SUMMARY CONCLUSION

FOR:

- plaintiffs -

AGAINST:

-defendant-

I. TABLE OF CONTENTS

II. FACTS AND RETROACTS

(This section is added so that the reader gets an idea of the regulatory environment in Belgium, the subject of the case. It speaks for itself that in itself the Belgian regulatory situation is not legally relevant for other countries.)

1. INTRODUCTION: CURRENT EXPOSURE LIMITS

1.
On April 29, 2001, the federal government issued for the first time a 'Royal Decree regulating transmission masts for electromagnetic waves between 10 MHz and 10 GHz'. This decree was annulled by the Council of State on 15 November 2004, because the amended draft text had not been submitted to the Supreme Health Council for its opinion. ([1])

On August 10, 2005, the federal government issued a new royal decree with almost the same content. That RD was in turn annulled by the Council of State on May 20, 2009, because the regions and not the federal government are competent for the protection of the population against electromagnetic radiation. ([2])

In its judgement of 15 January 2009, the Constitutional Court ruled that the regional competence under Article 6(1) of the Special Law of 8 August 1980 includes the competence to take measures for the prevention and limitation of risks linked to non-ionising radiation, including the limitation of human exposure to the risk of such radiations spreading through the environment. ([3])

2.
As a result of this judgement, the regions had to issue their own exposure standards:

- Brussels Capital Region enacted an Ordonnance for the protection of the environment against possible harmful effects and nuisance from non-ionising radiation. This legal act has been in force since 1 March 2007. Its purpose was to protect the environment against the possible harmful effects and nuisance of non-ionising radiation. It sets 3 V/m at 900 MHz as the overall exposure limit.

  An Ordonnance of 3 April 2014 amended the 2007 Ordonnance. (*Official Gazette* ,30 April 2014)

  Article 3, §1 of the Ordinance currently stipulates that the power density of non-ionising radiation in all places accessible to the public must never exceed 0.096 W/m^2 or 6 V/m at a reference frequency of 900 MHz.

[1] RvS no. 138.471 of 15 December 2004.
[2] RvS no. 193.456 of 20 May 2009.
[3] Constitutional Court No 2/2009 of 15 January 2009, *BS* 9 February 2009.

- In the Flemish Region, the standards were established by the Flemish Government Decision of 19 November 2010 amending the Decision of the Flemish Government of 1 June 1995 containing general and sectoral provisions on environmental health with regard to the standardisation of fixed and temporarily installed transmitter antennae for electromagnetic waves between 10 MHz and 10 GHz (*Official Gazette,* 13 January 2011). The Decree of 19 November 2010 entered into force on 23 January 2011.

  This decision sets the maximum electric field at 20.6 V/m. This is the same level as the old federal standard. Each transmitting antenna can contribute up to 3 V/m to this general field.

  The Flemish Decision applies to "transmitting antennae". A transmission antenna is any element that transmits electromagnetic waves at a frequency between 10 MHz and 10 GHz. Mobile phone masts, radio and TV aerials, amateur radio aerials, those of the emergency services, etc. are therefore all covered by this Decree. Mobile devices, such as GSMs, are not covered by the regulation. Federal product standards exist for these.

  This Decree was amended by Decision of the Flemish Government of 16 December 2011 amending various provisions of the Decision of the Flemish Government of 1 June 1995 containing general and sectoral provisions on environmental health and the Decision of the Flemish Government of 19 November 2010 concerning the standardisation of fixed and temporarily installed transmitter antennae for electromagnetic waves between 10 MHz and 10 GHz (*Official Gazette* 13 January 2012).

3.
The Brussels Capital Region has submitted a draft Ordinance to the Brussels Parliament to increase the standards from 6V/m to 9.19 V/m for indoor locations accessible to the public and to 14.57 V/m for outdoor locations accessible to the public (valid for 900 MHz).

The Flemish Region, too, has taken a decision to further relax the exposure limits on its territory.

On 10 June 2022, the Flemish Government Decision to amend the Decision of the Flemish Government of 1 June 1995 containing general and sectoral provisions on environmental health and the Decision of the Flemish Government of 12 December 2008 implementing Title XVI of the Decree of 5 April 1995 containing general provisions on environmental policy, with regard to permanently and temporarily installed transmitter antennae for electromagnetic waves between 100 kHz and 300 GHz, was approved. ([4]) This Decision entered into force on 31 July 2022.

4.
The current standards of both the Flemish Region and the Brussels Capital Region date back to a time when wireless communication was brief and mainly intended for emergencies. These standards are based on safety guidelines developed by organisations such as the International Commission on Non-Ionising Radiation Protection (ICNIRP). ICNIRP is a non-governmental organisation based in Munich

[4] *BS* 25 July 2022

and composed of scientists from all over the world. The composition of commission members and possible links of its members with the telecommunications industry have been repeatedly questioned by journalists, independent scientists, members of the European Parliament and, for example, a judgement of the Turin Court of Appeal ([5]). Yet governments and advisory bodies in Belgium continue not to question ICNIRP. Blindly, they follow the advice of an institution whose independence and scientific rigour are not guaranteed. In chapter 1.3 of Part V of these decisions, the plaintiffs discuss ICNIRP in more detail.

Compared to the 1990s, the use of wireless technology in society has increased exponentially. On a personal level, mobile phones are no longer used for short-term emergencies. Unwittingly, smartphones, mobile phones and other wireless applications are becoming an important part of everyday life for more and more citizens.

In addition, government and industry are increasingly using industrial wireless applications such as wireless digital meters, wireless street lights and so on.

In order to protect the population and the environment from all this, in drawing up exposure limits organisations such as ICNIRP focused from the outset on thermal effects under laboratory conditions. [6] Non-thermal biological effects which may occur in living organisms far below the standards thus established were, and still are, not taken into account. This is also the case for the exposure limits of Flanders and Brussels Capital Region.

All of this has led to an explosion of all kinds of symptoms and health problems and a rapidly growing body of alarming scientific findings - see numbers 5 and 6 and further in this submission- that point to an enormous cost of current regulations for the welfare and health of humans, plants, animals and the environment.

5.
Thus, the current regulations allow a radiation intensity that is harmful and that plaintiffs deem contrary to higher legal norms. Therefore, they ask for the court to establish the illegality of the current regulations.

The plaintiffs also ask for the court to impose on the defendants exposure limits taking the health issues suffered by the plaintiffs fully into account, exposure limits that, apart from the health issues suffered by plaintiffs, also protect all people, plants and animals.

Plaintiffs also call for a stricter application of the precautionary principle so that policy takes due account of all biological effects, including non-thermal, of radiation sources in the short, medium and long term. These requests imply drastically tightening current exposure limits in line with the state of play of independent and peer-reviewed national and international scientific research. Specifically, the plaintiffs are asking for a cumulative radiation standard of 0.6 V/m.

[5] Court of Appeal of Turin 12 March 2019, C-721/2017, publ. 13 January 2020. Annexes H.1.a to H.1.c.2.
[6] See also section 1.2 of this submission.

2. HEALTH RISKS AND DAMAGES FOR HUMANS [7]

6.

The following studies, among others, show that wireless technology does not only lead to negative health effects in the short term. In the long term, it causes all kinds of health issues.

a. Reflex Study 2002-2004 - Annexes G.2.1.a and G.2.1.b

Major two-year study commissioned by the European Union and led by German Prof. Franz Adlkofer. The results show that even at a SAR value of 1.3 W/kg, representative of many mobile phones today, significant biological damage is caused in human cells and DNA.

b. Cerenat study 2004-2006 - Annexes G.2.2.a and G.2.2.b

French study showing a statistical link between heavy mobile phone use and brain tumours.

*c. Ramazzini study (2005-2015) - Annexes G.2.3.a and G.2.3.**b***

The Italian Ramazzini Institute studied Sprague-Dawley rats for carcinogenic effects of long-term exposure to 1.8 GHz GSM radiation. It is the largest long-term study ever. The study, which is a replica of the NTP study, shows that mobile phone radiation causes brain and heart tumours, particularly in male rats. In the publication by Investigate Europe -Annexes G.2.3.c. G.2.3.d. **-** and the analysis by Science Direct **-**Annexes G.2.3.e. and G.2.3.f. - the results of the NTP study are confirmed by the Ramazzini study.

d. Anghileri et.al. (2006) - Annexes G.2.4.a and G.2.4.b

This study builds on scientific research from the 1970s (Czerski 1975). A group of mice was exposed to RF radiation of 800 MHz for one hour per week for four months. Compared to a control group not exposed to RF radiation, the radiation caused earlier general infiltration of lymphocyte cells, the formation of lymphoid ascites and extra-nodal tumours of various histological types, as well as increased premature mortality.

e. Bio-Initiative 2007 and 2012, updated in 2020 - Annexes G.2.5 to G.2.6.c

Annex G.2.5 contains a summary table from the BioInitiative with "*Reported biological effects of radio frequency radiation at low intensity exposure*".[8]

The BioInitiative is a meta-study of 200 then-available studies on the effect of electromagnetic fields (EMF) on free radicals and the oxidative cell stress it induces. The study found that there were statistically relevant effects in 180 of the consulted 200 studies. That is 90%. The study

[7] See also Part V, Chapter 1.2 and Annexes G.2

[8] To be found at: RF Color Charts Summarizing Several Studies - BioInitiative Report 2012
0.01 µW/cm² = 100 µW/m² ; 0.1 µW/cm² = 1,000 µW/m² ; 1 µW/cm² = 10,000 µW/m² ; 10 µW/cm² = 100,000 µW/m² ; 100 µW/cm² = 1,000,000 µW/m² ; 1000 µW/cm² = 10,000,000 µW/m²

Was updated in 2022. In the meantime, many more studies have been examined. The vast majority of them point to biological effects of RF radiation.[9,10,11]

f. Yakymenko et al. 2015 - Annexes G.2.23.a and G.2.23.b
Meta-study of 100 peer-reviewed studies. 93 of the 100 studies point to molecular effects of low-intensity radio waves, including significant activation of oxidative cell stress and DNA damage. This activation gives rise to cancer and other pathogenic disturbances.

g. Birks et al 2017 - Annexes G.2.7.a and G.2.7.b
Link between mobile phone use during pregnancy and behavioural disorders in children following birth.

h. National Toxicology Program (NTP) - 2018 study - Appendices G.2.8.a, G.2.8.b and G.2.8.c
Important two-year study by the US government on rats and mice. The study shows a clear link between 2G, 3G and an increased incidence of malignant tumours and DNA damage in mainly male mice and rats.

i. Meta study Martin Pall 2019 (2nd edition) - Annexes G.2.9.a and G.2.9.b
A meta-study discussing 197 studies showing that EMF disturbs our cellular metabolism, particularly the Voltage Gated Calcium Channels (VGCCs) of our cells. See also number 38 of this submission to the court.

j. Other Martin Pall studies (various dates) - Annexes G.2.10.a and G.2.10.b
Database of Professor Martin L. Pall's publications on the radiation effects of non-ionising EMF, in particular weak magnetic fields, on chronic inflammation and the VGCC mechanism.

k. Panagopoulos 2019 - Annexes G.2.11.a and G.2.11.b
Meta-study showing DNA and other damage caused by the use of mobile telephones and other forms of man-made EMF. What is remarkable about this meta-study is that it examined all generations of mobile telephones and all forms of wireless data communication. The research shows that in addition to signal strength, signal modulation is important. The more a signal is modulated, the more harmful its effects.

l. Epidemiological studies
A further range of epidemiological studies are cited in Annexes G.2.12 to G.2.21.

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[9] BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF)

[10] On the BioInitiative website, we read the following as an introduction to the new 2014 - 2022 report: "In the ten years since the BioInitiative 2012 Report was posted, hundreds of new peer-reviewed research papers have been published. A clear majority of studies report biological effects as opposed to 'no effect'. The trend continues to show that exposure to low-intensity ELF-EMF/Static Fields and RFR at levels allowable under current federal public safety limits pose health risks. This body of literature strongly supports new, biologically based public exposure standards that are protective against exposure levels identified in this Report to cause effects at levels thousands of times lower than current FCC limits.." https://bioinitiative.org/

[11] See, for example, number 60 of this submission to the court.

m. In Annexes G.2.22.a and G.2.22.b, the plaintiffs include a Swiss analysis addressing a number of important commonly used claims that "all is safe".
This study refutes the claims of Prof. Martin Röösli, advisor to the Swiss government, as well as chairman of BERENIS and member of the ICNIRP, regarding the rollout of 5G:

> *The rollout of 5G does not necessarily increase the total exposure to EMF;* "
>
> *Since no adverse health effects could be demonstrated for wireless radiation exposure to GSM, UMTS and LTE, 5G would also be safe.*"
>
> 3. "*Although effects on the brain and oxidative status have been observed, these would be without health consequences.* "

n. EHS - Annexes G.4
Here the plaintiffs submit scientific studies and other information relating to electrohypersensitivity (EHS).

o. 5G International Appeal - Annexes G.5.1
A well-argued 'International Appeal' by scientists, doctors, citizens and environmental organisations to the UN, WHO, EU, Council of Europe and national governments to stop the 5G rollout.

p. Pockett - Annex G.5.2
In this 124-page study, neuropsychologist Susan Pockett (New Zealand) looks in detail at the health effects of EM-radiation.

q. Balmori - Annex G.5.3
A recent 2022 meta-study showing health risks from EMF in people living near mobile phone transmission stations.

r. Lai - Annex G.5.4
A 2022 meta-study by Prof Henry Lai, PhD, and investigative journalist Blake Levitt examining the role of intensity, exposure time and modulation on the biological effects of radiofrequency radiation and exposure guidelines.

3. HEALTH RISKS AND DAMAGE TO THE ENVIRONMENT, PLANTS AND ANIMALS [12]

7.
There are also several studies that point to damage to the environment, plants and animals:

> *a. Mark Broomhall 2000-2015 - Annexes G.3.1.a and G.3.1.b*

[12] See also Annex G.3

Electromagnetic fields affect biodiversity. Over a period of 15 years (2000-2015), Australian botanist Mark Broomhall conducted research for UNESCO on the influence of transmission masts on the Mt. Nardi nature reserve in Australia.
Broomhall found that the numbers and species of animals were in sharp decline: 3 bat species have become rare or have disappeared, 11 bird species have disappeared, 11 migratory bird species have disappeared, 86 bird species show unnatural behaviour, 66 once common bird species are now rare or have disappeared, moths, butterflies, ants and bees have become rare, insect populations have been reduced by 80-90%.

b. Ulrich Warneke: Bienen, Vögel und Menschen Die Zerstörung der natur durch, Elektrosmog 2008 - Annexes G.3.2.a and G.3.2.b
Man-made electromagnetic fields of an unprecedented intensity of 10^{12} times natural background radiation disrupt contact with the earth's natural electromagnetic field. This disrupts the orientation and communication of animals and the natural functioning of all biological processes in plants, humans and animals.

c. Daniel Favre 2011 - Annexes G.3.3.a and G.3.3.b
Study investigating the influence of high frequency radiation on honeybee behaviour. Electromagnetic radiation from mobile phones disrupts communication between bees and the normal interaction of the bee population.

d. Balmori study 2015 - Annexes G.3.4.a and G.3.4.b
Exposure to current levels of radiation in cities and in the vicinity of mobile phone masts affects the functioning of the receptors for the earth's magnetic fields that birds and insects use for orientation. This can have serious consequences for migrating birds and insects, not only in the vicinity of cities but also in protected nature areas.

e. Shende et al. 2015 - Appendices G.3.5.a and G.3.5.b
Study investigating the influence of high-frequency radiation (telecom) on the house sparrow population in cities. A monthly comparative measurement of the house sparrow population in urban and rural areas shows a significant monthly decline in the number of house sparrows in urban areas, where there is much more high-frequency radiation, than in more rural areas with less radiation.

f. Waldman et al. 2016 - Annexes G.3.6.a and G.3.6.b
Important 10-year German study on the damaging effect of EMF on trees. Trees that were irradiated with less than 0.14 V/m (52 µW/m²) showed remarkably less harmful effects of EMF than trees exposed to higher radiation values.

g. Halgamuge 2017 - Annexes G.3.7.a and G.3.7.b
Meta-study of 45 peer-reviewed studies on non-thermal effects of EMF on 29 plant species. Of the studies reviewed, 89.9% indicated physiological and morphological influences. This research also shows that the plants are more sensitive to certain frequency bands. These are the 800-1500 MHz band, 1500-2400 MHz and 3500-8000 MHz.

h. Thielens et al 2018 - Annexes G.3.8.a and G.3.8.b
Influence of EMF fields from 2-120 GHz on insects. The study shows temperature increases in insects exposed to higher EMF frequencies. Frequencies higher than 6 GHz are especially harmful to insects smaller than 1 cm. 5G and 6G technologies want to make use of such high frequencies. These frequencies are currently licence-free.

i. Additional recent studies showing health risks on insects:

*Alain Thill 2020 - Annex G.3.9.a and G.3.9.***b**
Review of Biological effects of electromagnetic fields on insects This systematic review evaluates the state of knowledge on the toxic effects of electromagnetic fields (EMF) on insects. It also provides a general overview of reported effects and mechanisms, covering new findings in cell biology.

