting the health,*

safety and economic interests of consumers, as well as to promoting their right to information, education and to organise themselves in order to safeguard their interests."

- Article 35 of CFR where "*Everyone has the right of access to preventive health care and the right to benefit from medical treatment under the conditions established by national laws and practices.* ***A high level of human health protection shall be ensured in the definition and implementation of all the Union's policies and activities.***"

Proposal 6

`Replace wireless connections with` **`cables`**`. Do so immediately in places such as hospitals, kindergartens, schools, retirement homes, all public buildings`

Explanation

Parliamentary Assembly Resolution 1815 [vi] in point 8.3.2. states: "*for children in general, and particularly in schools and classrooms, give* ***preference to wired Internet connections****, and strictly regulate the use of mobile phones by schoolchildren on school premises*"

and in point 8.2.4. "*recommend the use of wired, fixed telephones at home*".

Advantages of **cabled** solutions are:

- much more fault tolerant
- effective energy consumption
- safe for long term usage
- no RF radiation
- provides a higher rate of transmission traffic security due to the lowered possibility of eavesdropping
- not dependent on environmental conditions, such as weather(humidity), obstacles in path and attenuation of materials

The European Economic and Social Committee has published the Opinion called Secure 5G deployment – EU toolbox [xvii]. Point 4.10 states:
"*...The solutions that might be proposed to complement the 5G communications infrastructure includes the use of* ***fixed data connections*** *by existing non-radio technologies (Ethernet cables, fibre optics, etc.), in situations where the use is fixed (e.g. ATMs, banking POS, industrial robots, remote controlled medical robots, etc.) and where large data transmission users operate (digital service providers, companies/ businesses, etc.); IoT Internet of Things present in fixed, non-mobile locations (Smart Home, Smart City, sensors on public utility equipment, etc.).*"

To implement our proposal for hospitals, kindergartens, schools, retirement homes and all public buildings (sensitive places):

- Cables should always be the first option (instead of wireless)
- Teachers and parents must be educated regarding the hazards of wireless devices especially around children.
- Regulate the use of Wi-Fi in sensitive places as in Cyprus [xviii], Cyprus hospital campaign [xix], in Russia [xx] or in France [xxi]. Bluetooth, mobile data and similar technologies (it means all wireless functions) need the same approach.

- Wireless functions must be set to "Disabled" by default on devices such as routers, printers, refrigerators...
- Wireless devices must have external physical switch for manual enabling/disabling of wireless functions.
- When wireless function is enabled by the user, default settings must be set to the lowest operational level.
- Wireless functions on devices must be set to "SLEEP" when not being used. For example, patent WO2004075583 - REDUCTION OF ELECTROSMOG IN WIRELESS LOCAL NETWORKS [xxii] introduces a system that "*after a predefinable time interval without connecting signal, the base station changes over from the normal transmitting−receiving mode into a **sleep mode**, in which sleep mode no beacon signals and/or other radio frequency signals are transmitted from the base station.*"
- Reject intelligent meters (smart meters for electricity, heat, gas and water) with radio transmission components and replace them by wired solutions. Both in France and the Netherlands there is no obligation to replace the conventional meter systems with wireless smart meters which are emiting RF EMF. In South Africa High Court 2017, it was suggested that the smart meters' standard (default) setting for internet connection should be cabled. This brings increased data security, faster-broadband infrastructure and no unused RF EMF emissions. [iii]
- Alternative technologies for mobile indoor transmission should be preferred and developed, All new technologies must be tested for health and environmental effects.

Proposal 7

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Educate the public on the hazards associated with wireless
technologies and how to minimize exposure (e.g. using
cables)
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Explanation

Parliamentary Assembly Resolution 1815 [vi] in point 8.3.1. states: "*develop within different ministries (education, environment and health) targeted information campaigns aimed at teachers, parents and children* ***to alert them to the specific risks*** *of early, ill-considered and prolonged use of mobiles and other devices emitting microwaves*"

and in point 8.1.3. "*put in place information and* ***awareness-raising campaigns*** *on the risks of potentially harmful long-term biological effects on the environment and on human health, especially targeting children, teenagers and young people of reproductive age*".

Our request is

- that the public be fully informed about the potential health risks from RF EMF and taught harm reduction strategies (e.g. Cyprus national campaign [xxiii])
- that people be advised to turn off the wireless functions (e.g. Wi-Fi, mobile data, Bluetooth etc.) at night and make sure they are not radiated from outside in order to help the body regenerate from day time exposure
- no advertising of wireless devices for or featuring children (like they have in France)
- medical professionals be educated about the biological effects of RF EMF and be provided training on treatment of patients with electromagnetic sensitivity
- that education programme be funded in order to include education about harmful effects of RF EMF in national education plans in Member States for parents, basic and secondary schools.

The rising amount of devices was not taken into account when current legislation was prepared. Employees for example are not aware about risks from these:

- many people during worktime at their work place or even working from home are unwantedly irradiated or unwantedly irradiate others by frequent mobile phone calls
- Many employees in hypermarkets, supermarkets, logistics, restaurants are using wireless devices such as handsfree devices, bluetooth devices, DECT phones, barcode scanning or payment terminals

Proposal 8

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Provide free zones without irradiating infrastructures in
municipalities and countries as refuges for humans and
wildlife; declare all nature reserves and parks radiation
free zones
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Explanation

Parliamentary Assembly Resolution 1815 [vi] in point 8.1.4. states: "*pay particular attention to "electrosensitive" people who suffer from a syndrome of intolerance to electromagnetic fields and introduce special measures to protect them, including the creation of* ***wave-free areas*** *not covered by the wireless network;* ".

This proposal aims at creating zones in which there is no or only a low level of RF EMF in order to protect the health of particularly sensitive groups of people (e.g. electrosensitive or electro hypersensitive people, sick people, senior citizens, children) as well as flora and fauna.

Sleeping areas should be identified as areas with the lowest exposure to RF EMF radiation in order to achieve regeneration of the body from day time exposure. Also public base station exposure must be reduced between 10pm – 7am.

Ensure public transport offers Wi-Fi and radiation free options such as Wi-Fi and mobile communications free compartments or vehicles.

The legal basis of proposal 8 is the Habitats Directive 92/43 EEC [xxix] and falls under "spatial planning".

This proposal can be based on Article192 (2) lit. a) TFEU in conjunction with Article 191 (1) TFEU.

Proposal 9

`In order to protect human health and bio-integrity, ask EU citizens for informed consent before exposing them to RF EMF`

Explanation

Humans are in many cases irradiated mostly involuntarily from a mixture of all-day transmission from their personal wireless devices but also from various infrastructure antennas and transmitters sources indoors and outdoors at their workplace, at home, in public places, transportation vehicles or nearby. People use devices in their default setting, at higher intensity and with most wireless antennas enabled all the time. The majority of the population is not educated about the importance of minimizing irradiation from personal devices when not used. Most citizens have no way of checking the values of exposure in the environment that is surrounding them.

Respect each person's right to mental and physical integrity as per Article 3 of CFR and safeguard human health, privacy, security. This includes avoiding any disturbance and interference in their biological, chemical, electrical and sensory processes and systems from RF EMF.

To implement our proposal:

- All small cells, small transmitters and wireless access points should be subjected to environmental assessments, building permits and residents approvals.
- All transmitting stations should be registered, designated and published.
- Consider separation of outdoor and indoor supply of mobile / wireless radiation. Basic Law for the Federal Republic of Germany [xxiv] Article 13 considers the home inviolable.
- Provide legal possibility of objection against RF EMF from neighboring dwellings, if this exceeds the Building biology evaluation guidelines [ix] values.
- Apply warnings ("labelling") on mobile device packaging with regard to their harmful effects, including smartphones. Similar regulatory approaches are known, for example, from European food law. Jurisdiction can be affirmed on the basis of Art. 114 TFEU.
- All advertisong of wireless devices must include warnings on radiation risks.
- Instruct manufacturers to print safe usage procedures on devices and not only inside manuals.
- **Hazardous areas** must be properly and visibly marked at access, entrance and other public and residential places with warning signs "Caution non-ionizing radiation" for the protection of the population and workers and a warning **sign for citizens with pacemakers and other implants**. It must be clearly specified, what labels to use and their locations.

Caution non-ionizing radiation

Parliamentary Assembly Resolution 1815 [vi] in point 8.2.3. states: "*introduce **clear labelling** indicating the presence of microwaves or electromagnetic fields, the transmitting power or the specific absorption rate (SAR) of the device and any health risks connected with its use*".

We disagree with continued efforts EU-wide agreements for permit-free rollout of small cells or wireless access points across all member states in such planned density, radiated power, close proximity to living beings (see chapter 5G in-depth analysis for ITRE Committee) and also with usage of millimeter waves, whose biological effects are known for decades. [42]

This is in deep contradiction with most of our demands to achieve a healthy and safe environment. This approach would inevitably lead to a resistance from people living in close vicinity of newly built small cell antennas or those planned for placement.

42 Zaliubovskaia, 1977: Biological effect of the millimeter-range radiowaves; PMID: 855273; https://mdsafetech.files.wordpress.com/2019/02/biological-effects-of-millimeter-wavelengths.-zalyubovskaya-declassif-by-cia-1977-biol-eff-mm-waves.pdf

Proposal 10

On the basis of the **precautionary principle,** enact a directive regarding RF EMF exposure limits for protection of **fauna and flora**

Explanation

We propose a directive similar to Directive 2013/35/EU on the minimum health and safety requirements regarding the exposure of **workers** to the risks arising from physical agents (electromagnetic fields) [iv] is enacted to protect fauna and flora.

This directive must include all biological RF EMF effects to fauna and flora.

Scientific research and observations have shown that RF EMF has potential impact on fauna and flora worldwide. Here is some of the **scientific proof**:

- *"….artificial magnetic, electrical and electromagnetic fields, generated by numerous mobile radio and wireless communication technologies. The consequences of this development have also been predicted by the critics for many decades and can now no longer be ignored.* ***Bees and other insects disappear, birds avoid certain areas and are disoriented in other locations.*** *Humans suffer from functional disorders and diseases. And those that are hereditary are passed on to the next generation as existing defects."*[43]
- *"Worldwide, the* ***number of insects is decreasing*** *at an alarming rate. It is known that among other causes, the use of pesticides……..Existing research indicates another factor of anthropogenic origin, which might cause subtle adverse effects: the increasingly frequent use of artificial electromagnetic fields (EMF) such as high voltage, mobile telephony and Wi-Fi. The infrastructure of the next generation of mobile communications technologies, 5G, is being deployed without having been previously tested for possible toxic effects."*[44]
- *"This review aims to cover experimental data on* ***oxidative effects*** *of low-intensity radiofrequency radiation (RFR) in living cells. Analysis of the currently available peer-reviewed scientific literature reveals* ***molecular effects*** *induced by low-intensity RFR in living cells; this includes significant activation of key pathways generating reactive oxygen species (ROS), activation of peroxidation,* ***oxidative damage of DNA*** *and changes in the activity of antioxidant enzymes. It indicates that among 100 currently available peer-reviewed studies dealing with oxidative effects of low-intensity RFR, in general,* ***93 confirmed that RFR induces oxidative effects*** *in biological systems."*[45]
- *"The potential effects of RF-EMF on most taxonomic groups including migratory birds, bats and bees are largely unknown. The evidence to inform the development in exposure*

43 Prof. Ulrich Warnke 2008: BEES, BIRDS AND MANKIND, Destroying nature by electrosmog; https://www.researchgate.net/publication/241538484_BEES_BIRDS_AND_MANKIND

44 Alain Thill 2020: Biological effects of electromagnetic fields on insects; https://ehtrust.org/wp-content/uploads/Thill_Review_Insects_2020_Engl.pdf

45 Yakymencho I. et al 2015: Oxidative mechanisms of biological activity of low-intensityradiofrequency radiation, https://ecfsapi.fcc.gov/file/60001122232.pdf or https://pubmed.ncbi.nlm.nih.gov/26151230/

*guidelines for 5G technology is limited raising the possibility of **unintended biological consequences**."*[46]

- *"Here we studied the effects of EMR from telecommunication antennas on key wild pollinator groups (wild bees, hoverflies, bee flies, remaining flies, beetles, butterflies, and wasps). We measured EMR at 4 distances (50, 100, 200 and 400 m) from 10 antennas (5 on Limnos Island and 5 on Lesvos Island, eastern Mediterranean, Greece), and correlated EMR values with insect abundance and richness (the latter only for wild bees and hoverflies). **All pollinator groups except butterflies were affected by EMR**."*[47]
- *"Statistical analysis demonstrated that electromagnetic radiation from mobile phone masts is **harmful for trees**. These results are consistent with the fact that damage afflicted on trees by mobile phone towers usually start on one side, extending to the whole tree over time."*[48]
- *"Currently, theoretical predictions on the underlying mechanism of chemical magnetoreception have been supported by experimental observations that exposure to radiofrequency (RF) in the MHz range disrupt bird orientation and mammalian cellular respiration. Here we show that, in keeping with certain quantum physical hypotheses, a weak 7 MHz radiofrequency magnetic field significantly **reduces the biological responsivity to blue light** of the cryptochrome receptor cry1 in Arabidopsis seedlings. Using an in vivo phosphorylation assay that specifically detects activated cryptochrome, we demonstrate that RF exposure reduces conformational changes associated with biological activity. RF exposure furthermore alters cryptochrome-dependent plant growth responses and gene expression to a degree consistent with theoretical predictions. To our knowledge this represents the first demonstration of a **biological receptor responding to RF exposure**, providing important new implications for magnetosensing as well as possible future applications in biotechnology and medicine."*[49]

Legal arguments for our proposal are:

- Article 37 of the CFR where "*A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development".*
- EU is competent to protect the environment via the precautionary principle article 191 (2) in the TFEU where "*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***

46 Sutherland et al. 2018: A 2018 Horizon Scan of Emerging Issues for Global Conservation and Biological Diversity; https://pubmed.ncbi.nlm.nih.gov/29217396/

47 Lazaro et al. 2016: Electromagnetic radiation of mobile telecommunication antennas affects the abundance and composition of wild pollinators; https://www.researchgate.net/publication/301647025_Electromagnetic_radiation_of_mobile_telecommunication_antennas_affects_the_abundance_and_composition_of_wild_pollinators

48 Waldman-Selman et al 2016: Radiofrequency radiation injures trees around mobile phone base stations; https://pubmed.ncbi.nlm.nih.gov/27552133/

49 M. Albaqami et al 2020: Arabidopsis cryptochrome is responsive to Radiofrequency (RF) electromagnetic fields; https://pubmed.ncbi.nlm.nih.gov/32647192/

***taken**, that environmental damage should as a priority be rectified at source and that the polluter should pay.*"

- Precautionary principle is explained in the chapter Precautionary principle.