*Alfonso Balmori 2021 - Annex G.3.*10.*a and G.3.10.b*
Electromagnetic radiation as an emerging driver for the decline of insects There has been evidence for the effects of non-thermal microwave radiation on insects for at least 50 years. This review shows that we should consider electromagnetic radiation as an important additional element in the dramatic decline of insects, in synergy with agricultural intensification, pesticides, invasive species and climate change.

III. LIABILITIES

(This section only includes what is relevant for other cases in the EU or internationally)

8.
The plaintiffs request the following:

(…)

The following questions to be referred to the European Court of Justice:

1. *Should Articles 2, 3, 4, 6 and 7 of the Charter of Fundamental Rights and Articles 168 and 191 TFEU be read as obliging the Union and its Member States, when drawing up and defining EMF exposure limits, to take full account not only of possible thermal effects of man-made electromagnetic radiation, but also of biological effects of all kinds caused by these radiation fields?*
2. *If so, does Council Recommendation 1999/591/EC infringe Articles 2, 3, 4, 6 or 7 CFR, as well as Articles 168 and 194 TFEU in so far as it recommends maximum exposure limits for electromagnetic radiation only taking thermal effects into account to the exclusion of the many biological effects found by independent science?*
3. *If so, should the relevant provisions of Directive 2018/1972 be read as obliging Member States, when devising a preventive regulatory framework which provides adequate*

protection against the harmful effects of man-made electromagnetic radiation, to take full account of the biological effects which such radiation has on humans, plants and animals?

Declare that the Decision of the Flemish Government of 19 November 2010 amending the Decision of the Flemish Government of 1 June 1995 laying down general and sectoral provisions on environmental health concerning the standardisation of fixed and temporarily installed transmitter antennae for electromagnetic waves between 10 MHz and 10 GHz (Official Gazette 13 January 2011) is unlawful and must be disregarded.

Further declare that the Decision of the Flemish Government of 10 June 2022 amending the Decision of the Flemish Government of 1 June 1995 laying down general and sectoral provisions on environmental health and the Decision of the Flemish Government of 12 December 2008 implementing Title XVI of the Decree of 5 April 1995 laying down general provisions on environmental policy, with regard to permanently and temporarily installed transmitter antennae for electromagnetic waves between 100 kHz and 300 GHz (Official Gazette 25 July 2022) is unlawful and must be disregarded.

Order the defendants to obtain the advice of the Supreme Health Council on radiation standards and exposure to radiation within one month after service of the interlocutory judgement, failing which the defendants will be liable to pay a penalty of € 1,000.00/day/petitioner and intervener, with a maximum of € 5,000,000.00 per defendant.

In addition, order the defendants to determine and impose a cumulative radiation standard with a maximum exposure limit of 0.6 V/m (or lower) within four months after being informed of the advice of the Supreme Health Council, failing which the defendant parties will be liable to pay a penalty of € 1,000.00/day/applicant and intervening party, with a maximum of € 5,000,000.00 per defendant party.

Order the defendants to pay the costs of the proceedings, including the costs of the summons and the legal costs of the proceedings provisionally estimated at € 1,680.

The Flemish Region claims the following in decrees:

Declare the plaintiffs' claim unfounded;
Order the applicants to pay the costs of the proceedings, including the costs of legal representation, assessed at EUR 1,560.00

The Brussels-Capital Region claims the following in decrees:

The Region seeks a declaration that the plaintiffs' claim is inadmissible and unfounded.

Herewith, order the plaintiffs, in solidum, one in default of the other, to see and hear the legal costs, including the procedural costs on the part of the plaintiffs, estimated at EUR 1,560.00.

IV. ADMISSIBILITY

(…)

V. MERITS OF THE CASE

(This part yet again merely contains legally what is relevant for other countries. Reference is made to what the plaintiffs posit about Flanders and Brussels, their exposure limits, advisory groups etc merely as an example for groups in other countries.)

1. THE FLAWED BASIS OF THE CURRENT EXPOSURE LIMITS

1.1 Introduction: The exposure limits of Flanders and Brussels Capital Region [13],[14]

1.1.1 Flemish Region

27.
On 10 June 2022, the Flemish Government Decision was approved to amend the Decision of the Flemish Government of 1 June 1995 containing general and sectoral provisions on environmental health and the Decision of the Flemish Government of 12 December 2008 implementing Title XVI of the Decree of 5 April 1995 containing general provisions on environmental policy, with regard to permanently and temporarily installed transmitter antennae for electromagnetic waves between 100 kHz and 300 GHz.[15] This decree entered into force on 31 July 2022. With this, the Flemish Region has further relaxed exposure limits on its territory.

Flanders has approved this new relaxation of exposure limits in order to roll out 5G.

In the memorandum accompanying the decision, the Flemish Government writes that "*there is no reason for concern as long as exposure limits are respected*".[16] The plaintiffs dispute this point of view.

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[13] In a recent interview for Radio 1, Prof. Dr. Pollin of imec, WAVES and KUL indicated that allowing a new telecom operator on the Belgian market will inevitably lead to higher radiation exposure.
http://radio1.be/luister/select/de-wereld-vandaag/nieuwe-telecomoperator-met-4000-nieuwe-sites-in-belgie-onvermijdelijk-ook-meer-straling
Professor Pollin also sits on the Brussels Committee of Experts, reviewed in Annex C.2.

[14] *In Belgium, following a decision by the Belgian Constitutional Court, the Regions and not the Federal Government are competent for setting exposure limits for man-made EMF. Belgium has three regions: the Flemish Region, Brussels Capital Region and the Walloon Region. The present court case concerns Flanders and Brussels Capital Region.*

[15] *BS* 25 July 2022

[16] Memorandum accompanying the draft decision of the Flemish Government, Doc VR 2022 1006 DOC.0649/1 - p. 3

This statement ignores the Council of Europe's resolution, which clearly outlines the legal issues surrounding health risks:

> *"The Assembly regrets that, despite calls for the respect of the precautionary principle and despite all the recommendations, declarations and a number of statutory and legislative advances, there is still a lack of reaction to known or emerging environmental and health risks and virtually systematic delays in adopting and implementing effective preventive measures."* [17]

28.
First of all, the document accompanying the Decision is written in an unclear manner and, thus, open to interpretation. For example, the document on the 5G frequencies, for which it is actually intended, does not provide any clarity.

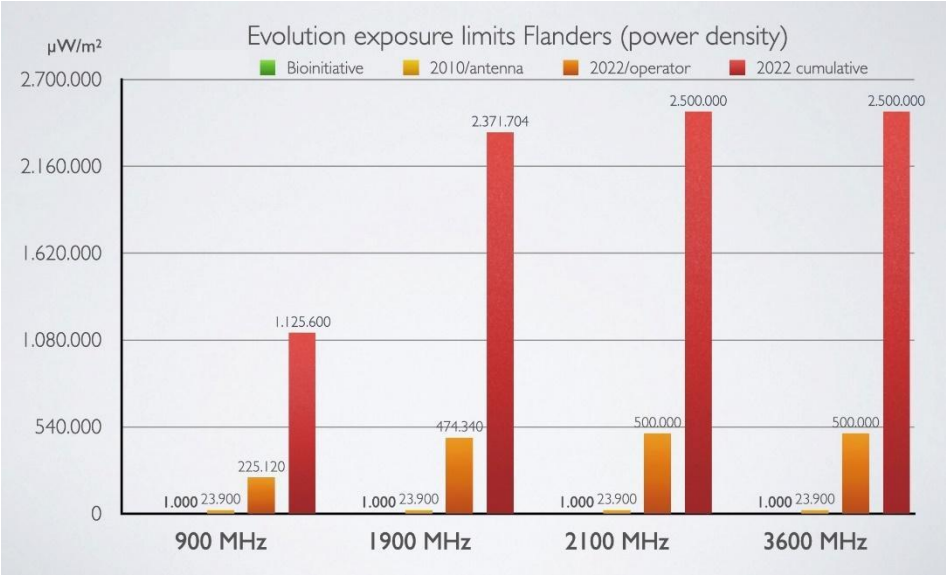
In line with the thermal dogma - see 1.2 of this submission to the court- with the above quote the Flemish Region may be referring to the risk of tissue heating. As far as biological effects are concerned, the new Flemish standards move even further away from safe exposure limits as recommended by the Council of Europe and the BioInitiative (see 1.2.2 of this submission to the court).

Flanders has decided to switch from a limit per transmitting antenna to an overall operator limit. This limit is set at 1/5 of the cumulative exposure standard. This allows for each operator to use considerably more power as was heretofore the case. In addition, for 5G the energy-intensive frequency band (3.6 GHz) established by the European Union will be taken in use. This frequency band was not used until the advent of 5G. In Flanders, the maximum limit for the 3.6 GHz band is no less than 30.7V/m.

29.
Both in field strength and in power density the below graphs seeks to give more clarity about the evolution of exposure limits in the Flemish Region in comparison with the BioInitiative's biologically safe standard.[18]

[17] Council of Europe Resolution 1815 on electromagnetic radiation, paragraph 6. Annex E.9.a and E.9.b

[18] **Field strength** is a measure of exposure to radiation from antennas. The power with which an antenna transmits is expressed in **Power density**. These are two different concepts. Power density is about the antenna that transmits. Field strength is about the exposure to radiation at a certain location.



In Annex F.1, the plaintiffs add more information on these graphs and their calculation.

30.

The plaintiffs note that:

1. The Flemish Region continues to adhere to ICNIRP's thermal dogma and refers to this organisation as if it were a serious international authority (see point 1.3 in this section of this submission to the court)
2. Contrary to what Flanders claims, the introduction of these new standards will lead to an enormous increase in radiation power density, and thus to a much higher exposure to man-made EMF;
3. In addition, the new regulations allow for a whole series of exceptions;

4. Towards the future, the Flemish Region is proposing new high frequency bands such as 26GHz, while no health research has yet been carried out in this area. [19]

1.1.2 Brussels Capital Region (BCR)

31.
The Brussels Capital Region wants a new increase in standards to enable the rollout of 5G.

In its documents "Preliminary draft ordinance" and "Explanatory memorandum to the ordinance", Brussels writes that "***This limited adaptation of the standard*** *strikes a new balance between recent technological developments and the maintenance of effective protection against the possible harmful effects of non-ionising radiation."* (own emphasis)

In number 14 of its second submission to the court, the BCR writes in addition:

> "*A new draft amending decree - approved by the Brussels Government at first reading on 7 October 2021 - aims to* ***increase the current emission standard of 6 V/m to 14.57 V/m outdoors and 9.19 V/m indoors****, including radio and television antennas. Although the aim is (once again) to relax the non-ionising radiation emission standard, these double emission standards still remain the strictest in the country - by extension in the whole of Europe and even the whole world (!) - and are far below the maximum exposure limits prescribed by ICNIRP and the WHO.*
>
> *The limited increase in the emission standard for non-ionising radiation takes full account of the precautionary and standstill principles and of the protection of the health of all inhabitants of Brussels Capital Region. It even increases the degree of protection (e.g. by extending the scope of the Radiation Ordinance to "broadcast" waves from TV and radio).*
>
> *With reference to the aforementioned double emission standard, the protection level will be up to 4.5 times higher 'indoors' and up to 2.8 times higher 'outdoors' with regard to the electric field. In terms of power density, these standards remain respectively 20.3 ('indoor') and 8.1 ('outdoor') times lower than the ICNIRP and WHO recommendations*."

32.
The plaintiffs strongly contest that the current Brussels standard, and the planned increase of that standard, (1) is limited and (2) in any way protects the health of the people of Brussels, and of the plants, animals and environment in Brussels, better than the original standard of 3V/m.

The graphs below visualise in comparison with the BioInitiative's biologically safe standard both in field strength and power density[20] how standards in Brussels have been systematically on the rise since 2007.

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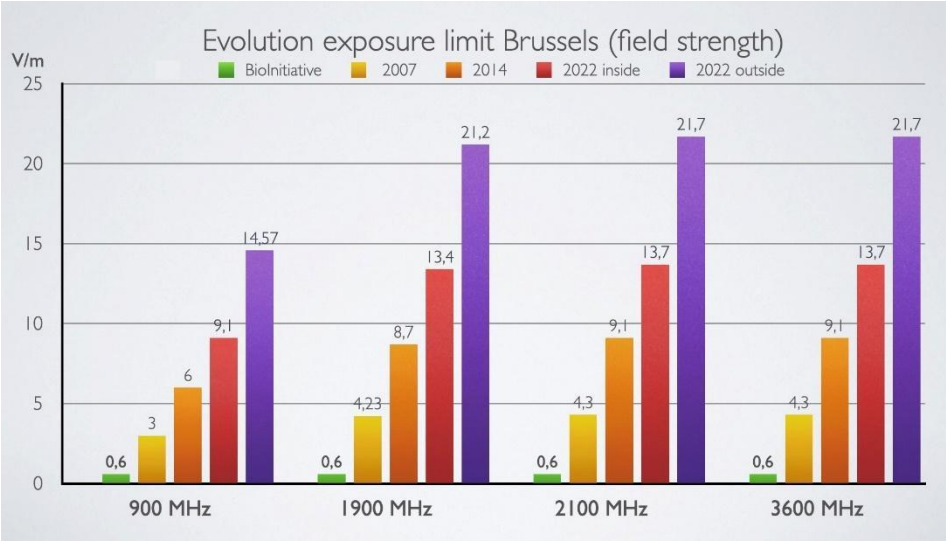
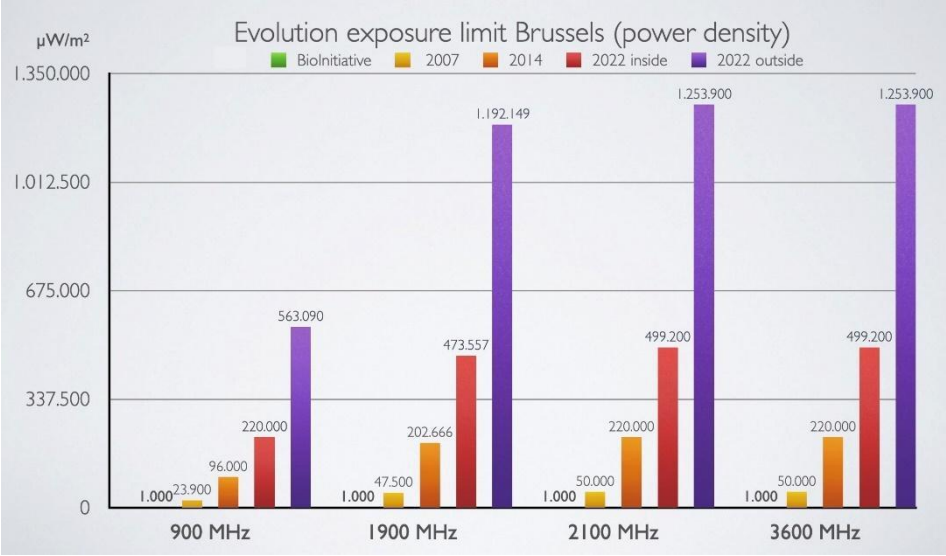
[19] The European Commission has not yet conducted any research on this either. See Annex E.11.a and E.11.b: "*The European Commission has not yet carried out a study on the possible health risks of 5G technology.* "
Annex D.3.c, p.21 - Ned Health Council: *"There are virtually no studies into a possible connection with diseases, disorders or biological processes of the exact frequencies that 5G will use. Most research is concerned with frequencies in the vicinity, which in addition to mobile telecommunications are used for example for WiFi. No experimental data is available for the 26 GHz frequency."*

[20] The difference between the biologically safe standard of 1,000µW/m² or 0.6V/m and the current limits in Brussels is so big that, as is the case for Flanders, the green bar is not even visible in the graph.





In Annex F.2, the plaintiffs add further information on these graphs and their calculation.

33.

Plaintiffs note the following about the standards in force in the BCR, and about the planned additional increase of exposure limits in Brussels:

1. The BCR has been systematically increasing the maximum limits since 2014;
2. What the BCR cites in its second submission to the court about the increase is misleading. The figures quoted are for the 900 MHz frequency band, but 5G uses a new and additional frequency band (3.6 GHz) to which Brussels residents will be exposed 24/7. As the above graphs show, the limits for all relevant frequency bands except 900 MHz are meanwhile considerably higher than what the BCR prescribes, both in field strength and in power density.
3. The BCR sticks to ICNIRP's thermal dogma and, like the Flemish Region, refers to this organisation as if it were a serious international authority;

4. The planned new increase is by no means "limited". As for the higher frequencies between 2 GHz and 300 GHz, used for 5G, the new Brussels standard will be in power density:
    - More than 2x higher (indoors) and 5x higher (outdoors) than the 2014 norm;
    - Over 10x higher (indoors) and 25x higher (outdoors) than the norm 2007
5. The exposure limits in force and the planned limit increase contrast sharply with the intention of the BCR in 2007 - at the time the maximum limit was still 3V/m- which stated that: "*The scientific community recognises that the cumulative exposure limit chosen by the Brussels Capital Region is the most effective way of effectively limiting the population's exposure to electromagnetic radiation.* "[21]
6. With regard to the future expansion of 5G to include the 26 GHz frequency band, the BCR has not conducted any health studies either.