ENACT STRONGER REGULATION TO PROTECT THE ENVIRONMENT FROM ALL THE IMPACTS OF 5G AND DIGITALIZATION

Proposal 11

Update Directive 2011/92/EU to include 5G deployment and all telecommunication as **projects** in Annex 1 to ensure that such projects are made subject to environmental assessment or a screening as prescribed by the directive

Explanation

Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment [xxv] mentions "*...an environmental assessment shall be carried out for all plans and programmes ... which are prepared for...telecommunication...*"

Therefore Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment [xxvi] must be updated and include all telecommunication including 5G.

Reference to relevant science can be found in the Legal Opinion on 5G [xxvii] from the Danish lawyer Christian F. Jensen and the conclusion: "*Establishing and activating a 5G-network — as it is currently described — will contravene current human and environmental laws enshrined in the European Convention of Human Rights, the UN Convention of the Rights of the Child, EU regulations, and the Bern- and Bonn-conventions protecting natural habitat and migrating species*".

The Spanish Ombudsman has ruled that the Spanish National 5G Action Plan has not taken environmental aspects into account. The Ombudsman has taken a position on the 5G implementation plan following the complaint lodged by AVAATE [xxviii] and the conclusion is clear: the implementation of 5G technology in Spain has not been subject to prior environmental assessment by the authorities.

In the decision signed by Ombudsman Francisco Fernández Marugán it is emphasized that the Ministry, through its Secretary of State, has ignored various articles in Law 21/2013 of Environmental Assessment, avoided consulting the draft 5G plan and the draft 5G pilot projects for the corresponding environmental body. As the Ombudsman states, the pilot projects carried out will use a frequency band for which safe exposure limits have not yet been set, which is something that is totally contrary to the precautionary principle.

Introduction of 5G based on illegal distribution of competence

However, the EU has drastically changed the technical conditions for the deployment of 5G by removing the competence of the Member States and declaring various technical devices to be permit-exempt according to Regulation 2020/1070. In this way local environmental laws are overruled and the industry can set up any kind of device no matter how harmful to the environment.

This strategy has made it possible to roll out 5G networks in Europe **without prior health and environmental impact assessments**, and because it was made mandatory to implement it, the

Member States had no more say in this area. While the various activities of the environment are usually subject to local impact assessments, the exposure of the environment to radiation, including the dangerous RF EMF radiation, and impacts of digitalization is exempt. Therefore Member States cannot fulfill their obligation to protect the public against such exposure even though it is required of them by national law to ensure a healthy and safe environment for the people living there.

Construction of 5G infrastructures is not only a matter of new technology but also involves environment and public health. The EU has a shared competence in these areas and therefore cannot go beyond its own competences and abolish the competence of the Member states as described above.

We propose that the competence originally given to Member states to assess the environmental impacts of the release of RF EMF into the environment should be restored so it belongs under national law and can be made subject to preliminary impact assessment by a national authority.

Therefore the Directive 2018/1972 and Regulation 2020/1070 should be abolished or changed to a recommendation.

Legal arguments for our proposal are:

- Article 3 of the TEU: "*The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress,* ***and a high level of protection and improvement of the quality of the environment****. It shall promote scientific and technological advance.*"
- Article 35 of the CFR, Health care: "*Everyone has the right of access to preventive health care and the right to benefit from medical treatment under the conditions established by national laws and practices.* ***A high level of human health protection shall be ensured in the definition and implementation of all the Union's policies and activities.***"
- Article 37 of the CFR, Environmental protection: "*A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.*"

Proposal 12

Reduce the massive electricity consumption caused by digital communication technology, e.g. by prioritizing wired solutions and low energy solutions in the action plan for the European Green Deal [xxix]

Explanation

According to Directive 2012/27/EU [xxx] on energy efficiency, the Union places energy efficiency and the need for decoupling energy use from economic growth at the core of the Union energy strategy. But many devices breach this directive:

- many Wi-Fi Routers, because the default transmit power level is set to maximum and they are used in several frequency ranges at the same time: 2.4 / 5 / 6 / 60GHz
- many wireless smart meters, because they needlessly consume energy by constantly monitoring devices and cause dirty electricity. Electrical/Phone and Fibre Cables can all be used to transfer smart meter data.
- Energy consumption forecast for Information and Communication Technology (ICT) devices and services: smartphones, computers, data centers, antennas, internet, etc. would represent in 2025 up to 20% of worlwide electricity consumption [xxxi]. In addition Green House Gases from ICT would exceed 14% in 2040. [xxxii]

Far from being a solution to climate change, the ecological footprint of the digital economy would reach its peak with 5G, aggravating the global eco-social crisis with no return.

The European Economic and Social Committee has published the opinion called Secure 5G deployment– EU toolbox [xvii]. Point 4.1 states:
"*...The EESC considers it essential that 5G is oriented to achieve a better circular use of resources and to reduce the large energy-related CO2 footprint. ...*"

According to The Shift Project [xxxiii]: "*The energy consumption of Information and Communication Technologies (ICT) is increasing by 9% every year. It is possible to limit this growth to 1.5% per year by moving to sober digital practices. The digital transition as it is currently implemented participates to global warming more than it helps preventing it. The need for action is therefore urgent.*"

According to Frédéric Bordage, a French expert in green IT and digital sobriety, the Environmental footprint of the digital world could be improved by using low digital technology: "*the idea of a low digital technology is to use robust, simple, low-impact and very widespread digital technologies such as 2G, SMS, etc. to meet daily needs. Most feedback gathered over the last 10 years shows that this approach is not considered as a regression but is instead well-received by users and it creates economic value. Radical eco-design aims to coordinate the use of low- and high-tech digital resources to best meet the needs of humanity while significantly reducing our digital footprint. To conclude with a simple example, it is not necessary to have a latest-generation smartphone connected in 4G or 5G to access weather forecasts. A simple SMS allows the forecast to be*

transmitted on a 2G mobile phone. On the other hand, calculating weather forecasts requires the use of advanced technologies."

Miguel Coma, an engineer in telecommunications and an Information Technology architect, argues in his article Green 5G or red alert? [xxxiv] that 5G will not contribute to a sustainable future as Huawei claims in Green 5G: Building a sustainable World. "*For today, I want us to realize how much energy 5G would consume: over three times the total amount of energy that Sweden uses for industries, transportation, electricity, residences, schools, etc., combined. Powering 5G globally would require building 36 new-generation nuclear reactors, 7800 massive offshore wind turbines or equivalent power plants using other energy sources.*

5G would increase CO2 emissions by 250 megatons (Mt CO2). This is seven times Sweden's total CO2 emissions, or one fourth of the emissions generated by aviation worldwide (before Covid-19). It would most likely compromise our targets for carbon neutrality and reduced emissions.

Huawei states that information communication technologies (ICT) could help reduce greenhouse gas emissions in other industries by 15% in 2020. This claim is based on an old (2008) report that examined most aspects of worldwide ICT. Regarding broadband mobile networks (3G, 4G, 5G), it actually reported soaring greenhouse gas emissions, and no potential CO2 savings in other sectors.

5G antennas will need much larger batteries than 4G antennas, only adding to global energy use. Manufacturing larger batteries will increase ore extraction and greenhouse gas emissions.

5G is also expected to shift data traffic from existing, wired networks toward much less efficient mobile networks. Given the huge amounts of energy (three times Sweden's footprint) that 5G will need, mainly from fossil fuels."

According to the Aarhus convention EU citizens have a right to ensure that the most up-to-date scientific data is taken into account when the EU adopts policies for the protection of the environment. Citizens have a right to access environmental information, to public participation in environmental decision-making processes and to access to justice.

Regarding the rollout of 5G the EU citizens have not been asked whether we want this ubiquitous wireless digital development which apparently will have huge increase in energy consumption as well as a rising carbon footprint. Very important issues our politicians do not talk about!

Legal arguments for our proposal are:

- Article 3 of the TEU, where "*The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and* ***a high level of protection and improvement of the quality of the environment****. It shall promote scientific and technological advance.*"
- Article 21 (f) of the TEU: "*help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development*"
- Article 4 (i) of the TFEU about Energy

- Article 191 of the TFEU about the precautionary principle and environment protection.
- Article 194 (c) of the TFEU: "*promote energy efficiency and energy saving and the development of new and renewable forms of energy.*"
- Article 37 of the CFR about Environmental protection: "*A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.*"
- Aarhus convention
- According to Proposal for a regulation on amending Aarhus regulation [xxxv] "*The EU institutions need to engage with members of the public if the **European Green Deal** is to succeed and deliver lasting change. The public is and should remain a driving force of the transition and should have the means to get actively involved in developing and implementing new policies.*"

Proposal 13

Include "Waste from Electrical and Electronical Equipment" (WEEE), other waste products, and the environmental impacts of mining for rare earth minerals and metals used in electronical equipment in the "Zero pollution action plan"

Explanation

In addition to the current 5G technology rollout with huge amounts of cables and antennas the introduction of billions of 5G-connected wireless devices (clothes, nappies, household appliances, watches, blinds) into our daily lives will expand **consumerism, technological obsolescence and electronic waste** that is difficult to recycle. European citizens have not been involved in the decisions taken to push this resource intensive new technology, or asked if this is the way we want our society to go forward. According to the Aarhus convention EU citizens have a right to public participation in environmental decision-making processes.

According to Needhidasan, S., et al. Electronic waste–an emerging threat to the environment of urban India "*every smartphone includes 1000+ substances, each with its own energy-intensive, **toxic waste-emitting supply chain***."

The **environmental footprint** of digitalization has to be reduced. The environmental costs of "upgrading" to a new device or a new program which often requires a new computer and new peripherals, each with embodied energy and toxins, is too high.

Manufacturers must prioritize safer chemicals and **environmental protections over profit** and products with built-in recycling and repairability and that allow easy, fire-proof battery replacement.

As an example: A YouTube video uses 24-60 images per second plus sound. A 30-second video typically requires more data and uses more energy than a 3MG photo. Therefore, limit videos and large photos for special occasions.

Citations regarding greenhouse gasses emissions (GHGE):

- According to Lotfi Belkhir and Ahmed Elmeligi, 2018 in Journal of Cleaner production Assessing ICT global emissions footprint: Trends to 2040 & recommendations they have found that: "*if unchecked, ICT GHGE relative contribution could grow from roughly 1–1.6% in 2007 to exceed 14% of the 2016-level worldwide GHGE by 2040, accounting for more than half of the current relative contribution of the whole transportation sector. Our study also highlights the contribution of smart phones and shows that by 2020, the **footprint of smart phones** alone would surpass the individual contribution of desktops, laptops and displays.*"
- Katie Singer in Behind Our Screens: "*Before its end-user turns a smartphone (or any computer) on for the first time, robotic machines must design it. Miners must extract ores. The ores must be washed, then shipped to smelters. Refined materials and manufactured solvents and bent plastics must be transported to assembly plants. Packaging must be designed and built. The final product must be transported to its end-user.*

Each station in this international supply chain ***consumes energy and emits greenhouse gases (GHGs) and toxic waste****. Miners and assembly workers often endure hazardous conditions. Rivers and lakes get polluted by "tailings" (emissions from refining ores). Oceans get acidified by cargo ships' bunker fuel.*" Note: many rare earth minerals are found near radioactive material.