1.2 Effects of non-ionising radiation

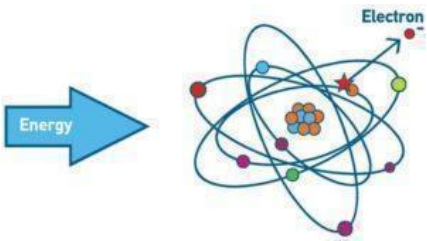
1.2.1 Thermal and biological effects

34.
Natural radiation from the universe, the sun and the earth has existed for millions of years. In addition to that, over the past decades mankind started generating artificial electromagnetic radiation.

The spectrum of natural and man-made radiation is very wide. There are an infinite number of possible signal types and frequencies. Certain radiation types promote health and others are unhealthy and harmful to biological life.

Beneficial radiation promotes and supports life. As electromagnetic beings, we need them. TodAs an example, nowadays the medical world uses electromagnetic fields to combat cancer cells. Other beneficial applications include acupuncture and light therapy. Photosynthesis is necessary for plants to grow.

35.
At the same time, man-made artificial radiation can seriously disrupt essential life frequencies. This harmful radiation includes the radio waves with which we communicate wirelessly.



Ionisation There is consensus in the scientific community about the harmfulness of electromagnetic radiation at very high frequencies. This type of radiation contains a great deal of energy and can therefore alter the molecular structure. This is called ionising radiation. It is cumulatively harmful to all living things. The best-known types of ionising radiation are x-rays, gamma rays and other forms of radioactivity.

[21] Preliminary draft Ordinance - Explanatory Memorandum p.1 (paragraph Ordinance of 1 March 2007) F.4.b

Tissue heating In addition to inducing molecular changes, electromagnetic radiation can also heat up biological tissues. Radiation is energy and energy generates heat. Sunlight, for example, heats up. That feels good and we need it. However, too much sun can cause burns.

Human-made electromagnetic radiation fields are generally lower in frequency than sunlight. With high transmitting power, even that kind of radiation can heat up tissues. Examples are the microwave oven and the induction cooking plate.

Radio and microwaves used for mobile telephony and mobile data traffic - such as Wi-Fi, Bluetooth, 2G, 3G, 4G and 5G - also cause heat effects. However, by controlling the transmission power, this can be limited.

Therefore, the government sets limit values that protect the population and nature from the heating effects of man-made EMF. In doing so the government draws inspiration from organisations such as ICNIRP - about which more below - and other national and international organisations.

Biological effects It is the conviction that only thermal heating is harmful and that biological effects do not or barely occur if standards are respected, that divides the scientific community and is the subject of scientific debate. It is a debate that has been raging for decades.[22,23]

Humans are not just biological beings but also electromagnetic beings that are constantly connected with natural electromagnetic radiation fields such as the geomagnetic field and the Schumann frequency. As electromagnetic beings, our cells communicate through electrical signals and also our heart generates an electromagnetic field. By now we can even measure and make visible the electromagnetic field of plants and animals.

Numerous peer-reviewed studies now show that man-made radiation already disrupts our electromagnetic nature and various biological processes far below the tissue heating threshold. It does so both in the short and long term.

The selection included by the plaintiffs in Annex G is taken from many hundreds of available studies. It provides a representative overview of all the often serious biological damage resulting from exposure to the defendants' current exposure limits. These effects range from fatigue, insomnia, disruption of hormone levels, damage to the blood-brain barrier and even DNA breaks to, in the long run, cancers, tumours and, for example, reduced or destroyed fertility.
The same applies to plants and animals: even far below the heating threshold, they constantly experience all kinds of serious biological damage at the current limits set by the defendants.

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[22] The EUROPAEM Guideline 2016 of the "European Academy for Clinical Environmental Medicine" gives an early example on page 7. Already in 1932, Schliephake mentions non-thermal, biological effects of the then radio technology. Schliephake E. *Arbeitsergebnisse auf dem Kurzwellengebiet*, Deutsche Medizinische Wochenschrift 1932, 58(32):1235-41.

[23] Soon after wireless communication techniques such as radio and television came into use, scientists discovered all kinds of non-thermal effects on the nervous system and the biology of humans, plants and animals. This is described in detail in, among others, Part I of *The Invisible Rainbow* by Arthur Firstenberg. Firstenberg, A., *The Invisible Rainbow*, Chelsea Green Publishing, 2017.

The cause of these negative biological effects is not just the transmission power of wireless technology but also how carrier waves are digitally modulated. This creates highly pulsed signals that disrupt subtle biological processes and continuously cause biological stress reactions. This is called oxidative stress.[24]

The defendants take little or no account of all these biological effects. In doing so, they are aligning themselves with a widely held preference, mainly on the part of physicists and engineers, for the so-called *thermal dogma*.

36.
Thermal dogma The thermal dogma, brushing all biological effects under the carpet, has a long history.[25]

In the 1950s, in the midst of the Cold War, the US Army rolled out very powerful fixed RADAR systems[26] on a large scale to intercept enemy missiles. From the very beginning, both military personnel and local residents felt sick from this novel technology.[27] For reasons of national defence and the threat of nuclear annihilation, both military and medical circles deliberately minimised those effects. [28]

Susan Pockett[29] explains how the Americans arrived at limits that only took tissue heating into account:

> *"By 1960, all three branches of the US military had concluded, on the basis of one man's calculations and some minimal experimentation involving disruption of food-motivated behaviour in irradiated laboratory animals (i.e. the point at which rats got too hot to eat) that 10 W/m²*[30] *was a safe power density limit to prevent excessive tissue heating. After some debate, this figure duly became the basis of the first IEEE/ANSI C95.1 microwave standard in 1966.*
> *And thereafter, the DoD treated all reports of biological effects at RF power densities less than 10 W/m² as a threat to national security, and shut down any lab that produced them (Becker and Seldon 1985; Marino and Ray 1986; Frey 2012)."*[31,32]

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[24] See Annex G.2.23.a and b (Yakymenko et. al.).

[25] Pockett, S., *Electrosmog: the health effects of microwave pollution,* 2021:, p. 18-19. G.5.2

[26] Radio Based Detection And Ranging: https://nl.wikipedia.org/wiki/Radar

[27] These were collected and listed by Dr. Zory Glazer https://zoryglaser.com/zory-archives-author/

[28] The Soviets took more precaution. After many soldiers operating radar stations were diagnosed with cancers and other biological effects - collectively known as microwave syndrome - strict exposure values of 0.1W/m² were imposed, a limit one hundred times stricter than those of the Western powers. Source: Susan Pockett (*Electrosmog: the health effects of microwave pollution,* 2021, P. 19 G.5.2)

[29] Susan Pockett is Professor of Neuropsychology at the University of Auckland.

[30] Converted: 10 W/m² = 10,000,000 µW/m²

[31] Frey 2012: https://www.the-scientist.com/news-opinion/opinion-cell-phone-health-risk-40449

[32] In 1960, the American Standards Association approved the initiative for the "Radiation Hazards Standards" project under the co-sponsorship of the US Department of the Navy and the Institute of Electrical and Electronics Engineers, Incorporated (IEEE); (then called the Institute of Radio Engineers (IRE)).
https://magdahavas.com/from-zorys-archive/pick-of-the-week-2-origins-of-1966-u-s-safety-standards-for-microwave-radiation/

The maximum IEEE/ANSI C95.1 exposure limit of 10 W/m² [(33)] -established, in 1966, by the US Department of Defence- was formulated not on the basis of public health but on the basis of national security. Over time it set the standard also for civilian use. Unchanged to this day, it sets the maximum exposure limit used by almost all national and international monitoring bodies, including ICNIRP.[34,35]

ICNIRP first published it in 1998. To enable the rollout of 5G, ICNIRP updated its guidelines in 2020. In doing so, it did not alter the 10 W/m² exposure limit. Rather, to allow for a de facto increase in exposure to man-made EMF, it adjusted the measurement protocol so that radiation peaks are smoothed out in averages. This is explained further in this submission to the court.

37.
Meanwhile, even in the U.S. the thermal dogma seems to be under fire. In a 2021 interim court order the Columbia District Court of Appeals ruled as follows:

> *"They instead represent a failure by the FDA to address the implication of Petitioners' studies: The factual premise—the non-existence of non-thermal biological effects—underlying the current RF guidelines may no longer be accurate.."* [36]

> *"Nevertheless, an agency's decision not to initiate a rulemaking must have some reasoned basis, and an agency cannot simply ignore evidence suggesting that a major factual predicate of its position may no longer be accurate.."* [37,38]

Recent scientific research clearly highlights the obsolescence of an exclusive focus on energy intensity and heating effects to assess the impact of man-made EMF on biological life:

> *"In addition, it is invalid to make direct comparisons between thermal energy and radiofrequency electromagnetic energy. Research data indicate that electromagnetic energy is more biologically potent in causing effects than thermal changes. The two likely function through different mechanisms. As such, any current RFR exposure guidelines based on acute continuous-wave exposure are inadequate for health protection."* [39]

1.2.2 Disruption of biological processes [40]

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[33] 10 W/m² (power density) = 61V/m (field strength). This is the standard that the ICNIRP still proposes today.
[34] https://www.icnirp.org/
[35] The USSR developed a policy that also took biological effects into account: https://magdahavas.com/from-zorys-archive/pick-of-the-week-5-why-the-double-standard/
[36] United States Court of Appeals for the Columbia District Circuit, 13 August 2021, *Environmental Health Trust et.al. v. Federal Communications Commission and United States of America*, case number 20-1025, p.14. See: Annex H.4.a, H.4.b and H.4.c
[37] United States Court of Appeals for the Columbia District Circuit, 13 August 2021, *Environmental Health Trust et.al. v. Federal Communications Commission and United States of America*, case number 20-1025, p.17.
[38] The Federal Communications Commission (FCC), the defendant in this case, is also rife with conflicts of interest with industry. Harvard researchers discovered this in 2015. See Annex B.18.
[39] Lai, H. and Levitt, B.B., "*The roles of intensity, exposure duration, and modulation on the biological effects of radiofrequency radiation and exposure guidelines*", Electromagnetic Biology and Medicine, 2022, https://doi.org/10.1080/15368378.2022.2065683. Annex G.5.4.a
[40] This website provides an updated and clear overview of studies demonstrating biological effects on humans, plants and animals: www.emfdata.org .

38.

Influence on human biology Contrary to what defenders of the thermal dogma claim, it is now indisputable that man-made electromagnetic fields damage the biological functioning of humans, plants and animals far below heating thresholds and the exposure limits applicable in Flanders and Brussels.

The electromagnetic interaction of life with its environment is a very complex scientific fact. Certain frequencies and signal forms can be harmful, while others are not. It is a question not just of signal strength (power density), but also of carrier frequencies and their modulation.

Here is a brief, non-exhaustive list of some of the key researchers and what they have contributed to research into the biological effects of man-made EMF.

In the 1970s, *W. Ross Adey* and his team discovered that the sensitivity of living beings to electromagnetic fields also depends on the frequency of the radiation. Thus, even at very low densities, life reacts strongly to what he called "biological windows". At other frequencies the reactivity is significantly lower even at higher exposure. [41]

High-frequency pulsed electromagnetic radiation (DECT, Wifi, Bluetooth, 2G, UMTS, EDGE, 3G, LTE, 4G, VoLTE, 5G) disrupts the normal functioning of cells, including the functioning of the voltage-gated calcium ion channels or VGCCs (Voltage Gated Calcium Channels).[42] These gateways regulate the calcium ion household in the cells. Even at very low intensity, high-frequency EM radiation disturbs the normal functioning of these very sensitive VGCCs. After all, our cells are controlled by a subtle, natural electrical and biochemical mechanism that regulates the absorption and release of calcium. Even extremely weak, pulsating electromagnetic fields continually disrupt this self-regulating cell function. In the short, medium and long term, this leads to a host of often serious biological effects.

Prof. Martin Pall (USA) mentions 9 types of biological effect caused by such a disruption of the VGCCs by man-made electromagnetic fields: [43]

1. *Reduced fertility*: damaged sperm, less sperm and less motile sperm, less usable eggs and lower egg quality, increase in spontaneous abortion, reduced libido;
2. *Neurological and neuropsychiatric disorders*: sleep disorders, fatigue, headache, depression, loss of concentration, dizziness, memory problems, increased tension, stress, anxiety and general irritability;
3. *DNA damage*: single and double DNA lesions, cancer-causing chromosomal mutations;
4. *Apoptosis or programmed cell death*: an important aspect for a broad range of neurodegenerative diseases. Apoptosis leads to infertility;
5. *Oxidative Stress & Free Radical Damage*: an important mechanism in almost all chronic diseases and a direct consequence of DNA damage;
6. *Disruption of normal hormone function:* changes in steroid and non-steroid hormones;

[41] https://www.semanticscholar.org/paper/Frequency-and-power-windowing-in-tissue-with-weak-Adey/e3547901dfb205095c9538228cd58717ca846754

[42] Annex G.2.10 Martin Pall - Wifi is an important threat to human health, Annex G.2.23.a and G.2.23.b Yakymenko - Oxidative mechanisms of biological activity of low-intensity radiofrequency radiation.

[43] See Annex G.2.9.a&b.

7. Excessive intracellular calcium;
8. *Cancer*: a sharp increase in the risk of cancer, tissue invasion and metastasis;
9. *Disruption of normal heart function*: tachycardia, arrhythmia, bradycardia (effect of prolonged exposure), palpitations, leading to premature death

Prof. Dominique Belpomme (France)[44] has done extensive work on the effects of electrosmog on brain function, including in EHS persons.[45] His research includes the influence of EMF on blood-brain barrier leakage, which allows harmful substances to enter the brain and cause neurodegenerative diseases.[46]

Prof. Lennart Hardell (Sweden)[47] is known for his research into carcinogenic substances in the environment, such as Agent Orange, and pioneering research into the use of mobile phones and the risk of brain tumours. [48]

Dr. Magda Havas, Ph.D (Canada)[49] has been researching the biological effects of non-ionising frequencies in the electromagnetic spectrum for many years. She studies the effects on humans and also investigates the effects of different frequencies on plants, bees, livestock and microbes. She has shown that EMF contributes to the formation of type 3 diabetes by disrupting hormone levels.[50] On her website she writes: "*We are electromagnetic beings or, as some would say, 'beings of light'. Therefore, we respond in different ways to external sources of electromagnetic frequencies that can be either beneficial or harmful.*"

Prof. Devra Davis, Ph.D MPH (USA) [51] was Senior Advisor to the Assistant Secretary for Health in the Department of Health and Human Services and was appointed by President Clinton to the US Chemical Safety and Hazard Investigation Board. She served on the Board of Scientific Advisors for the U.S. National Toxicology Program and on various advisory committees for the U.S. Centers for Disease Control and Prevention. In her book *Disconnect: The Truth about Cell Phone Radiation*[52] *Prof. Davis*

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[44] Professor of Clinical Oncology at the University of Paris-Descartes. Specialised in medical oncology and environmental medicine at the Alleray-Labrouste clinic. President of ARTAC (Association for Research and Treatment Against Cancer) and President of ISDE-France (International Society of Doctors for Environment) http://www.ehs-mcs.org/en

[45] http://www.ehs-mcs.org/en/diagnostic-criteria-of-emfis_192.html
http://www.ehs-mcs.org/en/patho-physiological-mechanisms_178.html

[46] sicem_demystifie.pdf (maisonsaine.ca)

[47] Swedish oncologist and professor at Örebro University Hospital. Professor Hardell's work played an important role in the IARC's 2011 reclassification of mobile telephony as a possible carcinogen.

[48] Some links to the work of Professor Hardell:
https://pubmed.ncbi.nlm.nih.gov/35567503/
https://pubmed.ncbi.nlm.nih.gov/35238501/
A link to Lennart Hardell's complete work on human-made EMF on pubmed:
https://pubmed.ncbi.nlm.nih.gov/?term=lennart%20Hardell&filter=simsearch3.fft&sort=date

[49] Canadian doctor who teaches at the University of Trent in Toronto. https://magdahavas.com/

[50] https://www.magdahavas.com/wp-content/uploads/2010/03/08_Havas_Diabetes_EBM.pdf

[51] Devra L. Davis is an American epidemiologist, toxicologist and author. She was founding director of the Centre for Environmental Oncology at the University of Pittsburgh Cancer Institute and is a former professor of epidemiology at the University of Pittsburgh.

[52] Davis, D., *Disconnect: The Truth about Cell Phone Radiation*, Environmental Health Trust, 2013.

writes that the potential threat of mobile phones is vastly underestimated. She exposes how industry influences science to avoid tighter regulation.

Professor Olle Johansson, Ph.D (Sweden), Professor Emeritus of the Swedish Karolinska Institute, is one of the world's leading authorities on the health effects of electromagnetic fields. He is part of a group of independent scientists from around the world who have been warning for years about the serious health risks to all living things from the extreme exposure levels of wireless technology.
Over the past years he has contributed to several important scientific documents such as the 2016 European EMF Guidelines[53] and the scientific underpinning of EHS.[54] In 2020 he also wrote a robust letter to the UK Parliament entitled "*Written evidence submitted by Professor Olle Johansson*".[55]

Dr. Andrew Goldsworthy, PhD (UK)[56] has spent many years researching calcium metabolism in living cells and also how cells, tissues and organisms are affected by electric and electromagnetic fields.
In a report entitled "*The Biological Effects of Weak Electromagnetic Fields*", he explains how weak electromagnetic fields from mobile phones, cordless phones and WiFi can have serious effects on our health. These include damage to glands resulting in obesity and related conditions, chronic fatigue, autism, increased allergies and multiple chemical sensitivities, early dementia, DNA damage, loss of fertility and cancer. [57]

In Annex G.2 of this submission to the court, the plaintiffs attach the summary and/or other information of a large number of independent (meta) studies that describe the biological effects of man-made electromagnetic fields on humans. These are biological effects far below the maximum standards applied by the defendants.

39.
Plants, animals and the environment As demonstrated by the scientific studies cited in the factual presentation and Annex G.3 of this submission, the defendant's limit values also harm plants, animals and the environment by inflicting serious biological damage caused by exposure to man-made electromagnetic fields.

Independent science cited by the plaintiffs shows, in particular, that these electromagnetic fields:

- Thoroughly disturb the natural habitat of plants and animals
- Damage genetic and biological diversity
- Disorient and decimate bee populations, other insects and birds
- Induce DNA damage also in animals
- Seriously damage trees and other plants

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[53] EUROPAEM EMF Guideline 2016 for the prevention, diagnosis and treatment of EMF-related health problems and illnesses,
https://europaem.eu/attachments/article/124/EUROPAEM_EMF_Guideline_2016_English_Original.pdf
[54] "Electrohypersensitivity: a functional impairment due to an inaccessible environment" Short summary at: https://www.degruyter.com/document/doi/10.1515/reveh-2015-0018/html
[55] Annex A.1.a and A.1.b Letter from Professor Olle Johansson: Letter to the UK Parliament
[56] Retired lecturer from Imperial College, London.
[57] https://stopsmartmeters.org.uk/wp-content/uploads/2012/04/Biol-Effects-EMFs-2012-NZ1.pdf

In Annex G.3 of this submission, the defendants attach the summary and/or other information of independent (meta) studies describing the biological effects of man-made electromagnetic fields on plants, animals and the environment. These are biological effects far below the maximum thresholds set by the defendants.

40.

0.6 V/m Because man-made electromagnetic fields are biologically active in humans, plants and animals at even limited transmission power, several important organisations recommend maximum exposure values that are significantly lower than those used by the defendants. They propose limit values that should also protect humans, plants and animals against biological effects. The recommendations below are based on many decades of scientific and epidemiological research:

- The 2007 BioInitiative report suggests an exposure limit of 0.6 V/m (1,000 µW/m²)[58] The 2012 BioInitiative recommendation concludes, based on additional research indicating the strong biological activity of man-made pulsed EM radiation, that an exposure limit of 0.03-0.05V/m is, in fact, even more appropriate.[59,60]
- The Council of Europe recommends the following in resolution 1815 (2011): "... *Establish preventive thresholds for levels of long-term microwave exposure in all indoor spaces, in accordance with the precautionary principle, not exceeding 0.6 volts per metre, to be reduced in the medium term to 0.2 volts per metre*;"[61]
- EUROPAEM (European Academy for Environmental Medicine) 2016 Guidelines recommend much stricter limit values (p. 19) ranging from 0.1 to 100 µW/m².[62] In field strength this is 0.006 to 0.02 V/m.
- The German Institute for Building Biology and Sustainability is a respected NGO in the field of environmentally safe building and the urban environment. They propose the SBM 2015 guideline of 0.02 V/m (1 µW/m²) for living environments.[63]

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[58] In the relevant BioInitiative Report we read on p. 26 (Conclusions): "*A precautionary limit of 0.1 (µW/cm2 (which is also 0.614 Volts per meter) should be adopted for outdoor, cumulative RF exposure. This reflects the current RF science and prudent public health response that would reasonably be set for pulsed RF (ambient) exposures where people live, work and go to school. This level of RF is experienced as whole-body exposure, and can be a chronic exposure where there is wireless coverage present for voice and data transmission for cell phones, pagers and PDAs and other sources of radiofrequency radiation. Some studies and many anecdotal reports on ill health have been reported at lower levels than this; however, for the present time, it could prevent some of the most disproportionate burdens placed on the public nearest to such installations. Although this RF target level does not preclude further rollout of WI-FI technologies, we also recommend that wired alternatives to WI-FI be implemented, particularly in schools and libraries so that children are not subjected to elevated RF levels until more is understood about possible health impacts. This recommendation should be seen as an interim precautionary limit that is intended to guide preventative actions; and more conservative limits may be needed in the future.*"

[59] https://bioinitiative.org/conclusions/

[60] The biological effects of man-made EMF become more severe as the power level to which one is exposed increases. In Annexes G.2.5 to G.2.6.c, the plaintiffs present a scientifically based overview of this subject based on the work of the BioInitiative. This provides a clear and detailed overview. American to European notation = 0.01 µW/cm² = 100 µW/m²; 0.1 µW/cm² = 1,000 µW/m²; 1 µW/cm² = 10,000 µW/m²; 10 µW/cm² = 100,000 µW/m²; 100 µW/cm² = 1,000,000 µW/m²; 1,000 µW/cm² = 10,000,000 µW/m².

[61] See Annex E.9.a and E.9.b

[62] https://www.degruyter.com/document/doi/10.1515/reveh-2016-0011/html

[63] Building Biology Testing: https://buildingbiology.com/site/downloads/richtwerte-2015-englisch.pdf

What the above organisations propose, is many orders of magnitude lower than what ICNIRP considers safe. The defendants consistently ignore this advice.

1.2.3 Position of the plaintiffs

41.
As explained in these and earlier submissions to the court, both the Flemish and Brussels exposure limits do not take into account the serious biological effects that man-made electromagnetic fields cause to the plaintiffs already far below the maximum standards established by the defendants. As a result, all of the defendants are constantly suffering the biological damage reported by independent science cited in the summons and this submission. This affects their health, their well-being and their general quality of life. In the long term, as is amply demonstrated by all the research cited, it can seriously affect their quality of life and even their health.

The plaintiffs as well as the intervening parties -who are also electro-hypersensitive- experience the negative health effects of the exposure limits as maintained by the defendants on a daily basis.

Therefore, all plaintiffs invoke their fundamental rights, cited in the writ of summons and all of the submissions to the court, to challenge the ongoing attack on their health, quality of life, well-being and private life. Pursuant to Articles 2 and 8 ECHR and 2 and 7 HHR - see Part V., 3.2 and 3.3 of this submission- the plaintiffs are entitled to a preventive regulatory framework ensuring protection of their health against the serious biological effects of man-made electromagnetic fields.

42.
The plaintiffs take guidance from the independent science of the BioInitiative and other such organisations mentioned above in proposing an alternative appropriate exposure limit. In that regard they request Your Excellency to limit the defendants' policy margin to exposure limits that fully take into account the biological effects of man-made EMF. For the plaintiffs, such an exposure limit consists of a cumulative field strength of 0.6V/m.

1.2.4 Biased vs. independent science

> *In fact, much of the scientific literature that excludes the carcinogenicity of exposure to radiofrequencies, or that at least maintains that the researches reached opposite conclusions, cannot be considered conclusive, (…) is in a position of conflict of interest, however, not always declared: see in particular, on page 94 of the report, the observation of the defendant's defence (in no way contested by the counterparty) that the authors of the studies indicated by INAIL, listed by name, are members of ICNIRP and/or SCENIHR, which have received industry funding directly or indirectly.*[64]

[64] Turin Court of Appeal 12 March 2019, C-721/2017, publ. 13 January 2020, p. 33. Relevant text extract from the original judgment: *'In effetti, buona parte della letteratura scientifica che esclude la cancerogenicità dell'esposizione a radiofrequenze, o che quantomeno sostiene che le ricerche giunte ad opposte conclusioni non possano essere considerate conclusive, come evidenziato anche dai Consulenti d'Ufficio a commento delle osservazioni della difesa dell'appellato (riportate alle pagg. 84-97 della relazione), versa in posizione di conflitto di interessi, peraltro non sempre dichiarato: si veda in particolare, a pag. 94 della relazione, l'osservazione della*

43.

In general There are several reasons why not all science is independent. The most obvious reason is conflicts of interest between researchers and parties, such as industry, that benefit from a favourable research outcome.

Industry may try to influence scientific research by undermining the financial and professional independence of both the scientist(s) and research itself.

In this regard, what the European Court of Human Rights writes about asbestos in *Brincat* also applies to electromagnetic radiation:

> *(...) It is also common knowledge that the issues surrounding asbestos have been greatly debated amongst stakeholders all over the world, and that given the interests involved, particularly economic and commercial ones, acknowledging its harmful effects has not been easy. (...)* [65]

From its side, in reports the European Environment Agency examines the reasons why the public is exposed to harmful substances or technologies, often for decades, despite rapidly accumulating evidence to the contrary.[66] This and other research[67] lays bare industry's misleading role. By (covertly) funding biased (pseudo) science and deliberately pursuing conflicts of interest of all kinds, industry tries to hinder the formation of a broad scientific consensus on the harmfulness of a particular substance or technology and to delay or prevent the introduction of appropriate (precautionary) measures.

In the summary brochure accompanying its second *Late lessons from Early Warnings* report[68] , the European Environment Agency points out the difficulties of translating early scientific evidence of the harmfulness of certain substances or industrial technologies into appropriate policy-making:

> *"The capacity to foresee and forestall disasters, especially when such action is opposed by powerful economic and political interests, appears to be limited, as the case studies in Late lesson from early warnings illustrate*."[69]

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difesa dell'appellato (in alcun modo contestata dalla controparte) secondo cui gli autori degli studi indicati dall'INAIL, nominativamente elencati, sono membri di ICNIRP e/o di SCENIHR, che hanno ricevuto, direttamente o indirettamente, finanziamenti dall'industria. "

[65] ECHR 24 July 2014, *Brincat and others V. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11.

[66] See for example: European Environment Agency, *Late Lessons from Early Warnings: The Precautionary Principle 1896-2000,* Environmental Issue Report No 22 and the already cited European Environment Agency, *Late Lessons from Early Warnings: Science, Precaution, Precaution*, EEA Report, No 1/2013. Both reports can be found easily online.

[67] See for example: Krimsky, S., *Science in the Private Interest: Has the Lure of Profits Corrupted Biomedical Research?,* Rowman & Littlefield Publishers, 2003.

[68] See Annex E.10.a and E.10.b.

[69] European Environment Agency, *Late Lessons from Early Warnings: Science, Precaution - Summary*, EEA Report, No 1/2013, p. 6.

In the summary of its 2013 report, the European Environment Agency explicitly mentions the dangers of the electromagnetic fields of wireless technology under *Emerging Issues*.[70] On page 31 we find the following passage:

> *"The chapter points to mobile phone industry inertia in considering the various studies and taking the IARC carcinogenic classification into account and a failing from the media in providing the public with robust and consistent information on potential health risks. The IARC carcinogenic classification also appears not to have had any significant impact on governments' perceptions of their responsibilities to protect public health from this widespread source of radiation."*

44.

Wireless technology Wireless communication technology is no exception. Also in this case industry is constantly trying to prevent scientific consensus on the harmfulness of technology used. For example, in 2007 Huss and others published[71] a study showing how the results of scientific research into the biological effects of man-made EMF were strongly influenced by sources of research funding. The conclusion of this study was clear:

> *"The interpretation of results from studies of health effects of radiofrequency radiation should take sponsorship into account.*

In 2010, American Emeritus Professor Henry Lai came to a similar conclusion. His research - with a statistical relevance of 99.9% - points to the large discrepancy between studies funded by industry and those not funded by industry. Only 28% of industry-funded studies detect biological effects of man-made EMF, while in independent research numbers rise to 67%: [72]

Percent and number of studies documenting "an effect" or "no effect" attributed to funding source (Lai 2010).

Cell Phone Biological Studies

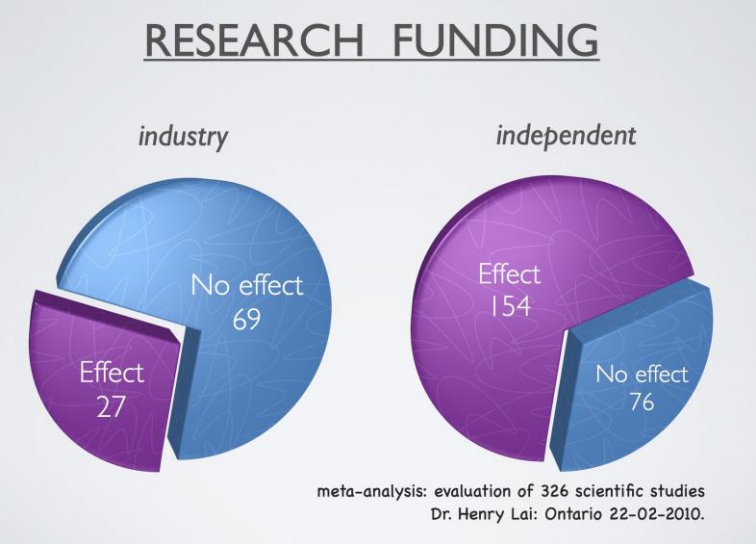
Funding Source	Effect		No Effect		Total	
	%	#	%	#	%	#
Industry Funded	28%	27	72%	69	29%	96
Non-Industry funded	67%	154	33%	76	71%	230
Total	67%	181	44%	145	100%	326

[70] European Environment Agency, *Late Lessons from Early Warnings: Science, Precaution - Summary*, EEA Report, No 1/2013, p. 31.

[71] Huss, A. et. al, *Source of Funding and Results of Studies of Health Effects of Mobile Phone Use: Systematic Review of Experimental Studies*. Available at: https://www.magdahavas.com/wp-content/uploads/2010/12/Huss_Sourceoffunding_2007.pdf

[72] The following presentation is from a powerpoint presentation given by Professor Lai. It is available from Professor Lai via the applicants.

Graphically, the difference shows as follows:



Worldwide, a lot of research has already been carried out[73] into the telecom industry's constant attempts at influencing the scientific debate. The Environmental Health Trust website contains an extensive anthology of that research.[74]

45.
Right to good governance and a fair trial The plaintiffs feel that the exclusion of all science the independence of which cannot be guaranteed, is an inherent part of both their right to good governance and the right to a fair trial as evinced by Article 6 ECHR. Therefore, the plaintiffs ask Your Excellency to only take into account those scientific studies about which we can be certain that (1) researchers have no ties to industry and (2) financing is completely independent from the telecom industry. Often research the funding of which has not been disclosed, derives from industry.

It will be seen below that in formulating exposure limits the defendants do not adhere to this general rule of good governance.

In policy documents and even in their submissions before the court, the defendants constantly refer to reports of organisations and expert committees, as well as to scientific studies, which either have proven links to industry or in which interference by industry cannot be excluded.

In addition, a thorough reading of both the defendants' positions before Your Seat as well as relevant policy documents reveals that despite rapidly accumulating evidence of serious biological damage caused by man-made electromagnetic fields, the defendants continue to stubbornly adhere to an outdated thermal dogma.

[73] See for example the Harvard study on the conflict of interest between the telecom industry and the Federal Communications Commission (FCC) in the US. Annex B.17.a and B.17.b
[74] https://ehtrust.org/science/research-industry-influence-emfs/

The totality of this manifestly unsound governance violates a series of subjective (fundamental) rights on the part of the plaintiffs. This forms the subject of the present proceedings.

1.3 International Commission for Non-Ionising Radiation Protection (ICNIRP) [75]

> "*Hence, our review shows that the ICNIRP 2020 guidelines fail to meet fundamental scientific quality requirements as to being built on a broad, solid and established knowledge base, uphold a view contrary to well established knowledge within the field, and therefore cannot offer a basis for good governance when setting RF exposure limits for the protection of human health. "* [76]

> "*The harmful effects of non-thermal biological interaction of RF-EMF with human and animal tissues have not been included in the determination of the ICNIRP 2020 guidelines (ICNIRP 2020a), despite the huge amount of available scientific publications demonstrating the harmfulness or potential harmfulness of those effects."* [77]

1.3.1 ICNIRP and the thermal dogma

46.
Since its inception ICNIRP claims that man-made electromagnetic fields only cause damage by tissue heating despite hundreds of scientific studies proving the contrary since the dawn of wireless technology[78] use.

In this regard ICNIRP claims that tissue heating can more easily be studied, explained and quantified. The plaintiffs quite paragraph 2.3 from the ICNIRP guidelines:

> *"The previous guidelines were based on adverse health effects that had been shown to be caused by RF EMF exposure. ICNIRP (2020) used the same approach, and indeed there is now a substantial body of literature that has confirmed that RF EMF exposure within the ICNIRP (1998) restrictions does not cause adverse health effects. However, the body of scientific information has not increased greatly in terms of exposures much higher than the ICNIRP (1998) restrictions, particularly in terms of thermal effects, making it difficult to determine thresholds for adverse health effects (i.e. the lowest RF EMF level that will cause an adverse health effect). Given this situation, and given that there is a strong body of literature concerning the effect of heating on health from other sources, ICNIRP (2020) has used this thermal physiology knowledge to supplement that of the RF EMF literature."* [79]

Biological effects are more difficult to study because they are more complex.