- The OECD Report from 2018 Global Material Resources Outlook to 2060 [xxxvi] recognizes the role of digitization in the exponential increase in extracted resources (rare earth minerals and metals). The report projects a doubling of global primary materials use between today and 2060. It would also increase water pollution and depletion, habitat destruction, deforestation, and droughts, impacts on flora/fauna and human health.
"***More than half of all greenhouse gas (GHG) emissions are related to materials management activities.*** *Fossil fuel use and the production of iron & steel and construction materials lead to large energy-related emissions of greenhouse gases and air pollutants. Metals extraction and use have a wide range of polluting consequences, including toxic effects on humans and ecosystems. The extraction and use of primary (raw) materials is much more polluting than secondary (recycled) materials*"

Despite ongoing efficiency improvements that reduce environmental impacts per unit of production, the global environmental impacts of using these metals are projected to more than double and, in some cases, even quadruple by 2060. This analysis excludes impacts during the use phase, as these are highly product-specific. In general, **copper and nickel tend to have the greatest per-kilo environmental impacts, while iron and steel have the highest absolute environmental impacts due to the large volumes used**.

Citations from the **Institute for energy research** The Environmental Impact of Lithium Batteries November 12, 2020:

- *"In May 2016, dead fish were found in the waters of the Liqi River, where a toxic chemical leaked from the Ganzizhou Rongda Lithium mine. Cow and yak carcasses were also found floating downstream, dead from drinking contaminated water. It was the third incident in seven years due to a sharp increase in mining activity, including operations run by China's BYD, one of the world' biggest supplier of lithium-ion batteries. After the second incident in 2013, officials closed the mine, but fish started dying again when it reopened in April 2016."*
- *"South America's Lithium Triangle, which covers parts of Argentina, Bolivia and Chile, holds more than half the world's supply of the metal beneath its salt flats. But it is also one of the driest places on earth. In Chile's Salar de Atacama,* ***mining activities consumed 65 percent of the region's water****, which is having a large impact on local farmers to the point that some communities have to get water elsewhere."*
- *"As in Tibet, there is the potential for toxic chemicals to leak from the evaporation pools into the water supply including hydrochloric acid, which is used in the processing of lithium, and waste products that are filtered out of the brine. In Australia and North America, lithium is mined from rock using chemicals to extract it into a useful form. In Nevada, researchers found impacts on fish as far as 150 miles downstream from a lithium processing operation."*

- *"**Lithium extraction harms the soil and causes air contamination.** In Argentina's Salar de Hombre Muerto, residents believe that lithium operations contaminated streams used by humans and livestock and for crop irrigation. In Chile, the landscape is marred by mountains of discarded salt and canals filled with contaminated water with an unnatural blue hue. According to Guillermo Gonzalez, a lithium battery expert from the University of Chile, '**This isn't a green solution – it's not a solution at all.**'"*

- *"China is among the five top countries with the most lithium resources and it has been buying stakes in mining operations in Australia and South America where most of the world's lithium reserves are found. China's Tianqi Lithium owns 51 percent of the world's largest lithium reserve in Australia, giving it a controlling interest. In 2018, the company became the second-largest shareholder in Sociedad Química y Minera—the largest lithium producer in Chile. Another Chinese company, Ganfeng Lithium, has a long-term agreement to underwrite all lithium raw materials produced by Australia's Mount Marion mine—the world's second-biggest, high-grade lithium reserve."*

Citations from the article "Lithium: Tibet's green energy treasure"

- "*Green transport in one place should not come at the cost of environmental and social damage in another. For the people of Tibet, this is a real threat with the extraction of lithium for use in electric buses.*"

- "*Tibetans have no say over China's lithium extraction and see none of its benefits. What they have seen is pollution and the build-up of factories and other infrastructure across Tibet's once pristine landscape.*"

- *"The two principal methods of **extracting lithium**, brine harvesting from lakes and hard rock mining, both carry risks of environmental and social damage due to the toxic chemicals required. The Ganhetan industrial zone, for example, is well-known among Chinese scientific investigators for its air pollution, which has been accompanied by increased rates of fluorosis, a disease that causes teeth to become brittle. High concentrations of toxic metals in the soil have made the surrounding area unsuitable for agriculture."*

- *"Toxic chemicals used by the Ganzizhou Rongda Lithium in Dartsedo, eastern Tibet, have found their way ito the Lichu River on more than one occasion, killing fish and farm animals belonging to the community of Minyak Lhagang. After one such leak, in April 2016, the residents of Dartsedo County defied a large police presence to protest to the local government, securing a temporary halt to the extraction."*

Amit Katwala writes in "The devastating environmental impact of technological progress" from 2019:

- *"An insatiable demand for the copper, lithium and rare-earth metals required to fuel the consumer electronics and electric vehicle industries is leaving **indelible scars on our fragile planet.**"*

- *"For decades, David Maisel has been photographing places where humans are changing the environment so dramatically that the impact can be seen from the sky. For his latest project, Desolation Desert, the San Francisco-based visual artist spent two weeks in and around*

South America's Atacama desert, where humankind's insatiable demand for copper, lithium and rare-earth metals to fuel the consumer electronics and electric vehicle industries is reshaping the landscape of a fragile ecosystem."

- *"You can't assess the full environmental impact of mining just by looking at the hole left in the ground. These pictures show the area around the Centinela copper mine, and the huge "tailings ponds" that surround the site. After the copper is separated from rock, the unwanted materials remain in the form of this slurry, collected in pools hemmed in by dams that Maisel describes as "vast beyond comprehension". Tailings, as they're known in the industry, can contain toxic metals such as arsenic and mercury. In January 2019, a tailings dam at an iron-ore mine in Brazil collapsed, killing at least 248 people. As of June 2019, the tailings facilities at the mine pictured here held 154 million cubic metres of tailings."*

French expert in responsible digital technology and low-tech, Frédéric Bordage writes in his study Environmental footprint of the digital world :

- "*The idea of a low digital technology is to use robust, simple, low-impact and very widespread digital technologies such as 2G, SMS, etc. to meet daily needs. Most feedback gathered over the last 10 years shows that this approach is not considered as a regression but is instead well-received by users and it creates economic value.*
Radical eco-design aims to coordinate the use of low- and high-tech digital resources to best meet the needs of humanity while significantly reducing our digital footprint. To conclude with a simple example, it is not necessary to have a latest-generation smartphone connected in 4G or 5G to access weather forecasts. A simple SMS allows the forecast to be transmitted on a 2G mobile phone. On the other hand, calculating weather forecasts requires the use of advanced technologies. Only by adopting this posture of sobriety and cleverly coordinating low and high digital technology will we be able to build a more enviable digital future and make it an effective tool for improving humanity's resilience to the already on-going collapse."

Legal arguments for our proposal are:

- Article 191(1) and (3) and Article 192(1) TFEU give the EU competence to take action in order to preserve, protect and improve the quality of the environment. Environmental policy and legislation in this field shall be based on the precautionary principle and the principle that preventive action should be taken, as laid down in Article 191(2) subparagraph 2 and Article 192(1) TFEU. In accordance with Article 191(3) TFEU, when preparing its policy and legislation on the environment, the EU shall take into account available scientific and technical data.

- (Compassion in world farming) Since animals are sentient beings, Article 13 TFEU provides that "*in formulating and implementing the Union's policies on agriculture, fisheries, transport, internal market, research and technological development and space, the Union shall pay full regard to the welfare requirements of animals*".
The EU Commission explains that "*This puts animal welfare on equal footing with other key principles mentioned in the same title i.e. promotion of gender equality, guarantee of social*

protection, protection of human health, combating discrimination, promotion of sustainable development, ensuring consumer protection and the protection of personal data". This provision is important in two respects:

  - it recognises animals as "sentient beings"; and
  - it requires the Union and its Member States, in (i) formulating and (ii) implementing the Union's policies in certain key areas, to pay "**full** regard to the welfare requirements of animals"

- Article 21 (f) of the TEU: "*help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development*"
- Article 3 of the TEU, where "*The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and* ***a high level of protection and improvement of the quality of the environment****. It shall promote scientific and technological advance.*"
- Article 35 of the CFR, Health care: "*A high level of human health protection shall be ensured in the definition and implementation of all Union policies and activities.*"
- Article 37 of the CFR, Environmental protection: "*A high level of environmental protection and the improvement of the quality of the environment must be integrated into the policies of the Union and ensured in accordance with the principle of sustainable development.*"
- According to the Aarhus convention EU citizens have a right to ensure that the most up-to-date scientific data is taken into account when the EU adopts policies for the protection of the environment. Citizens have a right to access environmental information, to public participation in environmental decision-making processes and to access to justice.
- According to Proposal for a regulation on amending Aarhus regulation "The EU institutions need to engage with members of the public if the European Green Deal is to succeed and deliver lasting change. The public is and should remain a driving force of the transition and should have the means to get actively involved in developing and implementing new policies."
- According to Proposal for a regulation on amending Aarhus regulation [xxxvii] *"The EU institutions need to engage with members of the public if the* ***European Green Deal*** *is to succeed and deliver lasting change. The public is and should remain a driving force of the transition and should have the means to get actively involved in developing and implementing new policies.*"
- Habitat Directive
- Bird Directive

Proposal 14

`Update Ecodesign Directive from 2009 setting tight limits to resource and energy waste of all connected devices including antennas and satellites`

Explanation

The launch of 5G is expected to bring a plethora of new interconnected devices to the market, most of which will replace their predecessors. Thus, the cycle of buying new and disposing of old is being significantly boosted. Instead of reducing environmental impact and saving energy there would be a whole new industry building thousands of **satellites**, new generations of an exploding amount of **antennas**, **electronic devices** like hundreds of millions of **mobile phones**, **tablets** and so on.

The Ecodesign Directive 2009/125/EC [xxxviii] is a directive under European law that sets **requirements for the environment-related design** of "energy-related products" (ErP) in the common internal market of the European Union.

The 2009 revision of the Directive extended its scope to energy-related products such as windows, insulation materials and certain water-using products.

The ultimate aim of the Ecodesign Directive is that manufacturers of energy-using products (EuP) will, at the design stage, be obliged to **reduce the energy consumption** and other negative environmental impacts of products. While the Directive's primary aim is to reduce energy use, it is also aimed at taking other environmental factors into consideration: **materials use, water use, polluting emissions, waste issues and recyclability.** To date, more than 40 products fall under this directive.

We call on the EU Commission to include all device groups that accompany digitalization, especially those listed in the first paragraph, into the Ecodesign Directive in order to improve their energy and resource efficiency as well as their energy security and reduction in demand for natural resources.

According to the EU's new Circular Economy Action Plan, all electronic devices, especially those, which are used for digitalisation, should also be made "*fit for a climate-neutral, resource-efficient and circular economy, reduce waste and ensure that the performance of front-runners in sustainability progressively becomes the norm*" The Ecodesign Directive is a possible connecting point for these objectives.

Please always consider that wired connections offer enormous energy savings compared to Wi-Fi without sacrificing comfort.

EU is competent to protect the environment via the precautionary principle in article 191 in the TFEU.

Proposal 15

Recognize all biologically harmful parameters* of RF EMF as a **pollutant**. Include them in all relevant EU Policies and Directives

* All parameters are listed in the first paragraph in Explanation of Proposal 1.

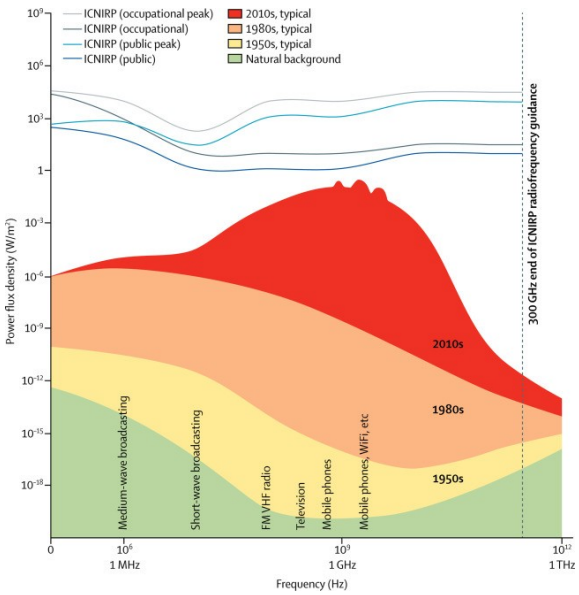
Explanation

RF EMF exposure has increased from extremely low natural levels by about 10^{18} times and this radiation can cause reactive oxygen species (ROS) and cellular or systemic oxidative stress in all life forms.

Arguments for accepting RF EMF as a potential pollutant

Citation from Planetary electromagnetic pollution: it is time to assess its impact published in www.thelancet.com:

> *"The rise in planetary electromagnetic pollution due to the exponential increase in the use of wireless personal communication devices (eg, mobile or cordless phones and WiFi or Bluetooth-enabled devices) and the infrastructure facilitating them, levels of exposure to radiofrequency electromagnetic radiation around the 1 GHz frequency band, which is mostly used for modern wireless communications, have increased from extremely low natural levels by about 10^{18} times (*figure*). Radiofrequency electromagnetic radiation is also used for radar, security scanners, smart meters, and medical equipment (MRI, diathermy, and radiofrequency ablation). It is plausibly the most rapidly increasing anthropogenic environmental exposure since the mid-20th century, and levels will surge considerably again, as technologies like the Internet of Things and 5G add millions more radiofrequency transmitters around us."*



Arguments for RF EMF being potentially biologically harmful

Citation from Manmade Electromagnetic Fields and Oxidative Stress—Biological Effects and Consequences for Health published in The International Journal of Molecular Sciences, March 2021:

> *"Concomitant with the ever-expanding use of electrical appliances and mobile communication systems, public and occupational exposure to electromagnetic fields (EMF) in the extremely-low-frequency and radiofrequency range has become a widely debated environmental risk factor for health. Radiofrequency (RF) EMF and extremely-low-frequency (ELF) MF have been classified as possibly carcinogenic to humans (Group 2B) by the International Agency for Research on Cancer (IARC). The production of reactive oxygen species (ROS), potentially leading to cellular or systemic oxidative stress, was frequently found to be influenced by EMF exposure in animals and cells. In this review, we summarize key experimental findings on oxidative stress related to EMF exposure from animal and cell studies of the last decade. The observations are discussed in the context of molecular mechanisms and functionalities relevant to health such as neurological function, genome stability, immune response, and reproduction. Most animal and many cell studies showed increased oxidative stress caused by RF-EMF and ELF-MF. In order to estimate the risk for human health by manmade exposure, experimental studies in humans and epidemiological studies need to be considered as well."*

Legal Arguments for our proposal are:

Given the above arguments and art. 1, 2, 3, 6, 7, 24, 35, 37, in the CFR it is imperative to accept RF EMF as an pollutant that must be monitored and restricted for proper protection of all life on Earth.