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[75] https://www.icnirp.org/

[76] Nordhagen, Else K. and Flydal, Einar. "Self-referencing authorships behind the ICNIRP 2020 radiation protection guidelines" *Reviews on Environmental Health*, vol., no., 2022. https://doi.org/10.1515/reveh-2022-0037 Annexes B.12.a and b. https://doi.org/10.1515/reveh-2022-0037

[77] EPRS study "*The Health Impact of 5G*", June 2021, Executive Summary p. IV. Annex E.12.a and E.12.b

[78] Already in 1972 there were over 2000 scientific articles describing biological effects. https://magdahavas.com/from-zorys-archive/pick-of-the-week-1-more-than-2000-documents-prior-to-1972-on-bioeffects-of-radio-frequency-radiation/ .
See also: Firstenberg, A., *The Invisible Rainbow*, Chelsea Green Publishing, 2017.

[79] See Annex B.16 under point 2.3 “Operational Adverse Health Effect Thresholds”

Sticking to the thermal dogma, today the ICNIRP recommends exactly the same 10 W/m² (power density) or 61 V/m (field strength) first formulated by the US Army in 1966. This very standard has been used from the outset by IRE, the American professional association of engineers.[80]

47.
In 2020, ICNIRP further relaxed its advice to governments so as to facilitate the rollout of 5G. It did so by keeping its maximum exposure limit intact while adjusting the measurement protocol and the averaged measurement slot.

To check whether tissues are heating up, ICNIRP now uses a measuring slot of 30 instead of 6 minutes:

> *"The averaging time for this restriction has also been changed from 6 minutes in ICNIRP (1998) to 30 minutes in ICNIRP (2020)".*[81]

This novel measurement method allows for radiation peaks to be smoothed out in averages. Not by coincidence, but precisely those radiation peaks are most harmful biologically. To use an analogy that clarifies how longer averages can be misleading: Everyone knows that you damage your ears if you stand unprotected next to a shooting cannon. ICNIRP actually claims that it is not very important what individual cannon shots do to your ears. What is important, is the average sound level of the full 30 minutes you stood next to the cannon. Like gunfire, modern technologies such as 3G, 4G and 5G increasingly make use of severely damaging power density peaks.

Annexes B.14, B.15 and B.16 show and compare 1998 and 2020 ICNIRP guidelines.

Apart from the alleged difficulties in measuring biological effects, what leads ICNIRP to cling to the thermal dogma? The ICNIRP's manifestly flawed advice on maximum exposure limits for man-made electromagnetic fields is the joint result of several converging elements. These are outlined here below.

1.3.2 Nature and functioning of the organisation

48.
Governments like to mention ICNIRP when justifying policy choices. Contrary to what many seem to assume, though, ICNIRP is not a government agency. Nor is it an international intergovernmental organisation. It has no policy responsibilities. ICNIRP is a private, non-governmental organisation with headquarters in Munich.

ICNIRP consists of a commission, scientific expert groups, project groups, a management board and a scientific secretariat. [82]
The Commission is composed of a Chair, a Vice-Chair and up to 12 other scientists. The Commission is assisted by a Scientific Expert Group of 25 external scientists with diverse scientific backgrounds.

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[80] IRE is now called IEEE *(Electrical and Electronics Engineers)* www.ieee.org.
[81] Annex B.15 - ICNIRP Guidelines 2020
[82] https://www.icnirp.org/en/about-icnirp/structure-membership/index.html

ICNIRP is anything but a transparent NGO. It does not provide detailed information on the origins and nature of its funding or on its internal operations. This is demonstrated by several research studies, which can be found in Annex B.

1.3.3 Inappropriate composition

1.3.3.1 Scientific profile

49.
The core of the organisation's scientific work is the Commission. The Commission elects its own members, nominated either by sitting members or affiliated organisations.

Regarding the profile of the Commission's members, the ICNIRP website states the following:

> *"Commission members are independent experts in the scientific disciplines relevant to non-ionising radiation protection (biology, epidemiology, physics, bio-physics, medicine)."*

However, research by Investigate Europe[83] shows that 13 of the 14 Commission members are physicists.[84] Only one member is medically qualified.
Physicists are not trained to assess the impact of technology on biology. Physicists are no medical doctors, biologists or epidemiologists. A group so composed cannot give sound advice on the impact of radiation on health and the environment.

The Scientific Expert Group[85] (SEG) supports the ICNIRP Commission. Depending on expertise and availability, its members are invited to participate in specific project groups set up to complete an element of the programme.
The SEG consists of 25 scientists selected on the basis of scientific credentials in a relevant discipline in biology, epidemiology, physics, biophysics or medicine and the tasks of the ICNIRP working programme.
According to the ICNIRP website, the SEG currently has 27 members instead of 25. Remarkably, again only 11 of the 27 members have a medical-biological background.[86]

Together, this means that the Commission and the supporting SEG are composed of 29 physicists and engineers and only 12 biologists or medical doctors. Of these, only one sits on the Commission. This is far from an appropriate composition to assess the impact of electromagnetic fields on humans, plants, animals and nature.

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[83] https://www.investigate-europe.eu/en/ *Investigate Europe* consists of an independent group of 11 experienced European journalists. They share facts, put them together and check them - to tackle the usual national bias.
[84] https://www.investigate-europe.eu/en/2019/how-much-is-safe/
[85] https://www.icnirp.org/en/about-icnirp/scientific-expert-group/index.html
[86] The list of all scientists in the ICNIRP Commission and the Scientific Council can be found at ICNIRP | Structure & Membership

And yet ICNIRP is a particularly influential group in precisely that area. Its guidelines are followed not just by the World Health Organisation, but by virtually the whole world.

1.3.3.2 Conflicts of interest [87]

> *"In fact, ICNIRP is a private organisation, whose RF guidelines have great economic and strategic importance for the telecommunications industry, with which several ICNIRP members have links through consultancy relationships."*
>
> *Court of Appeal of Turin [88]*

50.
On the ICNIRP website, we find a brief reference to the ICNIRP scientists' statement of interests:

> *"ICNIRP members are required to declare any personal interests in relation to their activities for ICNIRP. Members' declarations of personal interests are available below along the member's profile."*

However, when you open the declaration of interests of most ICNIRP scientists on the website, this turns out to be an empty box. As others have also noted[89], many declarations of interest are not or hardly filled in.

51.
In the meantime, it has been proven beyond any doubt that most scientists working for ICNIRP are intimately related to industry.

To start with, the pool of experts serving on the various relevant international committees is very limited. For example, out of 14 ICNIRP Commission members, 6 sit on another European or international scientific committee. For the scientists of the World Health Organisation, this even applies to 6 out of 7 members.

Here are a few examples:

- Two members of the SCENIHR Working Group also sit on the ICNIRP Commission
- IARC includes 4 members from ICNIRP
- AGNIR[90] (disbanded in 2017) had 4 ICNIRP Commission members

The below diagram[91] provides an overview of the extent to which current and former ICNIRP Commission members sit on European and international expert committees of varying kinds.

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[87] The US Federal Communications Commission (FCC) is also full of conflicts of interest with industry. Harvard researchers discovered this in 2015. See Exhibit B.17.a and B.17.b.

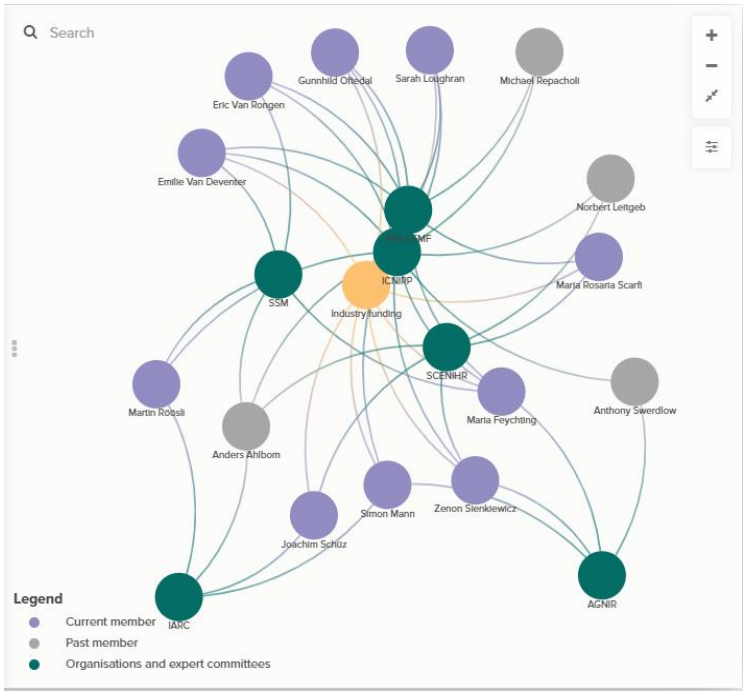
[88] Court of Appeal of Turin 12 March 2019, C-721/2017, publ. 13 January 2020, p. 34. Annex H.1.a to H.1.c.2.

[89] See Annex B.1.a and B.1.b Rivasi-Büchner 2020: ICNIRP-report-FINAL-JUNE-2020_EN.pdf, page 13; B.9 Susan Pockett: 2019 Conflicts_of_Interest_and_Misleading_Statements_in.pdf

[90] On the conflicts of interest at AGNIR, see: Starkey, S.J., "*Inaccurate official assessment of radiofrequency safety by the Advisory Group on Non-ionising Radiation*", Rev Environ Health 2016; 31(4): 493-503. Annex B.10.a and B.10.b.

[91] https://www.investigate-europe.eu/en/2019/how-much-is-safe/

The opinions issued by various European and international organisations are therefore often drafted by more or less the same people.



This point has also been recognised at a judicial level. Indeed, in 2019, the Turin Court of Appeal[92] upheld the 2017 decision of the Ivrea court that scrutinised the credibility of international and European advisory bodies. Thus, the Court writes on page 33 of its judgement:

> *"In fact, much of the scientific literature that excludes the carcinogenicity of exposure to radiofrequencies, or that at least maintains that the researches reached opposite conclusions, cannot be considered conclusive, as also highlighted by the Expert Consultants commenting on the observations of the defence of the appellee (reported on pages 84-97 of the report), is in a position of conflict of interest, however, not always declared: see in particular, on page 94 of the report, the observation of the defendant's defence (in no way contested by the counterparty) that the authors of the studies indicated by INAIL, listed by name, are members of ICNIRP and/or SCENIHR, which have received industry funding directly or indirectly."* [93]

52.

In Annexes B, the plaintiffs insert a series of authoritative studies that map out the conflicts of interest between ICNIRP members and the telecom industry. These include in particular:

Annex B.1	The **Büchner-Rivasi Report** (Klaus Büchner and Michèle Rivasi are Members of the European Parliament)
Annex B.2	The report of **the International Electromagnetic Field Alliance**
Annex B.3	A study **by Lennart Hardell and Michael Carlberg** - two internationally renowned scientists - to the European Union. This letter has been signed by more than 390 scientists.
Annex B.4	The 2011 study of renowned independent epidemiologist Dr. **Magda Havas, PhD**
Annex B.5	A 2019 article study from **Investigate Europe**

[92] Court of Appeal of Turin 12 March 2019, C-721/2017, publ. 13 January 2020. Annex H.1.a to H.1.c.2.

[93] Relevant extract from the original judgment: *'In effetti, buona parte della letteratura scientifica che esclude la cancerogenicità dell'esposizione a radiofrequenze, o che quantomeno sostiene che le ricerche giunte ad opposte conclusioni non possano essere considerate conclusive, come evidenziato anche dai Consulenti d'Ufficio a commento delle osservazioni della difesa dell'appellato (riportate alle pagg. 84-97 della relazione), versa in posizione di conflitto di interessi, peraltro non sempre dichiarato: si veda in particolare, a pag. 94 della relazione, l'osservazione della difesa dell'appellato (in alcun modo contestata dalla controparte) secondo cui gli autori degli studi indicati dall'INAIL, nominativamente elencati, sono membri di ICNIRP e/o di SCENIHR, che hanno ricevuto, direttamente o indirettamente, finanziamenti dall'industria.* "

Annex B.6 An article by the American investigative journalist **Barbara Koeppel** that appeared in The Washington Spectator on 28 December 2020

Annex B.7 A 2020 Report by **Joel Moskowitz**

Appendix B.8 An article by **Lennart Hardell** published in 2017 in the *International Journal of Oncology*

Appendix B.9 A 2019 article by **Susan Pockett**, published in the journal *Magnetochemistry*

Appendix B.10 A 2016 publication by **Sarah J. Starkey** in *Review on Environmental Health*

Annex B.11 A 2017 letter from the **Russian National Committee on Non-Ionizing Radiation** to the World Health Organisation

Annex B.12 A recent study by **Nordhagen and Flydal**, 2022, exposing self-referential authorship behind the ICNIRP 2020 Radiation Protection Guidelines. The authors expose some very remarkable patterns that undermine the ICNIRP as a scientific institution and reference.

Annex B.13 A recent study by **Hardell** from 2020 exposing how Expert Groups of the WHO, the EU Commission and Sweden are largely made up of ICNIRP members, with no representation from the many scientists who are critical of the ICNIRP position.

1.3.4 Alternatives

53.

As mentioned before, there are also other organisations with renowned scientists recommending maximum limits for man-made electromagnetic radiation. The recommendations of these scientists are often based on practical experience and the results of many decades of epidemiological research:

- The 2007 BioInitiative report suggests a standard of 0.6 V/m (1,000 µW/m²).[94,95] The 2012 BioInitiative recommendation, based on additional research indicating the strong biological activity of man-made pulsed EM radiation, concludes that an exposure standard of 0.03-0.05V/m is more appropriate.
- The Parliamentary Assembly of Europe recommends in resolution 1815 (2011): "*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*"; [96]
- EUROPAEM (European Academy for Environmental Medicine) Guideline 2016 recommends much stricter limit values (p. 19) ranging from 0.006V/m to 0.2V/m (0.1 to 100 µW/m²).
- The German Institute for Building Biology and Sustainability is a respected NGO in the field of environmentally safe building and the urban environment. They propose the SBM 2015 standard[97] of 0.02 V/m (1 µW/m²) for living spaces.

[94] https://bioinitiative.org/conclusions/

[95] The biological effects of man-made EMF become more severe as the power level to which one is exposed increases. In Annexes G.2.5 to G.2.6.c, the plaintiffs include a scientifically based overview based on the BioInitiative. This maps everything out in a clear and detailed manner.

[96] Annex E.9.a and E.9.b

[97] https://buildingbiology.com/site/wp-content/uploads/richtwerte-2015-englisch.pdf

These standards are 10 to 100 million times lower in power density than what ICNIRP considers safe.

1.3.5 Conclusions

54.
Already in 2011, the General Assembly of the Council of Europe considered the scientific advice of the ICNIRP to be seriously limited:

> *8.1.2. 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;* [98]

Yet anno 2022 Flanders and Brussels still refer to ICNIRP and similar European and international expert groups in both their legislative instruments and their submissions to the court.

All these expert groups, led by ICNIRP, adhere to a thermal dogma developed by the US military in the 1960s. From the very start, this thermal dogma did not take into account the manifold and dangerous biological effects of electromagnetic radiation, which by 2022 have been extensively documented by thousands of scientific studies. [99]

As already mentioned, also for other reasons ICNIRP is an inappropriate organisation to advise Flanders and Brussels on setting maximum limits for electromagnetic radiation:

- ICNIRP is not a government institution or an international governmental organisation, but a private non-profit organisation operating in a misty, biased manner including in how it appoints new scientists;
- The overwhelming majority of ICNIRP Commission experts are scientifically unqualified to set exposure limits that take into account the effects of electromagnetic radiation on the health and well-being of living beings of all kinds, including the plaintiffs in these proceedings;
- Most of these experts have extensive and repeatedly demonstrated conflicts of interest with the telecommunications industry, which may explain why, despite all the criticism and the rapidly accumulating scientific evidence, ICNIRP clings to a thermal dogma that is particularly convenient for the telecommunications industry.

1.4 National Advisory boards and expert groups

> *"Moreover, the Assembly notes that the problem of electromagnetic fields or waves and their potential consequences for the environment and health has clear parallels with other current issues, such as the licensing of medication, chemicals, pesticides, heavy metals or genetically modified organisms. It therefore highlights that the issue of independence and credibility of scientific*

[98] Council of Europe, Resolution 1815 (2011). See Annexes E.9.a and E.9.b

[99] Dr. Magda Havas provides more insight into this. She also safeguards the previously mentioned extensive archive of Zory Glazer - a US defence expert who researched the effects of Microwave Radiation Effects - who listed all this in the 1970s. See: https://magdahavas.com/from-zorys-archive/introduction-to-from-zorys-archive/

expertise is crucial to accomplish a transparent and balanced assessment of potential negative impacts on the environment and human health.[100]

(This part is added to give an idea of how BBSB treated this issue in the context of the Belgian case. It speaks for itself that other groups in other countries will have to do their own research on this matter, and draft novel screening submissions.)

55.
Flanders and Brussels do not just refer to ICNIRP. They rely on native specialised expert groups to scientifically underpin their policies.

The European Union also has such a specialised expert group -SCENIHR[101] - providing scientific support to policy makers.

Members of these committees are expected to be experts in the field of man-made electromagnetic radiation and health, to respect codes of ethics and to provide neutral and impartial advice. Possible conflicts of interest with industry are, of course, out of the question. All this seems obvious to the plaintiffs.

In Annexes C.1 and C.2, the plaintiffs include a screening of the members of these expert groups. From this screening, both the Flemish and the Brussels expert groups raise serious questions.

The federal government is not a party to this dispute. Following a decision by the Constitutional Court it is no longer competent to set exposure limits.[102] However, it does provide advice on these issues through, among others, the Belgian High Health Council and the joint website www.over5G.be. In Annex C.3, and to complete the file, the plaintiffs also screen the federal government experts. More information can also be found in footnote xxx of this submission.

1.4.1 Flanders

8.1.4. 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;[103]

Resolution 1815, General Assembly, Council of Europe

56.

[100] Council of Europe Resolution 1815 (2011), paragraph 7. Annex E.9

[101] https://health.ec.europa.eu/scientific-committees/former-scientific-committees/scientific-committee-emerging-and-newly-identified-health-risks-scenihr_en

[102] www.over5G.be is an initiative of the Federal Government, the Flemish, Walloon and Brussels governments, the FPS Public Health and the BIPT, with the cooperation of Sciensano.

[103] Recommendation 8.1.4 of the 2011 Council of Europe Resolution 1815. Annex E.9

In the Flemish Region, the Department of Environment[104] is responsible for scientifically monitoring the harmfulness of man-made electromagnetic fields. To this end, it calls on experts from Sciensano, imec[105] and Ghent University.

In Annex C.1, the plaintiffs insert a screening of the Flemish commission members and the ties of the Flemish government and a number of commission members with imec and the telecom industry.

The Flemish advisory committee is headed by Dr. Maurits De Ridder. Dr De Ridder has clear links with the (emeritus) professors Luc Verschaeve and Luc Martens, who themselves have extensive links with the telecom industry. Dr De Ridder himself maintains excellent ties with the Belgian telecom industry. For example, on 8 July 2022 Dr. De Ridder was interviewed for a 5G advertisement placed by Proximus in De Morgen.[106] The chairman of the Flemish advisory board is clearly not independent from industry.

His published work makes clear that Dr. de Ridder does not take people suffering from EHS seriously. For example, instead of trying to understand and treat this condition, Dr. De Ridder repeatedly gives guidelines to occupational physicians how to minimise the problem and recommend cognitive therapies.

The bias of the chairman colours the contents and conclusions of the relevant reports. More details are to be found in section 1.5.2.1 of this submission to the court. The 2021 report, for instance, makes no reference whatsoever to the Senate Committee hearings on EHS. During these hearings, several of Dr. De Ridder's national and international colleagues who take EHS seriously were granted the floor.[107]

The panel chaired by Dr De Ridder recently expanded from three members in 2019 to five members in 2021. At first sight, this seems like a good idea. However, a closer look at the panel as it is composed anno 2022 reveals that one member -Birgit Mertens- has no expertise or experience in research on the health effects of EMF, one member -Seppe Segers- only graduated in 2019, one member -Maryse Ledent- lacks the appropriate scientific background and one member -Els De Waegeneer- has only been working on the topic of non-ionising radiation since 2020.[108]

The Flemish advisory group has links with groups such as the BBEMG (Belgian BioElectroMagnetics Group). The Belgian BioElectroMagnetics Group (BBEMG) deals with the health effects of electric fields and magnetic induction generated by the transport and use of electric current in daily life and at work (50 Hz). The BBEMG management board includes Luc Verschaeve (Sciensano) and Dr. Maurits De Ridder.

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[104] Until recently, the Department of Environment, Nature and Energy (LNE).

[105] Imec, an important research institution in/of industry, is intimately linked to the scientific underpinning of the Flemish government's policy through its collaboration with UGent: https://www.waves.intec.ugent.be/ See Annex C.1 for more information on the connections between the telecom industry, imec, UGent and the Flemish government.

[106] Annex C.1.1.

[107] See Appendix E.7 for more details.

[108] More information in Annex C.1.

Critical questions can be asked about the independence of organisations such as BBEMG. For example, BBEMG is financed by ELIA, the transmission operator of the Belgian high-voltage grid. The following quote can be found on its website:

> "*Due to the lack of government sponsorship, the Belgian BioElectroMagnetics Group has entered into a contract with a private partner, Elia. The terms of the agreement between the sponsor and the research groups guarantee the freedom of research, communication and publication*".[109]

On the occasion of a debate about the VENTILUS project, François Desquesnes (cdH - les engagés) declared about this:

> "*This research centre and its director, together with other university research centres, form the Belgian BioElectroMagnetics Group (BBEMG), which studies the health effects of electric fields. "The problem here is that the group's research is partly funded by Elia. It is therefore difficult to believe that this group is completely objective in this matter.* " [110]

1.4.2 Brussels Capital Region

57.
The Brussels Expert Committee is composed of 9 members appointed by the Government. They have a 3-year renewable mandate. Three committee members are listed as health experts. The other six are technical or socio-economic experts.

In Annex C.2, each of these experts is screened. This makes clear that the Brussels expert group is mainly driven by technical and economic science. Only two experts actually participated in studies or analyses examining EMF health aspects.

The links between the Brussels Expert Committee and industry are, directly or indirectly, rather intense. And so to a frightening degree.

Virtually all experts have either direct links to the telecom industry -this is clearly the case, for example, with Professors Aerts and Pollin or they work for institutions that have strong and even institutional links with it, this is the case for several experts including Sofie Pollin, Arno Thielens, Véronique Beauvois and David Erzeel, who works for the BIPT, the government body responsible for allocating radiofrequencies. This government agency is in constant close contact with telecom operators. Moreover, one member of the committee -Isabelle Lagroye- is directly involved with ICNIRP.

On top of this, more than half the committee members have a clear academic bias in favour of technological and/or economic advancements of wireless technology and 5G. These people have little or no expertise on EMF and its health aspects.

A good example is Professor Pollin. She is chief scientist at imec, an important industrial hub with a strong technological agenda, and coordinator of MINTS, a public-private partnership with industry.

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[109] This is also made clear on the BBEMG website itself:
https://www.bbemg.uliege.be/nl/wetenschappelijke-onafhankelijkheid-en-wetenschappelijke-integriteit/

[110] Boucle du Hainaut : the ministers defend their choice of the absence of citizens in the study committees - La DH/Les Sports+ (dhnet.be)

Professor Pollin's predilection for wireless technology is abundantly clear from all her appointments and her scientific work.

The same applies, for example, to Professors Aerts, Thielens and Rolain.

The lack of expertise in, and attention to, health aspects in the composition of the Brussels expert panel is also evident from the reports. These do not or barely cover health aspects of man-made EMF. As might be expected based on the composition of the committee, the reports focus on technical aspects and technological and economic benefits of wireless communication technology, including 5G. For more details, see 1.5.2.2 of this submission to the court.

Both the profile of the scientists of the Brussels Advisory Group and the reports produced by this group show that this is a group of people eagerly awaiting the technological and economic opportunities of 5G, the Internet of Things and Smart Cities.

How can one expect serious advice on the biological effects of precisely wireless technology from such a group of people? Adherence to the thermal dogma here coincides perfectly with the backgrounds, interests and even the business concerns of a group of people for whom biological effects would seriously disrupt the many technological and economic advantages of wireless communication technology.

58.
In number 54 of its second submission to the court, Brussels Capital Region refers to a (political) consultation committee about the rollout of 5G (Annex D.2.2). This advisory group was composed of 15 members of the Brussels Parliament plus 45 randomly picked citizens.

About these recommendations Brussels states that: *"In making amendments to the Ordinance of 1 March 2007, the draft new ordinance is fully in line with the Consultation Committee's recommendations."*[111]

The recommendations produced by this consultative commission contain many valuable proposals. Contrary to what the Brussels Region writes on this topic, however, the work of the consultation committee was only taken into account whenever it accords with the planned increase in exposure limits and not the other way round.

The plaintiffs note in particular that:

1. Recommendations that are of fundamental importance to sensitive people and people suffering from EHS are not included in the draft Ordinance. These include:
   - *"Recommendation 17: Ask the competent authorities to study the possible recognition of electrohypersensitivity as a disease";*
   - *"Recommendation 43: initiate reflection on the possibility of so-called "white zones" with minimal radiation exposure (specific buildings, specific cars...)"*

[111] Explanatory Memorandum to the Preliminary Draft Ordinance, p. 8. Annex F.4.b.

2. Recommendations to raise public awareness of the adverse health aspects of EMF were also not retained:
   - *"Recommendation 13: Establish a public and independent monitoring system, financed by the telecom operators and the economic actors implementing 5G, to assess the effects of radiation, in particular on health, with a particular focus on electrohypersensitivity.*
     make the population, especially schoolchildren, aware of the potential health risks and of the best way to protect themselves against them;
     also to raise awareness among the medical profession of the risks involved in the use of non-ionising radiation and to urge the competent authorities to include a section on the risks involved in the use of non-ionising radiation in the training of health professionals;".
   - *"Recommendation 37: Ensure digital access for the whole population through targeted training and physical support centres;*
     provide information on digital consumption and the risks of hyperconnection (addiction, over-consumption, privacy risks, cyber violence, cyber scams, cyber-attacks, etc.) and constantly raise awareness of the dangers;
     initiate discussions with the competent authorities on banning the use of smartphones in all compulsory education networks through the internal regulations of educational institutions (for purposes not directly related to education);"
3. Recommendations expressing a preference for the deployment and use of wired connections in the draft ordinance were also not retained:
   - *"Recommendation 28: Given the impact of 5G on various levels, such as health, environment, employment, etc., prioritise the installation and use of optical fibre over the use of 5G and consequently roll out the cable network throughout the Brussels territory, ensuring that it is accessible in particular in public places and efficient in public and collective buildings, so as not to rely exclusively on the mobile network (fibre to the home);"*
   - *"Recommendation 36: Promote the use of optical fibre".*

The Brussels Region further claims in the Ordinance that the higher 5G frequencies will be less invasive:

> *"Finally, it should be noted that at high frequencies, these are the frequencies likely to be used for the second phase of the rollout of 5G, namely 25 GHz, the wavelengths will be only millimetres, and the waves will not penetrate deeply into human tissue. Therefore, absorption is concentrated at the surface, on the skin, which is less invasive than the frequencies currently used."* [112]

There is no scientific consensus at all for such a proposition. On the contrary, the first studies by independent researchers rather point into the opposite direction.[113]

[112] Explanatory Memorandum on the Preliminary Draft Ordinance, p. 7. See Annex F.4.b.

[113] A scientific argument for the biological activity of higher radio frequencies can be found in Chapter 14, page 115 of *Electrosmog: the Health Effects of Microwave Pollution* (2021) by Susan Pockett. There it is called the "Biological effects of Brillouin precursors". See Annex G.5.2.
Prof. Lennart Hardell recently conducted the first brief epidemiological case study on the biological effects of 5G in Stockholm. This research points into the opposite direction of the claims states by Brussels. Annex G.5.5.a and G.5.5.b.

The Explanatory Memorandum of the draft Ordinance further refers to ICNIRP guidelines to increase the safety of raising the Brussels limits.[114] This is, as is made abundantly clear in this submission to the court, a good example of bad government.

Finally, the Ordinance gives misleading information in relation to the recommendation document invoked by the BCR in its second submission to the court. The relevant passage from the Ordinance reads as follows:

> "It should be *noted that the standard set in this Ordinance implements Recommendation 14 of the Parliamentary Consultation Committee for the Rollout of 5G ("establish an emission standard of 14.5 V/m or less, allowing for the development of 5G while limiting the number of antennas and the impact of 5G on health and the environment")."* [115]

The draft Ordinance does include such limits, but they do not apply to higher frequencies between 2 GHz and 300 GHz, such as the European 5G frequency also to be used in Brussels. For these frequencies, the Ordinance relaxes the standards to 13.7V/m (indoors) and 21.7V/m (outdoors) to allow for the rollout of 5G.[116] In other words, the Ordinance does not implement Recommendation 14 of the Parliamentary Consultation Committee. On the contrary, it contradicts it.

1.4.3 European Union (SCENIHR)

59.
The European Union also has a specialised expert group -SCENIHR- providing scientific support to policy makers. SCENIHR member are known to categorically minimise the health effects of EMF. Several SCENIHR experts are or were also involved with ICNIRP.

The group consists of a chairman -Prof **Theodoros Samaras** from Greece- and 10 external members, called *external experts*. As an ex-Vodafone consultant, Professor Samaras is not beyond reproach when it comes to possible conflicts of interest with industry.

In January 2015 the European Ombudsman published a report[117] criticising the lack of transparency surrounding SCENIHR experts:

> *"The overall tenor of the contributions received is negative as regards the current situation. Stakeholders argue that there are major deficiencies persisting with regard to the composition and transparency of Commission expert groups. The main problems identified by stakeholders are*
> *(i) the inconsistent categorisation of organisations that are members of expert groups,*
> *(ii) the perceived continued dominance of corporate interests in a high number of expert groups,*
> *(iii) a lack of data on the expert groups register, and*

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[114] See Explanatory Memorandum Article V - a) Double Immission Standard and Adaptation of the Immission Standard

[115] Explanatory Memorandum on the Preliminary Draft Ordinance, p.4.b.

[116] For more details, see the Introduction to Chapter 1 under Part V. of these decisions as well as Annex F.2.

[117] eu-omb-expert-groups-com-final-opinion.pdf (statewatch.org)

(iv) the appointment of individuals who are closely affiliated with a specific stakeholder group as experts in their personal capacity, linked to the absence of an effective conflict of interest policy."

Also in 2015, a Swedish Foundation put the spotlight on the bias and conflicts of interest at SCENIHR:

"In the 2015 review, one single SCENIHR committee member was in charge of steering the process and selecting the experts assisting him. Nine of the ten selected experts have been involved with standards committees in the past who have repeatedly underplayed evidence that pointed to health effects - most notably ICNIRP, WHO-EMF Project, the Swedish Radiation Protection Authority (SSM) and the UK's AGNIR."

"Expert groups from the WHO, the EU Commission and Sweden are to a large extent made up of members from ICNIRP, with no representative from the many scientists who are critical of the ICNIRP standpoint." [118]

The composition of the SCENIHR has changed little over the years.
In 2022 **Norbert Leitgeb** disappeared from the list. For over a decade, this man declared vociferous opposition to possible health effects of mobile phone radiation. He claimed in 2003 that studies on health effects of base stations were a waste of time and money and that there was "*a greater need to reassure the public*". Norbert Leitgeb was also member of ICNIRP.

Besides the European Ombudsman and the Swedish foundation already mentioned, more specialised groups have raised questions about the composition and functioning of the SCENIHR. For example, on the website of the International EMF Alliance[119] we find an official complaint[120] , filed by some twenty European non-profit organisations with the European Commission, about the scientific bias of the 2015 SCENIHR opinion and the composition of SCENIHR. This detailed document reveals, as so often, a deep and comprehensive conflict of interest of the SCENIHR members with industry.

1.4.4 Conclusions of the plaintiffs

60.
The argument of the defendant's scientific advisory boards -based either on unconvincing meta-studies (Flanders) or on short and anecdotal discussions (Brussels)- that it is still not proven that man-made electromagnetic radiation is biologically active, is strongly contradicted by the much more extensive and serious recent research of the BioInitiative.

In that context earlier this year Prof. Dr. Em. Henry Lai examined hundreds of new publications and compared, percentage wise, studies that found biological effects and those that did not. Results were staggering:

- Genetic effects: 68% of the 423 studies point to effects, 32% do not; [121]

[118] Annex_1_SCENIHR_Experts_2015.pdf (stralskyddsstiftelsen.se)
[119] http://www.iemfa.org/
[120] http://www.iemfa.org/wp-content/pdf/Complaint-to-the-European-Commission-SCENIHR-2015-08-31.pdf
[121] Annex G.5.7.c.1

- Neurological effects: out of 391 reviewed studies, 74% indicate effects, 26% do not; [122]
- Free radicals: out of 288 studies 91% indicate effects and 9% do not [123]

Even if not all the studies analysed by Prof. Lai are probably of the same scientific quality -on both sides of the argument- the trend is clear and overwhelming.

Plaintiffs therefore conclude that:

- The defendants invoke scientific advisory boards whose composition is inappropriate both from the point of view of scientific background and scientific independence and integrity;
- The defendants in their submissions to the court as well as their policy documents refer to other scientific committees - such as ICNIRP and SCENIHR - which, like their own, are staffed by people whose competence and scientific integrity has been questioned both at home and abroad for many years;
- The policy of the defendants is not based on scientific advisory councils whose composition guarantees sound independent scientific able and willing to assess, on an objective basis, the latest scientific knowledge.

The above is reflected in the reports of the Flemish and Brussels expert committees.

1.5 The reports of the Flemish and Brussels expert groups

1.5.1 General methodological flaws

61.
The plaintiffs have carefully reviewed the scientific reports of the Flemish and Brussels expert groups, cited or referred to by the defendants.