Proposal 16

Include monitoring of all biological harmful parameters* of RF EMF in Environmental monitoring programmes, Biodiversity Strategy 2030, EU Nature restoration targets, Habitats and Birds Directives and Natura 2000

* All parameters are listed in the first paragraph in Explanation of Proposal 1.

Explanation

Hundreds of peer-reviewed scientific studies independent from industry strongly indicate that different RF EMF parameters cause biological effects at radiation levels below current limit values. The radiation level will rise with the 5G deployment (ref. Planetary electromagnetic pollution: it is time to assess its impact published in www.thelancet.com).

The Legal Opinion on 5G [xxii] by the lawyer Christian F. Jensen concludes that 5G deployment will contravene current environmental laws (Habitat- and Bird- directive) in the EU regulations and the Bern- and Bonn- conventions protecting natural habitat and migrating species.

Biodiversity is declining. More than 75% decline over 27 years in total flying insect biomass in protected areas must be caused by pollutants other than those already measured. [50]

The European Economic and Social Committee has published the opinion called Secure 5G deployment– EU toolbox [xvii]. Point 1.4 and 4.3 state that:
"*... The EESC asks the Commission* ***to strictly monitor*** *progress in the deployment and real use of 5G and calls on the Member States to further accelerate the process and* ***ensure a responsible implementation****, catering for all safety and security aspects, including those relating to the impact of 5G technology on public health and* ***living ecosystems****, the social and economic impact, the impact on competition, education and training, and securing respect for fundamental rights.*"

Legal argument for our proposal:

- Article 3 (3) of the TEU: "*The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and* ***a high level of protection and improvement of the quality of the environment****. It shall promote scientific and technological advance.*"
- Article 21 (f) of the TEU: "*help develop international measures to preserve and improve the* ***quality of the environment*** *and the sustainable management of global natural resources, in order to ensure sustainable development*"
- Article 13 of the TFEU; This provision is important in two respects:

50 Hallmann et al, 2017: More than 75 percent decline over 27 years in total flying insect biomass in protected areas; https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0185809

    - it recognises animals as “sentient beings”
    - it requires the Union and its Member States, in (i) formulating and (ii) implementing the Union’s policies in certain key areas, to pay “*full regard to the welfare requirements of animals*”

- According to the Article 191 of the TFEU the Union policy shall contribute to preserving, protecting and improving the quality of the environment and "*promote measures at international level to deal with regional or worldwide environmental problems*". Union policy "*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 192 and 193 of the TFEU
- Article 37 of the the CFR
- Habitat Directive
- Bird Directive

According to all the above, the Union must immediately take legal action to protect nature and wildlife in all EU countries. The Union shall take account of available scientific and technical data and the potential benefits and cost of action or lack of action.

Proposal 17

`Call for an immediate moratorium on 5G satellites mega-constellations worldwide until the environmental adverse effects are resolved`

Explanation

Plans for over 100,000 telecommunication satellites are already underway.

The sheer scale of the pollution they will cause and the risk they pose to Earth's electromagnetic grid which sustains life on the planet makes their approval a breach of the Outer Space Treaty (Article IV, question about 5G satellites being weapons) and a contravention of the UN Guidelines for the Long-term sustainability of Outer Space Activities guideline 2.2 (c), requiring the use of outer space to be conducted "*so as to avoid (its) harmful contamination and also adverse changes in the environment of the Earth*" and "*risks to people, property, public health and the environment associated with the launch, in-orbit operation and re-entry of space objects*". They also threaten Astronomy and Radio astronomy, existing satellites and other scientific or technological investments in Space that are in humanity's best interest (…).

The EU has pledged to "*promote responsible behaviour in outer space and preserve and protect the space environment for peaceful use by all nations*" within the European Space Policy, and has an obligation to safeguard the environment under TEU.

Therefore, we ask the Union to invoke relevant international treaties and call for an immediate halt to mega-constellations of telecommunications satellites being launched worldwide pending satisfactory assessment of their environmental effects and consequent limitation/ban of artificial constellations.

The deleterious impacts of 5G radio wave emitting satellites mega-constellations are multiple and very serious:

1 Alteration of Earth's natural **electromagnetism** which sustains life on the planet. Artificial man-made radiation from radio transmitters on the ground and in space is already damaging the Earth's electromagnetism. The mechanisms are well documented. Radio waves reach the ionosphere and the magnetosphere, and interact with the Van Allen belts, producing electron rain which modifies the electrical properties of the atmosphere. Thus, communications satellites emitting powerful RF beams deployed directly in the ionosphere will trigger electron rain and further pollute the Earth's Global Electrical Circuit that governs the electrical qualities of all-natural phenomena, including life itself, with these main consequences:

   a) shifting of the values of the Schumann resonance to which all life is attuned, associated with significant physical, biological and health effects.

   b) further destruction of ozone layer raising the temperature of the Earth.

   c) alteration of weather and climate.

2 **Increase of radiation at ground level.** 5G satellites will use the same type of phased array antennas as ground-based 5G systems, emitting powerful, focused beams of microwave radiation proven to adversely affect the health of humans, animals and plants. They will irradiate areas of the Earth not reached by other transmitters, and add their radiation to ground-based 5G transmissions from billions of IoT objects.

3 **Increase of atmospheric pollution and ozone depletion** from rocket exhaust and de-orbiting satellites' burnout on re-entry into atmosphere.

With the total number of satellites planned, and taking into account their short lifespan (5 years), which means they will be dismissed and replaced often, satellite launches and de-orbiting could number 5,000 to 10,000 per year, or 10 to 20 per day.

Rocket exhaust is extremely polluting: solid and liquid fuels destroy the ozone layer and kerosene releases massive amounts of soot at high altitudes. The combined effect of both types of fuels will raise the Earth's temperature. Mercury-based rocket fuel currently being developed could spread potent neurotoxins over the Earth should an accident occur.

Re-entry exhaust plumes of deorbited satellites are yet to be fully assessed for their environmental impact but will undoubtedly imply massive pollution with dangerous chemical substances in the lower atmosphere.

4 **Increase of space debris and Kessler effect.** The dangers posed by space debris, some 20,000 catalogued objects including spacecrafts, rocket stages, defunct satellites and fragmented missions, are already of grave concern to all space enterprises. As the number of objects in Earth orbit increases, so does the risk of collision and the possibility of a chain reaction as objects disintegrate and collide successively (Kessler effect). The worst-case scenario would render Space inoperable for hundreds of years. Satellites that fail or that are rendered non-manoeuvrable by, for example, a solar flare, increase the risk of this happening.

5 **Effects on navigation and survival of wildlife**: light pollution from the ground has already been found to greatly harm wildlife. To this we must now add the artificial night sky brightness from satellites which obliterates the stars and affects light sensitive biological systems, and which has already been estimated at a 10% increase over the natural brightness of the night sky.

6 **Severe obstruction of Optical and Radio Astronomy.** The importance of Astronomy and Radioastronomy cannot be understated: they expand our knowledge of the Universe and are crucial to assess risks to Earth from space weather, meteorites, etc. 5G mega-constellations represent a dramatic degradation of the scientific content for a huge set of astronomical observations in four main ways:

a) Crossing and scarring observations with bright parallel streaks at all latitudes. Mitigation procedures like darkening satellites do not work, as satellites damage astronomical images at all wavelengths.

b) Increasing light pollution: satellite fleets reflect and diffuse sunlight. This skyglow effect is already quantified to have increased night sky brightness by 10% above natural

levels. This already is the critical limit adopted in 1979 by the International Astronomical Union for the light pollution level not to be exceeded at the sites of astronomical observatories. How much more light pollution will tens of thousands of satellites produce?

c) Interfering with radio-astronomical observations as their communications bands overlap with radio-astronomical bands at all sub-bands. This is already damaging radio-astronomical observations. To which we must add the interference from the base stations on Earth and the trillions of transmitting objects of the planned IoT in just a few years. Radio astronomists justly fear Radio astronomy will become an extinct science if 5G satellites and ground-based 5G and IoT continue to be deployed.

d) Increasing the risk of damage to space-based astronomical instruments such as the Hubble telescope, which has already sustained substantial damage from colliding space debris.

For all of this damage to Science, Astronomists are also asking for a moratorium on satellite constellations and all technologies that can negatively impact astronomical observations from space and from the ground or impact on the scientific, technological and economic investments made in other astrophysical projects. They dispute the legality of any national agency like the FCC to authorize satellite constellations in disregard of their environmental and scientific impact and demand these projects be evaluated internationally and limited to the strictly necessary deployments in accordance to the Outer Space Treaty and the UN Guidelines for the Long-term sustainability of Outer Space Activities.

7 **Impairment of atmospheric measurements and weather forecasting**: the World Meteorological Organisation warns of the severity of interference caused by the 5G signals, which will impair weather forecasts with dire consequences for natural disaster management.

8 **Destruction of the view of the night sky**, Humanity's natural and cultural heritage of utmost importance, which must be protected and preserved for future generations

In view of all these enormous hazards, immediate measures must be taken to protect humanity and the environment in accordance with ethical imperatives and international agreements.

Furthermore, the citizens of Europe and the World have not been involved in the decision regarding the deployment of 5G satellites and their immense environmental impact. According to the Aarhus Convention EU citizens have a right to ensure that the most up-to-date scientific data is taken into account when the EU adopts policies for the protection of the environment. Citizens have a right to access environmental information, to public participation in environmental decision-making processes and to access to justice. Regarding the deployment of 5G satellites the EU Citizens have not been asked whether we will accept the pervasive environmental consequences from the 5G satellites in the name of technological progress.

Legal argument for our proposal:

- Article 3 (3) of the TEU: "*The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and* ***a high level of protection and improvement of the quality of the environment****. It shall promote scientific and technological advance.*"
- Article 21 (f) of the TEU: "*help develop international measures to preserve and improve the* ***quality of the environment*** *and the sustainable management of global natural resources, in order to ensure sustainable development*"
- Article 13 of the TFEU; This provision is important in two respects:
    - it recognises animals as "sentient beings"
    - it requires the Union and its Member States, in (i) formulating and (ii) implementing the Union's policies in certain key areas, to pay "*full regard to the welfare requirements of animals*"
- Article 191 of the TFEU; EU is competent to protect the environment via the precautionary principle.
- Article 192 and 193 of the TFEU
- Article 37 of the the CFR
- Habitat Directive
- Bird Directive
- Aarhus convention

Proposal 18

`Make an environmental impact assessment of all space projects a priority within the European Space Policy`

Explanation

Given the great threats to our environment from the unrestricted deployment of radio-wave emitting 5G satellites detailed in proposal number 17, we conclude that this type of satellite deployment is incompatible with a sustainability strategy [xxix] like the one the European Union has committed itself to follow.
We therefore demand that the **European Space Policy places environmental considerations above any other policy priority** in coordination with European partners and International bodies. The EU must live up to its environmental commitments and its pledge to lead in "*addressing the challenges posed by the multiplication of space actors, space objects and debris in line with UN conventions related to space.*" Orbital space must be **considered as part of the environment** in all relevant EU laws.

All European space activities **must be assessed** for their environmental impacts as the human activities in outer space have huge impact on the environment on Earth. [xxxix]

As it currently reads, the European Space Policy gives little consideration to the environmental impacts of space activities. Space is viewed as just another natural resource to exploit in a "race" against other geostrategical and economic interests. Now that the cost of manufacturing and launching satellites has been significantly reduced and massive digitalization is under way the race for space is one for profit and control of data, "**the new gold**", and many private actors have come into play.

We are against this view of Space as a natural resource to be exploited to the limit as humanity has done with other resources, with disastrous consequences for nature of which we are part. In order to avoid making the same mistakes with space and endangering life on Earth, environmental and ethical considerations must be paramount when considering any project above any other policy priority. Permissible projects in Space must be approved by an independent interdisciplinary panel of scientists with expertise in EMFs, health, biology, atmospheric and astrophysics, and astronomy, who will assess their impact on the environment, ensuring that the uses of outer space are safe for humans and the environment. The **principle of minimization of objects in space must be instituted**, limiting deployments to essential uses which will benefit humanity, such as natural disaster or climate monitoring.

Legal arguments for our proposal are:

- European Space Strategy
- UN Outer Space Treaty
- UN Guidelines for the long-term sustainability of outer space activities

- Points 13 and 34 of the UN General Assembly 55/122 International cooperation in the peaceful uses of outer space [xl]
- UN Report of the Committee on the Peaceful Uses of Outer Space [xli] point 9 of part II
- Decision No 541/2014/EU [xlii] (about the Space Surveillance and Tracking Support for space debris)
- Article 3 (3) of the TEU: "*The Union shall establish an internal market. It shall work for the sustainable development of Europe based on balanced economic growth and price stability, a highly competitive social market economy, aiming at full employment and social progress, and* ***a high level of protection and improvement of the quality of the environment****. It shall promote scientific and technological advance.*"
- Article 21 (f) of the TEU: "*help develop international measures to preserve and improve the* ***quality of the environment*** *and the sustainable management of global natural resources, in order to ensure sustainable development*"
- Article 13 of the TFEU; This provision is important in two respects:
    - it recognises animals as “sentient beings”
    - it requires the Union and its Member States, in (i) formulating and (ii) implementing the Union’s policies in certain key areas, to pay “*full regard to the welfare requirements of animals*”
- Article 189 of the TFEU
- According to the Article 191 of the TFEU the Union policy shall contribute to preserving, protecting and improving the quality of the environment and "*promote measures at international level to deal with regional or worldwide environmental problems*". Union policy "*shall be based on the* ***precautionary principle*** *and on the principles that preventive action should be taken, that environmental damaged should as a priority be rectified at source and that the polluter should pay*."
- Article 192 and 193 of the TFEU
- Article 37 of the the CFR

ENACT EFFECTIVE DATA PROTECTION TO SAFEGUARD OUR PRIVACY, SECURITY AND FREEDOM

Proposal 19

`Launch an impact assessment of the effects of 5G and connected objects and bodies on personal data protection and evaluate compliance against current data protection laws`

Explanation

5G, both as a mobile phone standard and as a communication protocol between the billions of connected objects, which are announced to begin surrounding us, will multiply data transfers, with higher volumes that will allow better definition (image, video and voice).

Article 35 of the GDPR provides for the possibility of Data Protection Impact Assessments (**DPIA**) at the level of an organisation collecting personal data. This specifically refers to the processing of personal data using new technologies that are likely to result in a high risk to the fundamental rights and freedoms of individuals.

We call for such assessment to be conducted regularly, every year, and for each EU member state as 5G is rolled out both as a mobile standard and as a communications protocol between the billions of connected objects that have been announced.

This requires amending Article 35 of the GDPR on the basis of **Article 16 of the TFEU**, so that this type of impact assessment can be initiated at the level of EU member states, at the request of a third party.

The European Economic and Social Committee has published the Opinion called Secure 5G deployment– EU toolbox [xvii]. Point 2.16 states:
"*...as 5G networks will largely be based on software, the main **security flaws**, such as those resulting from equipment suppliers' poor software development processes, could make it easier for actors to intentionally insert deliberate **backdoors** in products and make them also more difficult to detect. This may increase the potential for their use to have a particularly severe and widespread **negative impact**. While the **cybersecurity** issues of 4G have not yet been fully resolved, 5G problems might grow exponentially.*"

In point 4.15 is stated:
"*The EESC has suggested **moving from data ownership concepts to a definition of data rights** for individuals and legal persons. Consumers should be in control of the data produced by connected devices in a way that ensures consumer privacy along with accessibility, interoperability and data transfer, while ensuring adequate data protection and confidentiality, fair competition and a wider choice for consumers.*" This movement must be assessed first!

The Next Generation Internet initiative is designed to create an internet of humans that responds to our fundamental needs, including trust, security and inclusion. "*The **issue of trust has become***

***central**, following revelations about the exploitation of personal data, large-scale cybersecurity and data breaches, and growing awareness of online disinformation.*"

Prior to any use of personal data for processing, a natural person must give his or her consent by means of a clear, free, specific, informed and unambiguous declaration or positive act (**Article 4 point 11 of the GDPR**).

Currently, this consent is collected in a very partial way, by imposing its collection for each site consulted, which is very burdensome for the user as well as for the collecting structure without any guarantee of sustainable follow-up of the choices made. And the personal rights attached to it, guaranteed by the GDPR, also impose very heavy procedures for their implementation:

1. Right to be informed on the use of our data
2. Right of access: to know the data that an organization holds about us (**art 15**)
3. Right of opposition: refusing the use of our data (**art 21**)
4. Right of rectification: correcting our information (**art 16 and 19**)
5. Dereferencing of content in a search engine (**art 17**)
6. Right of deletion: delete our data online (**art 17**)
7. Right to portability: obtain and re-use a copy of our data (**art 20**)
8. Rights to human intervention in the face of our profiling or an automated decision (**art 22**)
9. Right to limit processing: freeze the use of our data (**art 19**).

In the context of 5G and the use of connected objects and bodies, particularly in telemedicine, when using facial or voice recognition, etc., these proofs of consent will be even more difficult to collect.

Proposal 20

Protect citizens against the increasing vulnerability to cybercrime by applying the principle of data minimization to collection via wireless (such as medical and banking data)

Explanation

Many experts point out that 5G and connected objects and bodies will dramatically increase the dangers of data loss and cybercrime:

- many transmissions will be over wireless connections, multiplying the risk of "eavesdropping"
- much more data will be transmitted over these devices, including sensitive data. We have particular concerns about data covered by medical confidentiality (medical watches, hearing aids).

Numerous European legislative texts have established measures to combat cybercrime, including:

- Convention on Cybercrime [xliii] of 23 November 2001, Council of Europe, Budapest
- Directive 2013/40 [xliv] on attacks against information systems
- Directive 2016/1148 [xlv] on measures to ensure a common high level of security of networks and information systems in the Union, known as the "NIS Directive"
- Regulation 2019/881 [xlvi] on ENISA (European Union Agency for Cyber Security) and on certification in information and communication technology cyber security

Further measures are currently being discussed by EU governments and the European Parliament.

However, it seems more important to us to reduce the risks by applying the principle of data minimization (**article 5 c) from the GDPR**) to the data collected and stored and to prohibit the commercialization of data related to medical confidentiality without exception (**article 9 from the GDPR**).

Legal arguments for our proposal are:

- According to Article 5-1 of the GDPR, personal data processed must be "*relevant and limited to what is necessary for the purposes for which they are processed*".

Proposal 21

Ensure the European Data Protection Board fight actively and independently against discrimination and digital rights violations

Explanation

Provide the European Data Protection Board and each national data protection authority with sufficient funding and human resources. Make them free of conflicts of interest so that they can independently investigate and sanction digital rights violations

Ensure the European and national data monitoring authorities fight actively against discrimination

There are two levels of supervisory authorities for the protection of personal data:

- the national data protection supervisory authorities (DPAs)[xlvii], whose role is defined by **Article 4 of the GDPR**
- the European Data Protection Board (EDPB)[xlviii], whose role is defined by **Articles 68 to 76 of the GDPR**.

However, the national and European bodies are not sufficiently independent of the States and companies, do not have sufficient resources of their own and their scope of control remains limited.

The GDPR is a regulation and according to **Art. 288 TFEU** it is binding in its entirety and directly applicable in all Member States.

Art. 68 (point 3) of the GDPR defines the composition of the EDPB: all heads of a supervisory authority in each Member State and the European Data Protection Supervisor (or their respective representatives).

Chapter VI (**Art. 51 to 59**) refers to the national supervisory authorities. **Articles 51 to 54** define the qualifications and eligibility requirements for appointment to these national authorities, but do not directly regulate the composition and selection of their members.

We therefore request that in the GDPR, the requirements for the composition of DPAs be formalized to ensure their independence from both the collecting structures and the States.

Furthermore, to guarantee this independence and effective investigative capacities, it is necessary to establish in the GDPR a minimum rate of funding of these authorities by each State (expressed in relation to the population of the country).

Another possibility would be a direct allocation of the EU's investments to guarantee the protection of personal data of all European citizens, which could be the subject of a specific plan to be integrated into the EU budget, on the proposal of the EU Commission. **Article 312 of the TFEU**, which defines the maximum annual amounts in the Multiannual Financial Framework (MFF), could be mobilized.

The desire to generalise 5G, and more generally digital technologies, particularly in relations with public authorities, could lead to an increase in discrimination.

Current data protection is insufficient in an Internet of Bodies and Things scenario in which all devices are collecting our data 24/7, to be processed as Big Data by artificial intelligence which has been proven to reproduce and aggravate discrimination.

Unlike individual consent, discrimination must be dealt with by an independent authority responsible for the a priori protection of data subjects.

The GDPR clearly mentions cases of discrimination as falling within the competence of supervisory authorities (**points 75 and 85 of the GDPR**), with reference to the **CFR** (in particular **Articles 8, 20, 21, 33, 34, 35, 36, 38, 42**).

However, these authorities have made little use of this competence, and to date do not provide any regular assessment of such discrimination, neither at national nor at European level.

We call for these laws to be implemented.

Proposal 22

`Require each citizen's explicit consent in order to subject their data to any automated procedure`

Explanation

According to **Article 5-1 of the GDPR**, personal data processed must be "*relevant and limited to what is necessary for the purposes for which they are processed*".

Artificial intelligence [xlix] on the 5G network will collect data continuously, which goes against this principle of data minimisation.

The European Economic and Social Committee has published the Opinion called Secure 5G deployment– EU toolbox [xvii]. Point 4.16 states:
"*The General Data Protection Regulation (GDPR)* ***should be supplemented with clear implementation guidelines*** *in order to achieve uniform implementation and a high level of data and consumer protection in view of the interconnectivity of machines and objects, and the rules on civil liability and product insurance should be revised to cater for a situation* ***where decisions will increasingly be taken by software*** *in a fully secure environment.*"

In the point 4.18 is stated:
"*The conversations on technical* ***standards*** *are a necessary clarification that will allow companies to compete once again and to carry out these key activities in order to implement advanced technologies such as 5G and* ***artificial intelligence*** *(AI) in all markets.*"

Various studies [l] have shown that artificial intelligence actually automatically reproduces previous discrimination in machine learning processes. The machine "learns" according to the choices it has already made in the past by systematising them - therefore artificial intelligence is a powerful engine for reproducing and aggravating discrimination.

Therefore, automated procedures should be allowed only after each individual citizen's explicit consent.

Legal arguments for our proposal are:

- Article 22 of the GDPR, formulated as the "*right to human intervention in an automated decision*", gives the right to refuse that a decision concerning the individual be subjected to an algorithm.
- UN report - Artificial intelligence and privacy, and children's privacy [li]:
  "*...both the data processing and the decision made as a result of that processing have potential* ***risks for the data subject***."

Proposal 23

Organize public debates whether or to what extent to authorise digital innovations led by scientists with biomedical expertise and who are free from conflicts of interest: appoint new ethics committee or expand EGE's activities

Explanation

Digital technologies, especially 5G in conjunction with the Internet of Things and of Bodies, can lead to uses that are contrary to respect for human dignity and life in society.

The European Group on Ethics in Science and New Technologies (EGE, whose role is defined by Article 2 of Commission Decision 2016/835 [lii]) does not seem to us to be mobilizable because its activity is focused on biotechnology issues. Moreover, its status is not integrated into the constituent treaties of the European Union or into the legislative structures of the European Union.

We call for the creation of a body that brings together scientists and representatives of different schools of thought, elected in complete independence from business circles and governments. This body would be responsible for creating the conditions for a public debate before any major technology is introduced, and for preparing decisions to be validated by referenda.

The European people have not been asked whether they prefer cable or wireless digitalization and in particular they were not involved in the pros and cons of wireless rollout.

With regard to digital innovations, this committee will concern consumers and the impact on their entire living environment, including in particular their consumption. We can therefore rely on **Article 169 (point 2b) of the TFEU**, which allows measures to be taken to supplement or monitor consumer protection policy in the EU.

Parliamentary Assembly Resolution 1815 [vi] in point 8.5.8. states: "*promote pluralist and contradictory **debates** between all stakeholders, **including civil society***".

The European Economic and Social Committee has published the Opinion called Secure 5G deployment– EU toolbox [xvii]. Points 1.10 and 4.11 state that:
"*The Commission, the EP, the Council and the governments and parliaments of the Member States should provide a **democratic framework for consultation**, where scientific or technological issues, legal guarantees and the responses of the relevant institutions to questions from civil society can be presented to the public.*"

Presently, these debates are in the hands of activist groups and a few political parties doing the job that official institutes should do. E.g. in Germany, the Ecological Democratic Party has set up a taskforce [liii] on Mobile Communications, which calls for a design that is compatible with health and the environment and complies with data protection laws.

Precautionary principle

In the EU the precautionary principle in relation to RF EMF is applied exclusively with limits that protect the population against overheating. What RF EMF also cause is completely disregarded. Studies show adverse effects already far below the limits applied in Europe.

The European Treaties have explicitly established that the precautionary principle applies in the field of EU **environmental** policy (Article 191 para. 2 TFEU).