As indicated earlier in this submission to the court, the plaintiffs consider it part of their right to a fair trial -enshrined in for instance Article 6 of the ECHR- that the present proceedings merely take into account science the independence of which can be guaranteed.[124]

As the European Court of Human Rights implied in the case of asbestos in *Brincat*[125], industry is constantly trying to safeguard its interests by influencing not only the public but also the scientific debate. This has been demonstrated so often in scientific literature, in the media and in the general debate in society that it has become common knowledge. The plaintiffs addressed this issue in Section 1.2.4 of Part V.

[122] Annex G.5.7.f.1

[123] Annex G.5.7.i.1

[124] In the same sense: Court of Appeal of Turin 12 March 2019, C-721/2017, publ. 13 January 2020. Annex H.1.a to H.1.c.2.

[125] ECHR 24 July 2014, *Brincat and others V. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11, paragraph 105, as cited elsewhere in this submission to the court.

Therefore, the plaintiffs consider relevant in this dispute only those scientific studies of which (1) the financing is known and independent, i.e., completely free from possible influence from industry and (2) researchers are also free from possible or actual conflation with industry.

In addition, good governance on the part of the defendants requires that, in order to monitor the state of play of scientific literature, they appoint scientists who are versed in the subject, free of potential conflicts of interest and who take an entirely neutral scientific view on the issue of the health effects of electromagnetic fields.

62.
The reports of expert groups used by the defendants for policy purposes are manifestly lacking in all these respects:

1. Neither the reports used by Flanders nor those used by the Brussels Capital Region distinguish between research financed and carried out independently and research for which it is either clear that there was influence from industry or for which such influence cannot be excluded with certainty. What is more, the said reports appear to remain completely unaware of this fundamental methodological issue;
2. Section 1.4 of this submission to the court shows that the relevant expert groups consist, at least in part, of scientists who approach the issue of man-made electromagnetic fields in a biased manner.

For these reasons, the documents submitted are generally flawed and do not provide an adequate basis for assessing the issue of biological harm caused by man-made electromagnetic fields from a policy point of view.

1.5.2 Specific shortcomings

63.
The scientific bias and inadequacy of the reports on which the defendants base their policy is highlighted by the very text of the documents in question.

1.5.2.1 Flanders

64.
To its second submission to the court Flanders attaches the final report, "Overview of studies on the health effects of RF radiation published in 2021", by the Department Environment. The plaintiffs reproduce this document in Annex D.1.

In its submission of 22/02/2022 (21/1408/A), in Par. 17 Flanders claims the following in relation to this document:

> "*Flanders closely monitors scientific developments concerning the potential health risks of electromagnetic radiation. Indeed, in a quarterly report an expert group updates the published scientific studies in this field ....* "

"There can therefore be no question of any negligence on the part of the complainant."

After a thorough analysis of the submitted document, however, the conclusion of the plaintiffs is that the expert advice rather constitutes excellent proof of Flanders' failure to substantiate its policy in a scientifically acceptable manner.

1.5.2.1.1 Internal inconsistencies and biased conclusions

65.
The plaintiffs are pleased to quote from the submission of the expert group on the quarterly meta-study: Flanders - Final report Dept. of Environment - studies 2021 - Appendix D.1:

- First quarter: "*A review of all available experimental and epidemiological studies has found no confirmed evidence that low-level RF fields with a frequency above 6 GHz are hazardous to human health."* (page 3)
- Second trimester: "*Time-trend studies show that, despite the large increase in the use of mobile phones, there is no increase in salivary gland tumours and brain tumours, showing that there is no causal relationship between the two*.
  Electromagnetic hypersensitivity has been found to be associated with predisposition to paranoid thoughts." (page 19)
  "*Thus, it remains difficult to relate a biological effect observed in an in vitro or in vivo study to a negative health outcome in humans. This problem was also highlighted by the researchers of several studies. Consequently, additional studies are still necessary to investigate the relevance of these observed biological changes to human health*." (page 25)
- Third trimester: "*Most epidemiological studies do not support a link between mobile phone use and tumours in the head*."
  "*The review based on a systematic literature search and quality assessment does not suggest any adverse health effects of WiFi exposure below the legal limits*." (page 34)
- Fourth quarter: "*Most epidemiological studies do not support a link between mobile phone use and different types of tumours. Other negative health effects are also not scientifically proven*." (page 53)

66.
The unsuspecting reader will conclude from the above that there is no reason for concern. Human-made electromagnetic fields do not cause any biological effects within the Flemish exposure limits.
However, such a conclusion is contradicted by a whole series of studies mentioned in the document itself. The plaintiffs like to quote more extensively from the document submitted by Flanders:

1. Page 8: Himanshi, Rai U, Singh R. Radiofrequency radiation: A possible threat to male fertility. Reprod Toxicol. 2021 Jan 23;100:90-100. doi: 10.1016/j.reprotox.2021.01.007. Epub ahead of print. PMID: 33497741.
   "*In this review based on in vitro and in vivo studies, the authors conclude that RF can alter the morphology and physiology of sex cells, with adverse effects on spermatogenesis, motility and reduced concentration of male sex cells. The authors also state that RF leads to genetic and hormonal changes. Moreover, they summarise the contribution of oxidative stress and protein kinase complex after RF exposure, which could also be the possible mechanism for the reduction of sperm parameters*."

2. Page 9: Lai H. Genetic effects of non-ionising electromagnetic fields. Electromagn BiolMed. 2021 Feb 4:1-10. doi: 10.1080/15368378.2021.1881866. Epub ahead of print. PMID: 33539186.
"The types of genes whose expression is affected (e.g. genes involved in cell cycle arrest, apoptosis and stress responses, heat shock proteins) are consistent with the findings that EMF causes genetic damage."
"The mechanisms by which EMF effects are caused are unknown. The involvement of free radicals is a possibility."
"Other data, such as adaptive effects and mitotic spindle abnormalities after EMF exposure, further support the hypothesis that EMF causes genetic effects in living organisms."

3. Page 10: Negi P, Singh R. Association between reproductive health and exposure to non-ionizing radiation. Electromagn Biol Med. 2021 Jan 20:1-10. doi: 10.1080/15368378.2021.1874973. Epub ahead of print. PMID: 33471575.
"Constant exposure to non-ionising radiation from a mobile phone is one of the possible reasons for increasing infertility in men."
"Mobile phone radiation impairs male fertility by affecting various parameters such as sperm motility, sperm count, sperm morphology, sperm concentration, morphometric abnormalities, increased oxidative stress and a number of hormonal changes."

4. Page 10: Górski R, Nowak-Terpiłowska A, Śledziński P, Baranowski M, Wosiński S. Morphological and cytophysiological changes in selected lines of normal and cancer cells of human origin under the influence of a radiofrequency electromagnetic field. Ann Agric Environ Med. 2021 Mar 18;28(1):163-171. doi: 10.26444/aaem/118260. Epub 2020 Mar 17. PMID: 33775083.
"It was found that exposure to RF electromagnetic fields caused a significant decrease in viability in fibroblasts and a significant increase in cancer cells."
"Submission: Based on the results obtained, it can be hypothesised that a high-frequency electromagnetic field may have harmful effects on human cells."

5. Page 14: Effects on the nervous system and neurological disorders: Delen K, Sırav B, Oruç S, Seymen CM, Kuzay D, Yeğin K, Take Kaplanoğlu G. Effects of 2600 MHz radiofrequency radiation in brain tissue of male Wistar rats and neuroprotective effects of Melatonin. Bioelectromagnetics. 2021 Feb;42(2):159-172. doi:10.1002/bem.22318. Epub 2021 Jan 13. PMID: 33440456.
"This study showed that an exogenous high dose of melatonin could reduce these adverse effects of RF radiation. The authors conclude from their study that it is recommended to minimise exposure to RF radiation, and point to the potentially beneficial impact of a daily intake of melatonin supplements."

6. Page 14: Özdemir E, Çömelekoglu Ü, Degirmenci E, Bayrak G, Yildirim M, Ergenoglu T, Coşkun Yılmaz B, Korunur Engiz B, Yalin S, Koyuncu DD, Ozbay E. The effect of 4.5 G (LTE Advanced-Pro network) mobile phone radiation on the optic nerve. Cutan Ocul Toxicol. 2021 Mar 3:1-27. doi:10.1080/15569527.2021.1895825. Epub ahead of print. PMID: 33653184.
"Conclusion: The authors conclude that the results obtained in this study support optic nerve damage caused by mobile phone radiation. These results indicate a significant risk that may reduce quality of life."

7. Page 26: Yu G, Bai Z, Song C, Cheng Q, Wang G, Tang Z, Yang S. Current progress on the effect of mobile phone radiation on sperm quality: An updated systematic review and meta-analysis of studies in humans and animals. Environ Pollut. 2021 Aug 1;282:116952. Doi: 10.1016/j.envpol.2021.116952. Epub 2021 Mar 30. PMID: 33862271.
"Exposure to RF-EMV from mobile phones can reduce the motility and viability of adult human sperm in vitro. The combined results of animal studies showed that exposure to RF-EMV from mobile phones could suppress sperm motility and viability."
"Previous studies have extensively investigated and demonstrated the harmful effects of mobile phone radiation on sperm."

8. Page 29: Hasan I, Amin T, Alam MR. Hematobiochemical and histopathological alterations of kidney and testis due to exposure of 4G cell phone radiation in mice. [Hematobiochemical and histopathological alterations of kidney and testis due to exposure of 4G cell phone radiation in mice]. Saudi J Biol Sci. 2021

May;28(5):2933-2942. doi:10.1016/j.sjbs.2021.02.028. Epub 2021 Feb 17. PMID: 34012329; PMCID: PMC8117002.
"...the authors concluded that exposure to fourth-generation mobile phone radiation can affect the blood vessels and inflammation of the kidneys and testis tissues of the mice. Based on these studies, the authors believe it is important to raise public awareness of the potential harmful effects of exposure to radiofrequency electromagnetic radiation from mobile phones."

9. Page 30: Jelodar G, Azimzadeh M, Radmard F, Darvishhoo N. Alteration of intrapancreatic serotonin, homocysteine, TNF-α, and NGF levels as predisposing factors for diabetes following exposure to 900-MHz waves. [Alteration of intrapancreatic serotonin, homocysteine, TNF-α, and NGF levels as predisposing factors for diabetes following exposure to 900-MHz waves]. Toxicol Ind Health. 2021 Jun 21:7482337211022634. doi: 10.1177/07482337211022634. Epub ahead of print. PMID:34151670.
"Exposure to 900-MHz RF-EMV decreased pancreatic NGF and serotonin levels and increased pro-inflammatory markers (Hcy and TNF-α), which may be a predisposing factor for type 2 diabetes."

10. Page 38: Effects of Radiofrequency Electromagnetic Radiation on Neurotransmitters in the Brain.
Hu C., Zuo H., Li Y. (2021) Effects of Radiofrequency Electromagnetic Radiation on Neurotransmitters in the Brain. Frontiers of Public Health 9: 691880
"Many studies have shown that the nervous system is an important target organ that is sensitive to electromagnetic radiation."
"The effects of electromagnetic radiation on metabolism and neurotransmitter transport remain unexplained."

11. Page 38: Belpoggi F. (2021). Health Effects of 5G. European Parliamentary Research Service.
https://www.europarl.europa.eu/ReData/etudes/STUD/2021/690012/EPRS_STU(2021)690012_EN.*pdf*
"Human cancer: there is limited evidence of carcinogenicity of RF radiation in humans."
"Reproductive/developmental effects in humans: there is sufficient evidence of adverse effects on male fertility. There is limited evidence of adverse effects on fertility in women."

12. Page 45: Effects on the nervous system and neurological disorders Hinrikus H, Lass J, Bachmann M. Threshold of radiofrequency electromagnetic field effect on human brain. [Threshold of radiofrequency electromagnetic field effect on human brain] Int J Radiat Biol. 2021 Aug 23:1-11. doi:10.1080/09553002.2021.1969055. Epub ahead of print. PMID: 34402382.
"Submission: The analysis of the physical model of the non-thermal mechanisms of RF-EMV effects leads to the conclusion that no threshold for the effect can be determined."
"According to the authors, the possible causal relationship between RF-EMV effect and depression in young people is a very important issue."

13. Page 46: Other effects - Effects or the endocrine system Alkayyali T, Ochuba O, Srivastava K, Sandhu JK, Joseph C, Ruo SW, Jain A, Waqar A, Poudel S. Investigation of the effects of radiofrequency radiation from mobile phones and extremely low frequency radiation on thyroid hormones and thyroid histopathology. [An Exploration of the Effects of Radiofrequency Radiation Emitted by Mobile Phones and Extremely Low Frequency Radiation on Thyroid Hormones and Thyroid Gland Histopathology]. Cureus. 2021 Aug 20;13(8):e17329. doi: 10.7759/cureus.17329. PMID: 34567874; PMCID: PMC8451508.
"The thyroid gland is among the organs most sensitive to mobile phone radiation because it is located in the anterior neck."
"This review shows that radiofrequency radiation from mobile phones (RFR) may be associated with thyroid insufficiency and changes in serum levels of thyroid hormones, with a possible disruption of the hypothalamic-pituitary-thyroid axis."

14. Page 49: Tripathi R, Banerjee SK, Nirala JP, Mathur R. Concomitant exposure to electromagnetic fields of mobile phones and unhindered drinking of fructose during pre-, peri-, and post-pubertal stages perturbs the hypothalamic and hepatic regulation of energy homeostasis by early adulthood: experimental evidence [Simultaneous exposure to electromagnetic field from mobile phone and unimpeded fructose drinking during pre-, peri-, and post-pubertal stages perturbs the hypothalamic

and hepatic regulation of energy homeostasis by early adulthood: experimental evidence]. Environ Sci Pollut Res Int. 2021 Sep 2. doi: 10.1007/s11356-021-15841-y. Epub ahead of print. PMID: 34476698.
"Altogether, according to the authors, the current study shows that exposure to EMF from mobile phones and unrestricted intake of fructose during childhood and adolescence has an inhibitory effect on the central and peripheral nervous system that regulates glucose sensors, glucose regulation, eating behaviour and satiety behaviour in early adulthood."

15. Page 50: Sharma A, Shrivastava S, Shukla S. Oxidative damage in the liver and brain of rats receiving Oxidative damage in the liver and brain of the rats exposed to frequency-dependent radiofrequency electromagnetic exposure: biochemical and histopathological evidence]. Free Radic Res. 2021 Aug 27:1-12. doi: 10.1080/10715762.2021.1966001. Epub ahead of print. PMID: 34404322.
"... the brain is more susceptible to oxidative damage compared to the liver of exposed animals. The authors conclude on the basis of these results that RF-EMV exposure can induce oxidative damage to the liver and a frequency-dependent increase in the incidence of brain damage."

16. Page 61: Ghazanfarpour M, Kashani ZA, Pakzad R, et al. Effect of electromagnetic fields on spontaneous abortion: A systematic review and meta-analysis. [Effect of electromagnetic field on abortion: A systematic review and meta-analysis]. Open Med (Wars). 2021;16(1):1628-1641. Published 2021 Nov 3. doi:10.1515/med-2021-0384
"Conclusion: According to the study authors, exposure to EMFs above 50 Hz or 16 mG is associated with a 1.27× increased risk of premature spontaneous abortion. They therefore argue that it may be wise to advise women of this potentially significant environmental hazard. Indeed, pregnant women should receive tailored counselling, according to the authors."

67.
The plaintiffs point out that the above list, taken entirely from the document submitted by Flanders, only concerns studies carried out in 2021. In this and previous submissions to the court, the plaintiffs also refer to a whole series of additional studies, including a number of large studies conducted by renowned institutions. In Annex G, the plaintiffs include a non-exhaustive list.

It follows from the totality of the scientific research cited that for decades already, and this on a global scale, the existence of biological effects of unnatural man-made electromagnetic fields is a scientific fact.

The Department Environment justifies the submission mentioned in number 65 of this submission that, despite all the research carried out even in 2021, there is no conclusive proof of the existence of harmful biological effects - an almost unbelievable proposition in 2022 - by repeatedly pointing out flaws in the scientific methodology of those studies as reviewed by the expert panel.

68.
However, after a thorough reading of the document in question, the plaintiffs note the following:

1. Studies that point out that there is no evidence that RF radiation is harmful are scientifically favoured over those that do. All too often, the argument is used that the latter studies are flawed or that the results are inconsistent. As if the thousands of scientists, including many from top universities and reputable research institutions, who have consistently identified biological effects of man-made electromagnetic fields for decades, collectively and individually do not know how to conduct scientific research, while those researchers who do not identify biological effects would, miraculously, be able to do so.
   This is all the more inappropriate given the above-mentioned absence of a distinction between independent and non-independent funded and conducted research in the Flemish document

itself. As a result, chances are that the quarterly meta-studies of the Department of Environment are the implicitly plaything of the telecom industry's continuous attempts to blur the scientific debate. For this reason alone, the document under discussion is inappropriate as a scientific basis for Flemish policy.

2. In their conclusions to the quarterly meta-studies, Doctors Maurits De Ridder, chairman of the Flemish group, and Professor De Waegeneer write the following: "*Negative expectations about the harmfulness of electromagnetic fields may favour the occurrence of illusory symptom perceptions*." (page 3) "*Electromagnetic hypersensitivity appears to be associated with predisposition to paranoid thoughts*." (page 19).