It is also recognised in the case law of the Court of Justice of the European Union (ECJ) that, beyond environmental law, it is a general principle of Union law that applies in particular in the field of **health protection**.[51]

The precautionary principle is based on the idea that if there is uncertainty about the existence or extent of risks, protective measures can be taken without waiting for the existence and severity of those risks to be fully demonstrated.[52]

The precautionary principle is anchored in EU law and international law. According to Article 191 para. 2 sentence 1 TFEU, the EU's environmental policy is based on the precautionary principle and the principle of preventive action. New technological developments are also subject to the precautionary principle.

The precautionary principle also plays an important role in many **decisions of the ECJ**, for which a **few selected example cases** are given below.

- If an authority has to **approve a plan or a project** and there is uncertainty as to whether the plan or project will have an adverse effect on a habitat conservation area, the ECJ obliges the authority to apply the precautionary principle provided for in Art. 6 (3) p. 2 of the Habitats Directive 92/43 EEC [xxix] and to effectively prevent the adverse effect on the conservation areas caused by the plan or project. [53]
- When approving projects such as the **construction of a power plant**, the approval authority must also take into account the precautionary principle when carrying out the **FFH impact assessment**, the protective measures with which any directly caused harmful effects are to be prevented or reduced in order to ensure that the project does not adversely affect the protected area. [54]
- The same applies insofar as a decision is to be made on exceptions pursuant to Art. 16 (1) Habitats Directive 92/43 EEC [xxix]. If the examination of the best available scientific data reveals uncertainty as to whether the favourable conservation status of a population of a species threatened with extinction can be maintained or restored despite the derogation, the

51 ECJ, Judg. v. 5 May 1998, Case C-180/96, ECLI:EU:C:1998:192, United Kingdom v. Commission, para. 99.
52 Court of Justice of the European Union (ECJ) , Judgement from C-77/09, ECLI:EU:C:2003:431, Monsanto Agricoltura Italie u.a., Rn. 111; EuGH, Urt. v. 22. Dezember 2010, Rs. C-77/09, ECLI:EU:C:2010:803, Gowan International Trade and Services, Rn. 73.
53 ECJ, Judgment of 11.04.2013 - C-258/11, NVwZ-RR 2013, 505 = NuR 2013, 343 = BeckRS 2013, 80740; ECJ, Judgment of 15.05.2014 - C-521/12, NVwZ 2014, 931 = NuR 2014, 487 = ZUR 2014, 418 = BeckRS 2014, 80961 (para. 26 - 28).
54 ECJ, Judgment of 26.04.2017 - C-142/16, NuR 2017, 393 = UPR 2017, 300 = ZUR 2017, 414 = DVBl. 2017, 838 with comment Stüer = BeckRS 2017, 107776 - Kraftwerk Moorburg (para. 34 and 40).

Member States are obliged under the precautionary principle enshrined in Article 191(2) TFEU to refrain from adopting or implementing such an exemption regulation. [55]

- In the examination of **plans and programs**, there is also an obligation to carry out an impact assessment if it cannot be ruled out on the basis of objective circumstances that the plan or project in question will have a significant adverse effect on the protected area. [56]
- In a preliminary ruling on the validity of Regulation (EC) No. 1107/2009 of the European Parliament and of the Council of 20 October 2009 concerning the placing of plant protection products on the market and repealing Directives 79/117/EEC and 91/414/EEC, the ECJ[57] stated that in the event of uncertainty as to the existence or extent of risks to human health, protective measures may be taken without waiting for the existence and seriousness of those risks to be fully demonstrated.[58]

It follows from this case law that if a certain risk for 5G appears to be sufficiently documented on the basis of scientific data, which is the case in view of the abundance of critical scientific reports, at least precautionary measures can be taken. **The precautionary principle is ultimately a special manifestation of the principle of proportionality.** According to this principle, the risks disclosed by science must be weighed against the concrete benefits that are also associated with 5G.[59] The more serious the health consequences for parts of the population, the stronger the restrictions on the introduction of this new technology.

In view of the lack of scientific knowledge about the possible consequences of mobile phone radiation, the precautionary principle provides important indications of the necessities to be fulfilled before the introduction of a new technology.

Studies indicate that an immediate application of the precautionary principle before employment of 5G is highly necessary. Based on The Legal Opinion on 5G [xxii] by the lawyer Christian F. Jensen which concludes that:

- **1.2.2.1.1. Subject conclusion (p. 10)**
  "There is clear scientific documentation that radiofrequent electromagnetic radiation, also below the employed limits in Denmark, cf. item 2.1 below, causes DNA damage to both humans and animals. Panagopoulos (2019) documents that not only the strength of radiation is significant to the expected damage. Further it is documented that the findings will also be applicable to 5G, owing to the commonalities between the technologies."
- **1.2.2.5. Subject conclusion (p. 24)**
  "It seems clearly and scientifically well documented that exposure to radio frequent electromagnetic radiation (also below the currently used limits in Denmark, cf. item 2.1 below) can be carcinogenic, and in this respect pose a health risk to humans, which could prove life threatening.
  Add to this the by Pall 2018 summarised scientific documentation of a range of further kinds of damage, incl. reduced fertility, spontaneous abortions, neurological/neuropsychiatrical effects, etc.

55 ECJ, Judgment of 10.10.2019 - C 674/17, NVwZ 20219, 1827 = DÖV 2020, 33 = NuR 2019, 756 = ZUR 2020, 54 = BeckRS 2019, 23630 (para. 66).
56 ECJ, Judgment of 07.09.2004 - C-127/02, ECR I 2004, 7449 = EuZW 2004, 730 = BeckRS 2004, 75716; ECJ, Judgment of 17.04.2018 - C- 441/17, NVwZ 2018, 1043 = NuR 2018, 327 = ZUR 2018, 349 = BeckRS 2018, 5422.
57 OJ 2009 No. L 309, p: 1.
58 ECJ, Judgment of 01.10.2019 - C-616/17, NVwZ-RR 2019, 1038 = BeckRS 2019, 22830 (para. 43).
59 Sobotta, Zur Rechtsprechung: News from the precautionary principle - any doubt excluded?

Further, it must be concluded that children are especially vulnerable, and that several studies point to a possible connection between exposure to radiofrequent electromagnetic radiation and behavioural difficulties, autism, reduced perception, etc."

- **1.2.3.1.1. Subject conclusion. (pp. 30)**
  "*As is the case in relation to health damages and risk thereof for humans, it appears highly scientifically well documented that radiofrequent electromagnetic radiation, including that which stays within the (Danish) authorities' guidelines, respectively is and can be damaging to the health of birds and (in extenso) their habitats. Birds have a special trait that is their ability to orientate themselves partially based on an interaction with the Earth's naturally occurring magnetic field. Radiofrequent electromagnetic radiation's effect on birds' biologically determined abilities to orientate themselves can lead to the destruction of a species, including inside specially designated protected habitats. Particular to this issue, however, it must be highlighted that, for the time being, this does not seem to relate to 5G-frequencies, etc., though it could be the case. It appears that at the present time studies on this only show that birds' biologically determined sense of orientation is negatively affected by radiofrequent electromagnetic radiation.*"

- **1.2.3.2.1 Subject conclusion. (p. 37)**
  "*It appears to be scientifically well documented that radiofrequent electromagnetic radiation, also within the limits set by the (Danish) authorities, respectively are and can be damaging the health of insects.*
  Add to this the special condition that also the abilities of insects to orientate are in part based on interaction with naturally occurring fields in e.g. the flowers to be pollinated. Radiofrequent electromagnetic radiation's effect on the biologically determined abilities to orientate can be devastating for the preservation of the species.
  Further, the disappearance of insects from an area can have vital importance for insectivorous birds' abilities to survive as species."

- **1.2.4.1. Subject conclusion. (p. 38)**
  "*It seems scientifically well documented that radiofrequent electromagnetic radiation, also when inside [within] the limits set by the (Danish) authorities, respectively is and can be damaging to plants. Add to this, that the disappearance on plants from an area can have vital importance for the survivability of birds and insects as species.*"

- **1.3. Overall subject conclusion.(p. 39)**
  "*It is my belief that the scientific research materials analysed above document a clear and weighty causal link between the exposure of humans and animals to radiofrequent electromagnetic radiation on the one hand, and a range of damaging effects as well as possible damaging effects on both groups, including life threatening, on the other hand. There is in addition a well supported causal link as it pertains to damage done to plants. This is also true below the currently set limits, cf. also item 2.1. below.*"

- **2.2.1.1.1. Subject conclusion. (p. 46)**
  "*Against the background of the scientific results in item 1.2 above there remains in my assessment no reasonable doubt that the 5G-system is an industrial activity, which poses danger to humans. As long as the current limits (as announced by the Danish Health Authority, cf. item 2.1 above) are in use, life threatening health conditions caused by radiofrequent electromagnetic radiation by activating the 5G-system must quite clearly be expected, and this would be in contravention with the positive obligations of the Danish state according to ECHR art. 2. As it must be assumed that the risk is well known to the Danish state, it is also obvious that it would incur liability in relation to the 5G-system85, no later than when the life threatening health conditions appear."*

- **3. Conclusion and final remarks. (p. 64)**
  "*It is the conclusion of this legal opinion that establishing and activating a 5G-network, as it is currently described, would be in contravention of current human and environmental laws enshrined in the European Convention on Human Rights, the UN Convention on the Rights of the Child, EU regulations, and the Bern- and Bonn-conventions.*"

German analysis in Springer Nature Switzerland AG by Hans-Jürgen Müggenborg: The precautionary principle when expanding the 5G [liv]

We Consider ICNIRP Flawed

What and who is ICNIRP?

ICNIRP is a private German association consisting of a Commission of up to 14 members with a scientific background, most of whom are very closely related to the industry. [60]Rivasi&Buchner, page 98 Its board members have a long-time history of employment within the telco industry (directly or as consultants). One such example is Martin Röösli.

Martin Röösli (Switzerland) is employed in his main job as a Professor of Environmental Epidemiology at the Swiss Tropical and Public Health Institute in Basel. This institute serves many corporate clients, including Swisscom, the largest telecommunications company in Switzerland. In its 2019 annual report, the institute discloses that of the total budget of about 90 million Swiss francs, 78.6% was *"competitively acquired"*Rivasi&Buchner, page 98. Martin Röösli is also a member of the Swedish Radiation Protection AuthorityRivasi&Buchner, page 96 and does unpaid work for the COSMOS study, which received strong financial support from telecommunications companiesRivasi&Buchner, page 98. Furthermore, Martin Röösli is a board member of the Swiss FSM organization, (the Research Foundation for Electricity and Mobile Communications), which is financed by telecommunications companies, and is receiving funding from Swissgrid and Swisscomm.Rivasi&Buchner, page 98 Many studies selected by Röösli or carried out by him were directly financed by the Research Foundation Electricity and Mobile Communication.Rivasi&Buchner, page 98

In addition, Röösli does not have the necessary medical, biological or physical expertise to assess the health effects of mobile phone radiation. In an Expert Opinion[61] from Lennart Hardell (Professor of Oncology at Örebro University, Sweden) sent to the Swiss Federal Council there is the clear conclusion that the Federal Council and the federal offices responsible for mobile radiation are completely misadvised by the misinformation and false assessments of Professor Röösli with fatal consequences.Rivasi&Buchner, page 98

The election process for new ICNIRP members in particular should be questioned. This is a closed election procedure. This means they are elected to the commission every four years on the proposal of the current members and the Executive Council of the International Radiation Protection Association (IRPA). Looking closely at the qualifications of the 13 members in total, it becomes clear that only few are trained RF EMF experts and can make a professional judgment on this subject.

ICNIRP Guidelines

The ICNIRP 1998 recommendations were adopted by the EU in its Council Recommendation of 1999. These ICNIRP recommendations are not comprehensive enough and are based on a few selected studies that conform to certain guidelines predefined by ICNIRP, which exclude a big number of studies that show adverse effects from RF EMF. ICNIRP guidelines are flawed because:

- bioactive parameters have not been included in evaluations

60 (Rivasi&Buchner) Michèle Rivasi & Klaus Buchner, 2021, Wirkungen des Mobil- und Kommunikationsfunks, Schriftreihe der Kompetenzinitiative zum Schutz von Mensch, Umwelt und Demokratie e.V.

61 https://ägerital.5gfrei.ch/de/de-gutachten-schweizer-bundesrat-interessenkonflikte-anstatt-schutz-vor-mobilfunk

- interaction of frequencies is not evaluated
- total exposure as a sum of fields is not evaluated
- cumulative effects are not evaluated
- heating of tissue is the only accepted parameter

When such factors are not included, the guidelines for RF EMF exposure limits will be erroneous and will be set too high to accommodate the industry that wants to be able to use very high frequencies for the development of their industrial products.

And this is exactly the case. Throughout the world, ICNIRP guidelines are the de facto standards for safe exposure to RF and EMFs. The only problem is that they are not safe.

Experts such as David Carpenter, professor of environmental medicine at the University at Albany, New York, warned WHO that ICNIRP was ignoring studies. Environmental scientist Professor Neil Cherry was particularly outspoken. He was commissioned by the New Zealand government to review the ICNIRP guideline before it was introduced. For this purpose he wrote the "ICNIRP Guideline Critique" in 1999, which has been ignored until today, but remained unchallenged. His conclusion: "The ICNIRP guideline is flawed and contrary to law. It contains a pattern of biases, omissions and deliberate distortions" (https://waveguard.com/strahlenschutzgrenzwerte/).

What ICNIRP guidelines are NOT

At an international EMF conference in London (2008), Professor Paolo Vecchia, ICNIRP Chairman from 2004 to 2012, said about the exposure guidelines "What they are not": *"They are not mandatory prescriptions for safety", "They are not the 'last word' on the issue"*, and *"They are not defensive walls for industry or others"*.

The European Economic and Social Committee have published the Opinion called Secure 5G deployment– EU toolbox [xvii]. Point 4.10 states:
"However, the EESC notes that ICNIRP are not recognised by all the community, with some scientists promoting much stricter population exposure limits according to the ALARA principle. The solutions that might be proposed to complement the 5G communications infrastructure includes the use of fixed data connections by existing non-radio technologies (Ethernet cables, fibre optics, etc.), in situations where the use is fixed (e.g. ATMs, banking POS, industrial robots, remote controlled medical robots, etc.) and where large data transmission users operate (digital service providers, companies/ businesses, etc.); IoT Internet of Things present in fixed, non-mobile locations (Smart Home, Smart City, sensors on public utility equipment, etc.)."

The 2020 limit value proposal from ICNIRP

ICNIRP 2020 [lv] has revised its mobile operator-friendly limit recommendations issued in 1998 to give legitimacy to the radio exposure that will increase with 5G[62]. We oppose changes because:

- ICNIRP insist on thermal dogma only
- biological mechanisms of action are denied
- auditory effect is excluded (list of Differences[lvi])

62 Dr. med. Joachim Mutter in his book "5G, Die geheime Gefahr", 2020 page 60

- mentioning "*A higher SAR is required to reach this temperature rise in children due to their more-efficient heat dissipation*" is unacceptable in view of EU's effort to protect children more (ICNIRP 2020, page 488)
- introduction of Type-1 and Type-2 tissue with accepted temperature rises of 5°C and 2°C, which is unacceptable for us (ICNIRP 2020, page 489).
- The scientific base of the new guidelines is unclear, since the evaluation of the scientific reports by ICNIRP is not published. Only general statements were made public. There is an exception in respect of the NTP report on cell phone radiation studies. A detailed ICNIRP comment is available. In this comment ICNIRP does not accept the outcome of this study, although the peer review was exceptionally extensive. The ICNIRP view is not generally supported nor shared by NTP.
- ICNIRP has not published any response to the comments received. The comments are noted at the website, the response remains a secret.

Dr. Mutter says (2020): *"If you get sick, but this does not happen from overheating, then it has nothing to do with mobile phone radiation. By law, damages below the ICNIRP limit are excluded; thus, if someone is harmed, legal action is excluded."* (Mutter, page 61)

Since the current, extremely high limits in the range above 10GHz are not sufficient for 5G, ICNIRP has revised its recommendations ([63]Buchner&Krout, page 124).

Because ICNIRP only works with average limit values, it is important to know that 5G works differently. In many cases with 5G, the signal is no longer emitted around the cell tower as before, but is sharply focused on the user. High energy flows are beamed out, which impact the user and all those in between the source and the target. A major problem here is that the intensity of the radiation is calculated as an average. From a biological point of view, however, the peak values are the most important ones. Since 5G uses intense radiation to transmit information in a very short time, the average means that the biological effects are greatly understated. Buchner&Krout, page 124-131

An example: you immerse your hand in 20 degree Celsius tempered water for 50 seconds and then in 100 degree Celsius hot water for 10 seconds; now we can claim that the average temperature in the measured 60 seconds was 33.33 degrees Celsius, which is a well tolerated temperature. The part of your skin that was in 100-degree water for 10 seconds will definitely be scalded, and still we can say, "That was just a little 10-second peak."

At the frequency of 26 GHz planned for 5G, a penetration depth into human tissue is only about 1.5mm Buchner&Krout, page 80, chapter "Was ist bei 5G anders?", which is associated with a local temperature increase of 2.51degrees Celsius Buchner&Krout, page 125, after three minutes an increase of 4.14 degrees Celsius, and after 6 minutes eyes would be heated by an increase of at least 5.7 degrees Celsius.

Damage to the eye and clouding of the lens could be the result as well as the development of skin cancer.Buchner&Krout, page 125

63 (Buchner&Krout) Prof. Dr. Klaus Buchner & Dr. med. Monika Krout, 5G Wahnsinn, 2021

The NTP Study [lvii]

In a U.S. Department of Health and Human Services program, 3080 mice and rats were exposed to different levels of cell phone radiation over a lifetime. This showed clearly and statistically significantly that male rats developed more tumours in the heart (schwannomas) and in the brain (gliomas) compared to the control group.

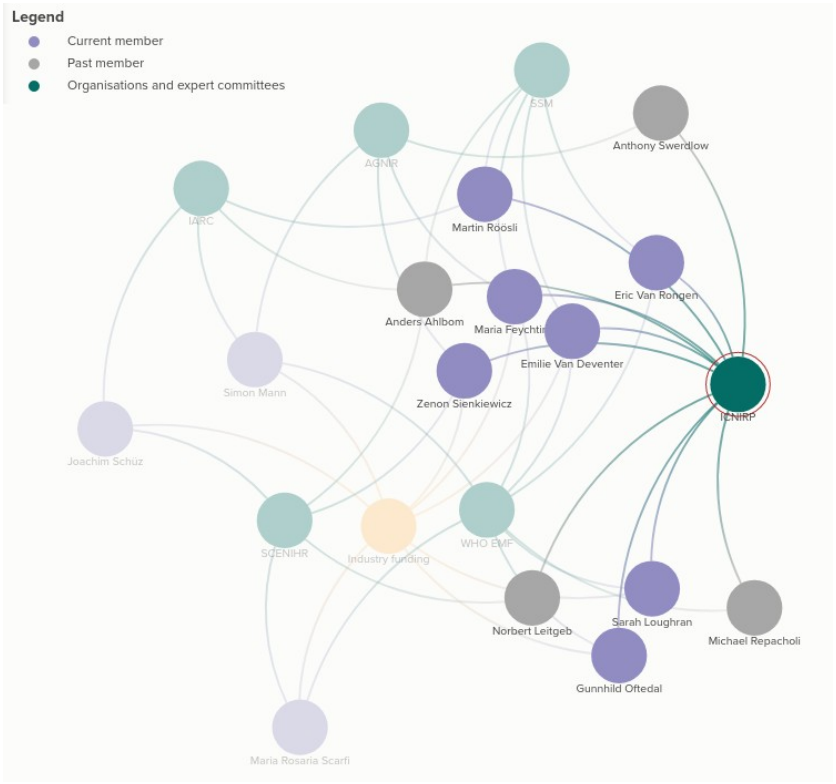
ICNIRP reacted to this study by claiming that the study had not been conducted properly; therefore, no conclusions could be drawn from it.[Buchner&Krout, page 134] Even Prof. James C. Lin of the University of Illinois at Chicago who himself had been a member of ICNIRP for 12 years contradicted this. He called this study a clear proof of the carcinogenic effect of cell phone radiation. Prof. Lin had published this in an industry journal and thus silenced ICNIRP. Today, the NTP study, along with the Ramazzini study, is considered convincing evidence of the carcinogenic effects of radio radiation. [Buchner&Krout, page 135] This is an example of ICNIRP being unreliable regarding assessments of studies and only pick out the ones that agree with their view.

ICNIRP refutes studies they will not use for limit setting by raising doubts on the validity of the study. As an example ICNIRP has made an assessment of a study where the conclusion is allegedly "unclear" and the proven mutagenic effects of EMFs is doubted:

In the case of cells of soft tissues such as glands, connective tissue, etc., the hereditary damaging effect of radio radiation can be observed very clearly, but not so in the case of muscle cells. But the former scientific advisory body SCENIHR of the EU Commission, which included several ICNIRP members, simply mixed together studies on muscle cells, where no effect was found, with those on soft tissue cells and claimed that the scientific situation was unclear because the experiments were contradictory. [Buchner&Krout, page 135]

This is a highly incompetent way of dealing with scientific studies; the above mentioned "cell study" or its results were obviously interpreted inaccurately and was finally deemed "unclear". Studies with "unclear" results are not used to assess EMFs and allow the mobile phone companies to adhere to their limits.

As has been shown clearly above, the private association ICNIRP alone is not in a position to determine and recommend safe limit values for the environment and the population.



You can find an animated source from 2019, where you can open up interconnections of persons or explanations for abbreviations: https://www.kumu.io/Investigate-Europe/the-scientists-and-the-organisations#conflict-of-interest/icnirp

5G in-depth analysis for ITRE Committee

Policy Department A at the request of the ITRE Committee [Itre1] prepared in 2019 an in-depth analysis named 5G Deployment State of Play in Europe, USA and Asia [Itre2] which compared the deployment of 5G in the EU with other leading economies. This study was the basis for later briefing Effects of 5G wireless communication on human health [Itre3] which was released in 2020.

The operators and suppliers of mobile industry promise that 5G will bring advance in speed and reliability to mobile devices, advanced manufacturing, better healthcare systems, smart cities, connected vehicles. We would like to highlight important facts contained in these and related documents:

- *"The cost of meeting the European Union's connectivity goals for 2025, including 5G coverage in all urban areas, set out in its Communication on Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society, is estimated at €500 billion. Given the scale of the investment needed, the mobile industry needs to convince governments of the economic and social benefits that 5G might bring and, consequently, marketing hype is widespread."* [Itre2, page 7]
- *"The aim to cover all urban areas, railways and major roads with uninterrupted fifth generation wireless communication can only be achieved by creating a very dense network of antennas and transmitters."* [Itre3, page 1]
- *"The planned 5G networks are expected to serve up to one million connected devices per square kilometre, about a one thousand fold increase as compared to today."* [Itre 4, page 6]
- *"For the first time, 5G will use millimetre waves in addition to the microwaves that have been used to date in 2G, 3G and 4G technology. Due to the limited coverage, to implement 5G, cell antennas will have to be installed very close to one another, which will result in constant exposure of the population to millimetre wave radiation. Use of 5G will also require new technologies to be employed, such as active antennas capable of beam-forming, massive inputs and outputs. Which would make measuring radiation exposures even more difficult. With higher frequencies and shortened ranges, base stations will be more closely packed into a given area to give complete coverage that avoids "not-spots". Ranges of 20-150 metres may be typical, giving smaller coverage areas per "small cell". A cell radius of 20 metres would imply about 800 base stations per square kilometre (or small area wireless access points (SAWAPs), the term used in the European Electronic Communications Code (EECC)). This contrasts with 3G and 4G which use large or "macro" cells. Traditionally they offer ranges of 2-15 km or more and so can cover a larger area but with fewer simultaneous users as they have fewer individual channels."* [Itre2, page 3]
- *"As 5G employs a very high level of pulsations, the idea behind 5G is to use higher frequencies, which allows such high levels of pulsation, in order to carry very large amounts of information per second. Studies show that pulsed EMF are in most cases more biologically active and therefore more dangerous than non-pulsed EMF. Every single wireless communication device communicates at least partially via pulsations, and the smarter the device, the more pulsations."* [Itre 3, page 5]

- *”Along with the mode and duration of exposures, characteristics of the 5G signal such as pulsing seem to increase the biologic and health impacts of exposure, including DNA damage, which is considered to be a cause of cancer. DNA damage is also linked to reproductive decline and neurodegenerative diseases.”* Itre 3, page 5
- *"Millimetre waves, which will be employed by 5G, are mostly absorbed within a few millimetres of human skin and in the surface layers of the cornea. Short-term exposure can have **adverse physiological effects** in the peripheral nervous system, the immune system and the cardiovascular system."* Itre3
- *“This raises the question as to whether there is a negative impact on human health and environment from higher frequencies and billions of additional connections, which, according to research, will mean constant exposure for the whole population, including children.”* Itre3, page 1
- *“Primary responsibility for protecting the population from the potential harmful effects of EMF falls to the governments of EU Member States under Article 168 of the Treaty on the Functioning of the European Union.”* Itre 3, page 4 However, the EU is urging Member States to increase the limits of permissible exposure as is seen in the 5G Action Plan for Europe Itre 4 which was adopted in 2016.

The main objective of the action plan is to roll out these technologies across the EU as rapidly as possible. The 5G Action Plan for Europe does not mention health aspects at all and exposure limits of RF EMF in the Member States are identified as barriers - limits are sometimes much lower (i.e. safer) than required by the relevant European directive on health protection, therefore they impose greater restrictions on aggregation (i.e. the action of multiple signals simultaneously). These barriers are intended to be removed by harmonising the rules, which implies increasing the exposure limits across the Member states if countries have stricter limits (i.e. safer) than European standards (point 3.3., section Reducing the cost of installing access points). Itre 4, page 6

For urban coverage with 5G small cells, EU advices member states to enable a unified EU approach to antenna densification.

In the chapter **Factors for 5G Success** is mentioned: *“After technology capability, key factor of success will be the ease with which a large number of small cells can be deployed in densifying the network. China and the Asian Tigers have an advantage here because their political structures and culture mean that they can mandate deployment without the need for public assent.”* Itre2, *page 24*

We can see similar behaviour to Asian tigers as the EU plans to rapidly deploy hundreds of small cells per square kilometre as “*in line with EECC Article 57, EU is crafting a regime for SAWAP deployment, aiming for permit-free installation from 2020.”* Itre2, *page 24*

In document Light deployment regime for Small-Area Wireless Access Points (SAWAPs) it was mentioned that pursuant to Article 57 of the EECC EECC the EU Commission services are preparing a first Commission Implementing Act on small-area wireless access points (SAWAPs or ‘small cells’), "*that will be exempted from any individual town planning permit or other prior individual*

permits, except for environmental or historical reasons or public safety" [Itre5]. Its adoption was targeted for Q2/2020, in compliance with the deadline of 30 June 2020 in the EECC [EECC]

Regulation (EU) 2020/1070 introduced in point (8) "*base stations divided into five installation classes corresponding to different limits of their equivalent isotropical radiated power (EIRP) of a few milliwatt (Class E0), 2 Watt (Class E2), 10 Watt (Class E10), 100 Watt (Class E100) and above 100 Watt (Class E+)*" [Itre6] and installation safety distances which "***requires that the lowest radiating part of the antenna of a Class E10 has a height of at least 2,2 metres above the general public walkway to ensure a distance of at least 20 cm between the main antenna lobe and the human body of a 2 m tall person***" and in point (9) "*For aesthetic reasons, the indoor installation of small-area wireless access points of Class E10, which are likely to utilise the maximum volume limit of 20 litres,* ***should be limited to large indoor places with a ceiling height of at least 4 metres, such as museums, stadiums, convention centres, airports, metro-transport stations, railway stations, or shopping centres***."

We are deeply concerned about the findings contained in the documents:

- *"Significant concern is emerging over the possible impact on health and safety arising from potentially much higher exposure to radiofrequency electromagnetic radiation arising from 5G.* ***Increased exposure may result not only from the use of much higher frequencies in 5G but also from the potential for the aggregation of different signals, their dynamic nature, and the complex interference effects that may result, especially in dense urban areas.*** *The 5G radio emission fields are quite different to those of previous generations because of their complex beamformed transmissions in both directions – from base station to handset and for the return.* ***Although fields are highly focused by beams, they vary rapidly with time and movement and so are unpredictable, as the signal levels and patterns interact as a closed loop system. This has yet to be mapped reliably for real situations, outside the laboratory."*** [Itre2, page 11]
- SCHEER [xiii] in Statement on emerging health and environmental issues (2018) on page 14 *"indicated a preliminary estimate of the importance of 5G as high, in a statement in December 2018. Furthermore, it evaluates the scale, urgency and interactions (with ecosystems and species) of possible hazard as high."* [Itre3, page 5]
- *"Council of Europe Resolution 1815 (2011)* [vi] *points to the potential health effects of the very low frequency of electromagnetic fields surrounding power lines and electrical devices, which are the subject of ongoing research and public debate. It also states that some non-ionising frequencies appear to have more or less potentially harmful, non-thermal, biological effects on humans, other animals and plants, even when exposed to levels that are below the official threshold values. The resolution identifies young people and children as particularly vulnerable groups and suggests that there could be extremely high human and economic costs if early warnings are neglected."* [Itre3, page 5]
- *"...this is doubly salient regarding* ***the possible negative health impacts due to the inescapability of constant exposure of citizens in a 5G environment****. The recent academic*

literature illustrates that continuous wireless radiation seems to have biological effects especially considering the particular characteristics of 5G: ***the combination of millimetre waves, a higher frequency, the quantity of transmitters and the quantity of connections****. Various studies suggest that 5G would affect the health of humans, plants, animals, insects, and microbes – and as* ***5G is an untested technology, a cautious approach would be prudent****.* ***The UN Universal Declaration of Human Rights, the Helsinki Accords and other international treaties recognise that informed consent prior to interventions that might affect human health is an essential, fundamental human right, which becomes even more controversial when considering children's and young people's exposure.*** *"* Itre3, page 9

- *"According to the 2019 study '5G deployment: State of Play in Europe, USA and Asia' prepared for the European Parliament,* ***long-term technology research is essential.*** *'One key problem is* ***the unusual propagation phenomena, especially controlling and measuring radio frequency EMF exposure with Multiple Input Multiple Output (MIMO) at millimetre wave frequencies*** *for the handset and the base station. The study states that the main problem seems to be that it* ***is not currently possible to accurately simulate or measure 5G emissions in the real world"*** Itre3, page 9
- ***"The European Commission has not yet conducted studies on the potential health risks of the 5G technology."*** Itre3, page 9

Itre1	European Parliament Committee on Industry, Research and Energy https://www.europarl.europa.eu/committees/en/itre/home/highlights
Itre2	5G Deployment: State of play in Europe, USA and Asia http://www.europarl.europa.eu/RegData/etudes/IDAN/2019/631060/IPOL_IDA(2019)631060_EN.pdf
Itre3	Effects of 5G wireless communication on human health https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/646172/EPRS_BRI(2020)646172_EN.pdf
Itre 4	5G for Europe: An Action Plan, 2016; https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52016DC0588&from=en
Itre5	Public Consultation on the light deployment regime for small-area wireless access points https://digital-strategy.ec.europa.eu/en/consultations/public-consultation-light-deployment-regime-small-area-wireless-access-points
Itre6	https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32020R0911
EECC	Directive (EU) 2018/1972 establishing the European Electronic Communication Code

Reference to existing laws

We demand the EU abide by existing EU and international laws and values including

- Treaty on European Union (**TEU**)
  Article 3 about protection of environment, child and security
  Article 21 (f) "*help develop international measures to preserve and improve the quality of the environment and the sustainable management of global natural resources, in order to ensure sustainable development*"
  and other articles
- Treaty on the Functioning of the European Union (**TFEU**)
  Article 4 about common safety concerns in public health matters
  Article 6, 9 about human health protection
  Article 13 about animal protection
  Article 16 about personal data protection and other articles
  Article 114 concerning health, safety, environmental protection and consumer protection
  Article 168 about human health protection
  Article 169 about consumer protection
  Article 191 about **precautionary principle** and environment protection
  Article 192
  Article 193
  Article 194 about energy efficiency
  Article 189 about space matters (check other links in group document)
  and other articles
- Charter of Fundamental Rights of the EU 2012/C 326/02 (**CFR**)
  Article 2 about right to live
  Article 3 about right to the integrity of the person
  Article 4 about prohibition of torture and inhuman or degrading treatment
  Article 6 about right to liberty and security
  Article 8 about protection of personal data
  Article 21 about the right to non-discrimination
  Article 24 about the rights of the child
  Article 31 about fair and just working conditions
  Article 35 about high level of human health protection
  Article 37 about environmental protection
  Article 38 about consumer protection
  and other articles
- Aarhus convention where EU citizens have a right to ensure that the updated environmental information (article 5) is taken into account when the EU adopts policies for the protection of the environment.
- General Data Protection Regulation (**GDPR**)
  Article 5 about data minimisation
  Article 9 about processing of special categories of personal data
  Article 21 about right to object

Article 22 about automated individual decision-making and other articles
Article 35 about data protection impact assessment;

- Directive 92/85/EEC Article 6 about prohibited exposure of pregnant workers, Annex I (e) non-ionizing radiation
- UNICEF Convention on the Rights of the Child (**UNCRC**)
  Article 24(f) about preventive health care, guidance for parents
- Universal Declaration of Human Rights
  Article 3 "Everyone has the right to life, liberty and security of person."
- Directive 92/43/EC (Habitat Directive)
- Directive 2009/147/EC (Bird Directive)

Abbreviations

The EU Commission - The European Commission

GHG - green house gas(es)

ICT - information and communication technologies

RF EMF or RF-EMF - radio frequency electromagnetic field (or fields)

RFR - radio frequency radiation

UN - United Nations

5G - five generation

i https://apps.who.int/gho/data/view.main.EMFLIMITSPUBCRADIOFREQUENCYv (limits in countries)
ii http://www.irishstatutebook.ie/eli/2016/si/337/made/en/pdf
iii https://www.academia.edu/49209568/World_Health_Organization_International_EMF_Project_International_Advisory_Committee_IAC_25th_anniversary_of_the_International_EMF_Project_and_the_10th_Optical_Radiation_meeting_South_Africa_National_Report_2021
iv https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013L0035 (Workplace Directive 2013/35/EU)
v https://www.iarc.who.int/wp-content/uploads/2018/07/pr208_E.pdf (IARC class B)
vi http://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=17994& (Resolution 1815)
vii https://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL_IDA(2019)631060 (5G deployment)
viii https://op.europa.eu/en/publication-detail/-/publication/2d5bedf8-d1dd-4631-85d7-6c54c18f32b0/language-en (Parliament resolution 2009)
ix https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf (ICNIRP 1998)
x http://ec.europa.eu/social/BlobServlet?docId=14741&langId=en&usg=AOvVaw2pm_f1PoHltXjnkj3uqgc3 (Guide for workers directive)
xi https://bioinitiative.org/preface/
xii http://www.emfinspect.com/wp-content/uploads/2018/07/SBM-Germany-2015.pdf (Building biology guidelines)
xiii https://ec.europa.eu/health/scientific_committees/scheer_en
xiv https://www.europarl.europa.eu/doceo/document/P-9-2020-000221_EN.html
xv https://www.europarl.europa.eu/doceo/document/P-9-2020-000221-ASW_EN.html
xvi https://data.anfr.fr/anfr/visualisation/table/?disjunctive.marque&disjunctive.modele&sort=das_tronc_norme_nf_en_50566 (French market)
xvii https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/secure-5g-deployment-eu-toolbox (Secure 5G...toolbox)
xviii https://ehtrust.org/wp-content/uploads/CYPRUSPDF-Wireless-in-School-Letter.pdf (Cyprus ministry)
xix http://paidi.com.cy/new-videos-makarios-hospital-campaign/?lang=en (Cyprus hospital campaign)
xx https://www.scribd.com/document/182641315/RNCNIRP-Russia-Wi-Fi-Regulation-19-06-12-pdf (RNCNIRP)
xxi https://www.assemblee-nationale.fr/14/ta/ta0468.asp (France)
xxii https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2004075583 (patent)
xxiii https://popularresistance.org/cyprus-launches-cell-phone-wireless-radiation-awareness-campaign/ (Cyprus national campaign)
xxiv https://www.gesetze-im-internet.de/englisch_gg/englisch_gg.html#p0075 (Basic law, Germany)
xxv https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32001L0042 (Directive 2001/42/EC)
xxvi https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011L0092 (Directive 2011/09/EU)
xxvii https://helbredssikker-telekommunikation.dk/sites/default/files/LegalOpinionOn5G.pdf (Legal Opinion)
xxviii https://www.avaate.org/spip.php?article2834
The association AVAATE (Asociación vallisoletana de afectados por antenas de Telecomunicaciones) in northwestern Spain has lodged a complaint with the Ombudsman about the lack of environmental approval of the national 5G action plan.
xxix https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en (European green deal)
xxx https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0027 (Directive 2012/27/EU)
xxxihttps://www.researchgate.net/publication/320225452_Total_Consumer_Power_Consumption_Forecast (20% electricity consumption)
xxxii https://www.sciencedirect.com/science/article/abs/pii/S095965261733233X (GHG)
xxxiii https://theshiftproject.org/en/article/lean-ict-our-new-report/ (Shift project)
xxxiv https://wsimag.com/science-and-technology/64080-green-5g-or-red-alert (red alert)
xxxv https://ec.europa.eu/environment/aarhus/pdf/legislative_proposal_amending_aarhus_regulation.pdf
xxxvi https://www.oecd.org/environment/global-material-resources-outlook-to-2060-9789264307452-en.htm
xxxvii https://ec.europa.eu/environment/aarhus/pdf/legislative_proposal_amending_aarhus_regulation.pdf
xxxviii https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32009L0125(Ecodesign Directive 2009/125/EC)
xxxix https://www.esa.int/Science_Exploration/Space_Science/Our_environment_in_the_context_of_space
xl https://www.unoosa.org/pdf/gares/ARES_55_122E.pdf (Assembly 55/122)
xli https://undocs.org/pdf?symbol=en/A/71/20 (UN report)
xlii https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0541&from=ES (Decision No 541/2014/EU)
xliii https://www.coe.int/en/web/conventions/full-list/-/conventions/treaty/185 (Convention, Budapest)
xliv https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32013L0040 (Directive 2013/40)
xlv https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:32016L1148 (Directive 2016/1148)
xlvi https://eur-lex.europa.eu/eli/reg/2019/881/oj (Regulation 2019/881)
xlviihttps://ec.europa.eu/info/law/law-topic/data-protection/reform/what-are-data-protection-authorities-dpas_en (national boards)
xlviii https://edpb.europa.eu/edpb_en (Data Protection Board)

xlix https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence
l https://www.newscientist.com/article/2166207-discriminating-algorithms-5-times-ai-showed-prejudice/
li https://undocs.org/en/A/HRC/46/37
lii https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016D0835 (Decision 2016/83)
liii https://www.oedp.de/partei/bundesarbeitskreise-und-kommissionen/bak-mobilfunk
liv https://link.springer.com/content/pdf/10.1007/s10357-020-3785-z.pdf (Müggenborg)
lv https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf (ICNIRP 2020)
lvi https://www.icnirp.org/en/differences.html (ICNIRP differences)
lvii https://microwavenews.com/news-center/ntp-final-rf-report (NTP study)