3. These statements ignore what well-known specialists, including Belgian ones, have stated during the 2020-2021 hearings in the Belgian Senate[126] . For example, Prof. Dirk Adang of Hasselt University, an expert of the Belgian High Health Council[127] and chairman of the Permanent Working Group on Non-Ionizing Radiation of the High Health Council, stated the following during the hearing of March 6, 2020:

> "*In Belgium, there are no figures on the prevalence of this problem. Based on the prevalence of electro hypersensitive persons in other countries, an extrapolation and an estimate can be made. The result varies between 1.5% and 3% of the population. In absolute figures, therefore, we are talking about a potentially large number of people (roughly 150 000 to 300 000)".* [128]
>
> "*Mr Adang stresses that the symptoms are there, both somatic and psychological, causing suffering to those affected. The symptoms can therefore give rise to problems in the workplace or in social functioning*." [129]

The Senate conclusions[130] furthermore state that:

a. EHS does exist,
b. It is a serious problem for a significant part of the population
c. There is a need to protect these people
d. There is a need to protect other vulnerable people as well
e. There is a need to better inform the population
f. It is appropriate to apply the precautionary principle.

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[126] See: Belgian Senate, *Proposed resolution on the recognition of electrohypersensitivity*, 17 May 2021, 7-88/5.

[127] In Annex C.3, the plaintiffs review all relevant experts of the HOG. There are 14 people on the HOG. Here too, despite impressive *curricula,* relevant expertise is scarce.
Professor Dirk Adang in particular has the necessary knowledge, experience and expertise to make sense of the health risks of man-made EMF.
It can also be expected that Dr Patrick Smeesters is somewhat familiar with the issue. He was chairman of the Ionising Radiation Section of the Belgian High Health Council. In the field of ionising radiation - the present proceedings are about non-ionising radiation, see chapter 1.2 in this part of these decisions - he was until 2011 advisor to several bodies, among which the FANC (Federal Agency for Nuclear Control). However, he is not known to have published on the health effects of non-ionising radiation.
Of the 12 other specialists, none has any relevant education or published work.

[128] Belgian Senate, *Proposed resolution on the recognition of electrohypersensitivity*, 17 May 2021, 7-88/5, p.6.

[129] Belgian Senate, *Proposed resolution on the recognition of electrohypersensitivity*, 17 May 2021, 7-88/5, p.7.

[130] See Annex E.6.

That electrohypersensitivity cannot simply be reduced to a psychological malfunction is shown, moreover, by a recent ruling of the Belgian Constitutional Court on smart meters.[131]

The Court considered the following:

> *"(...) The potential exposure to electromagnetic radiation may significantly reduce the existing level of protection of a healthy environment for the category of persons who are exposed to it. For persons sensitive to electromagnetic fields, it may be necessary to minimise exposure to them from the outset."*

The above is in clear contradiction to the submission of Professors Maurits De Ridder and Els De Waegeneer in the document cited by Flanders. The 'scientific' positions cited by these professors, on the other hand, are fully in line with the personal convictions of Dr Maurits De Ridder, the chairman of the advisory group in question, which are mentioned in number 56 of this submission to the court.

1.5.2.1.2 Plaintiff conclusions

69.
Plaintiffs therefore conclude:

1. The reports submitted by Flanders have fundamental methodological flaws that violate the right to good governance and the right to a fair trial;
2. The conclusions of the Flemish expert group drawn from the quarterly meta-studies are one-sided, biased and misleading. They do not reflect the reviewed research or they do so in an incomplete manner, and at times they even express the scientific bias of the Flemish researchers themselves;
3. In no way does the Flemish expert group include a warning in their conclusions, e.g. for children, people suffering from EHS or pregnant women. This is all the more worrying, as such warnings are clearly formulated by several scientific studies -see the next chapter in this submission to the court as well as number 40 and 53 of the current submission- as well as in, for example, Council of Europe Resolution 1815. Such warnings are even to be found in the relevant analyses and decisions of the Belgian Senate.[132]
4. The fact that many of the studies mentioned in the report detect biological effects of man-made electromagnetic radiation while, in their conclusions, recommending additional research to confirm the study's findings, should prompt Flanders to set stricter exposure limits based on a tightened application of the precautionary principle. Instead, the often cautiously formulated results of sound scientists are used to pretend there is still no conclusive evidence, so that a tightened policy that takes account of biological effects can forever be postponed and exposure standards can even be relaxed;
5. The fact that the Flemish expert group, after more than half a century of worldwide independent scientific research and rapidly accumulating worldwide evidence of serious biological effects -of which the plaintiffs present an anthology in Annex G- still does not

[131] Constitutional Court nr. 5/2021, 14 January 2021

[132] *Note to the reader: in Belgium the Senate is currently a wholly consultative institution without any decision-making power.*

consider such evidence to be proven anno 2021 is, at best, proof of the poor scientific pedigree of the said advisory board and, at worst, proof of conscious scientific bias on the part of at least some of the group members. It is true that research into biological effects in the past sometimes drew provisional and cautious scientific conclusions, but in recent years this has become less and less the case. Supported by the abundant scientific evidence and an ever-higher scientific standard of the research conducted - the NTP and Ramazzini studies are good examples of this - the confidence of independent researchers in the fact that man-made EMF already causes biological effects far below the limits applied by Flanders and Brussels has become very high;[133]

6. The reports of the Environment Department do not formulate precautionary measures for vulnerable groups such as children, pregnant women, the elderly, the sick and people suffering from EHS. This again stands in marked contrast to, for example, the draft resolution of the Belgian Senate and Constitutional Court thinking since the onset of 2021.

Based on scientifically flawed meta-studies carried out by a improperly constituted expert group, the scientific basis of the Flemish government's policy is therefore seriously flawed with regard to the subjective (fundamental) rights of plaintiffs.

1.5.2.2 Brussels Capital Region

70.
The scientific underpinning of the Brussels-Capital Region's policy is based on annual reports by a committee of experts.

At the date of this submission to the court, this Expert Committee has not yet published a report for the period 2020-2021. Therefore, in the context of these decisions, the plaintiffs reviewed the following reports:

1. Brussels Environment - Brussels-Capital Region - Report of the Committee of Experts on Non-Ionizing Radiation 2017-2018
2. Brussels Environment - Brussels-Capital Region - Report of the Committee of Experts on Non-Ionising Radiation 2018-2019
3. Brussels Environment - Brussels-Capital Region - Report of the Committee of Experts on Non-Ionising Radiation 2019-2020 [134]

1.5.2.1 Analysis of the reports

71.
The Plaintiffs have thoroughly analysed the above documents and, in the context of the present dispute, come to a number of important, overarching findings:

[133] See, for example, what R.L. Melnick, the head of the NTP study, writes about this in his reply to the criticism of the NTP study. Footnote 146 and Appendices D.4.a and D.4.b.
[134] Annexes D.2.1.a., D.2.1.b. and D.2.1.c.

1. As demonstrated in 1.4.2 of this submission to the court, the composition of the Brussels Expert Committee is neither suitable nor representative for conducting neutral, scientifically independent and in-depth research on the health effects of electromagnetic fields.
2. This is reflected in the reports reviewed by the plaintiffs:
    a. In contrast to the work of the Flemish Environment Department, the Brussels Expert Committee does not itself conduct a comprehensive meta-analysis of the available scientific literature on the health effects of unnatural man-made electromagnetic fields. Research of this specialised committee is essentially limited to general, anecdotal and often very poorly substantiated considerations[135] about selectively chosen (meta)studies.
    b. Examination of the health aspects forms only a very limited part of the overall content of the relevant reports. In the 2017-2018 report, it spans but 3 out of 34 pages, in the 2018-2019 report that is 18 out of 99 pages. The research here is mainly about health aspects of the yet-to-be-deployed 5G. The 2019-2020 report spends 11 of 55 pages on possible health consequences of the 5G rollout.
    Apart from discussing the NTP study in the 2017-2018 report[136,137] , the Expert Committee is up to date on the rapidly developing scientific literature on the biological effects of wireless technology.
3. Furthermore, the inappropriate composition and functioning of the Brussels Expert Committee is clearly reflected in the general structure and content of the examined reports. In all of the three reviewed reports, a fairly short chapter on possible health aspects is inserted between much more elaborate chapters that discuss the technical and economic aspects of wireless technology used or to be deployed. As far as the latter is concerned, these reports constantly sing the praise of the budgetary and economic advantages of 5G for Brussels Capital Region.

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[135] An example is the following quote. On page 19, in the introduction (3.1) to the study of the health effects of 5G, the expert committee approaches the possible dangers of 5G from the perspective of the classical risk of warming effects. At the bottom of the page, reference is made to the ICNIRP's thermal dogma. In this context, we find the following sentence: "*The effect on human health of waves in the 3.5 GHz band may be similar to that of 4G, so 5G can use existing base stations in this bandwidth*." What independent science is this based on? The modulation, intensity and duration of 5G will be different from those of previous generations of mobile technology. Recent research by, for example, Lai and Levitt (Appendix G.5.4a and b) shows (1) that you cannot deduct the biological effects of man-made EMF purely from heating effects and (2) that, given the state of the science in 2022, it is very difficult to make that kind of general statement in a scientifically valid way.
A recent and first, very brief epidemiological finding by Professor Hardell also shows something completely different from what the expert committee of the BCR is claiming here. See Annex G.5.5.a and G.5.5.b.

[136] After thorough investigation, including hearings with several (internationally renowned) experts, the Court of Appeal in Turin comes to a radically different opinion on the value of the NTP and the Ramazzini studies than the experts of the Brussels Capital Region. Based on the hearings, the Court concludes that these studies are valuable and relevant for estimating the biological damage of man-made electromagnetic fields in humans. See relevant quotes elsewhere in this submission to the court. Turin Court of Appeal 12 March 2019, C-721/2017, publ. 13 January 2020. Annex H.1.a to H.1.c.2.

[137] Contrary to what the Brussels 2017-2018 report and the 2018-2019 report on page 32 state, the NTP study was indeed blinded and conducted in accordance with the rules of the art at every level. The results are also consistent and clear. See: Melnick, R.L., *Commentary on the utility of the National Toxicology Program study on cell phone radiofrequency radiation data for assessing human health risks despite unfounded criticisms aimed at minimising the findings of adverse health effects*, Environmental Research 168, 2019, p. 4. See Annex D.4.a and D.4.b.

4. It thus comes as no surprise that the reviewed reports consistently adhere to the thermal dogma, paying biological effects scant lip service before brushing them under the carpet altogether. A few quotes give more insight into the firm faith of the Brussels expert group in the thermal dogma:

> *"As for the energy associated with the photons, even the highest frequencies of 5G (around 70 GHz) remain almost 100,000 times lower than the level required to ionise biological molecules. So we remain in the realm of non-ionising waves, with energies that are also insufficient to break the low-energy bonds that regulate interactions between biological molecules in cells. However, as with the radiofrequency waves currently used in telephony, these higher frequencies can cause the rotation of free dipole molecules, leading to tissue heating. These thermal effects occur when exposed to high incident power densities (more than 10 mW/cm²), which are higher than current standards (consumer applications must not exceed 1 mW/cm²). So the regulations protect us from these thermal effects."* [138,139]
>
> *"The known health effects of the frequencies up to 300 GHz are therefore still due to thermal effects. Regulatory bodies have set standards and limits to protect the public from these thermal effects (ICNIRP, 2020). Thus, exposure below the regulatory values would not lead to heating of tissues and thus would not be hazardous to health."* [140]

Contrary to what the above quotes claim, recent independent scientific research increasingly concludes that the mechanisms by which man-made EMF causes biological effects well below the heating threshold have little or nothing to do with the energy intensity and power density necessary for tissue heating:

> *"Furthermore, it is incorrect to make direct comparisons between thermal energy and radiofrequency electromagnetic energy. Research data indicate that electromagnetic energy is biologically more powerful in causing effects than thermal changes. The two probably operate through different mechanisms. As such, any current guidelines for exposure to radiofrequency radiation based on acute non-modulated waves are inadequate for health protection..."* [141]

1.5.2.2 Plaintiff conclusions

72.

The plaintiffs thus draw the following conclusions:

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[138] Brussels Environment - Brussels Capital Region - Report of the Committee of Experts on Non-Ionizing Radiation 2018-2019, p. 28. Under the cited quote, the document also briefly discusses the biological effects of 5G. Here, the document relies mainly on the work of other bodies which, like the expert groups in Flanders and Brussels, may be suspected of adhering to the thermal dogma for economic and budgetary reasons and whose report may not distinguish between independent research and research whose independence cannot be guaranteed.

[139] 1 mW/cm^2 = 61 V/m, according to the ICNIRP the upper limit for avoiding tissue heating.

[140] Brussels Environment - Brussels-Capital Region - Report of the Committee of Experts on Non-Ionising Radiation 2019-2020, page 19.

[141] Lai, H. and Levitt, B.B., "*The roles of intensity, exposure duration, and modulation on the biological effects of radiofrequency radiation and exposure guidelines*", Electromagnetic Biology and Medicine, 2022, https://doi.org/10.1080/15368378.2022.2065683. Annexes G.5.4.a and G.5.4.b.

1. An analysis of the composition of the Brussels expert group in section 1.4.2 shows that it is mainly driven by technological and economic considerations and that there are clear, even overwhelming, ties with industry.
2. This is reflected in the reports prepared by the group:
    a. In the reports, the study and analysis of the health aspects are of minor importance compared to technical and technological aspects and the important economic benefits of non-ionising wireless communication technology for Brussels Capital Region;
    b. Against this background, it is not surprising that the experts do not seriously investigate swiftly mounting independent scientific (meta-) research consistently pointing to often serious biological effects of technologies deployed at current field strength levels.[142] Research is limited to a minimal discussion of selectively chosen (meta-) studies and scientific perspectives that confirm the experts' prior scientific convictions and support their view of the importance of wireless communication technology for the budgetary and economic development of the Region.
3. The expert group still adheres to a by now outdated ICNIRP paradigm, to which they refer in all their reports as an important, independent and relevant scientific authority. This, of course, colours what they investigate and how they investigate it.
4. Thus, the conclusions of the Brussels expert group concerning possible health issues relating to electromagnetic fields focus mainly on tissue heating. Biological aspects are discussed, but in a selective, anecdotal and biased manner.
   The 2019-2020 report states, for example, that the expert committee is also investigating biological effects as part of the rollout of 5G, not because it takes them seriously, but because there is much public concern:
   > "*Despite the existence of exposure limits protective for the entire population and based on scientific data, the issue of the long-term (athermal, should the exist) health effects of this new technology, and more generally of wireless communication technologies, raises concerns and questions among the public. In particular, frequencies above 6 GHz are a source of concern*." [143]
   Rather than being interested in serious and in-depth research, the report goes on to cite a few (1) selectively chosen studies, (2) whose scientific and financial independence was not examined and which obviously reassure the public.
5. The expert committee's 'research' into biological effects is therefore not serious. It is biased and instrumental.

The plaintiffs therefore conclude that the reports in question do not constitute an adequate basis for a policy truly protecting their fundamental rights. The expert group uses the reports to constantly advocate the technological and economic advantages of non-ionising communication technology. Serious scientific research into, and consideration of, biological effects caused by this technology far below current exposure limits obviously does not fit into this picture.

[142] For every increase in field strength by a factor of 10, the power increases by a factor of 100.

[143] Brussels Environment - Brussels-Capital Region - Report of the Committee of Experts on Non-Ionising Radiation 2019-2020, page 20.

The reports, on the other hand, do provide a very convenient basis for a policy that continually and consistently violates the fundamental rights of the plaintiffs in favour of considerations that prioritise both the economic and budgetary development of the Brussels Capital Region.

1.6 Recommendations from institutions and advisory bodies

73.
The defendants have a general duty to protect the population from harmful influences in the environment in which they live. Part of this duty is the obligation to inform the public in a complete, clear and unambiguous way.

Based on the exposure limits in force and the scientific reports on which they are based, Flanders and Brussels consider there is no reason for concern regarding negative biological effects of man-made EMF.

In Annexes E.1 to E.13, the plaintiffs insert a whole series of quotes and official (policy) documents. The defendants, and all of the authorities involved in the defendants' policies, are or should be aware of this information.[144] Based on all the information listed in this Annex, they can be presumed to know that electromagnetic fields have biological effects that are harmful and should therefore be fully taken into account.

74.
Despite this widely available information, the following is what happens:

1. Flanders, Brussels and the other governments of our country often communicate differently, in an unclear and confusing way, misleadingly and even with contradictory messages;
2. The defendants continue to hide behind ICNIRP guidelines that adhere to an outdated thermal dogma, even though they know or should know, based on widely available national and international information, that they must consider both thermal and non-thermal effects of RF-EMV in their risk assessment[145] ;
3. The defendants do not mount any or insufficient information and awareness campaigns pointing out negative biological effects at current exposure limits, while this is urgently recommended by all kinds of advisory bodies and (scientific) studies. On the contrary, on the basis of an outdated thermal dogma, they mislead the public by constantly communicating that there is no problem, that more research is needed and that this technology does not harm health; [146]

[144] See by analogy Malta's obligations under the ECHR as regards asbestos: ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11, 105-106. Quoted extensively elsewhere in these decisions.

[145] Radiofrequency electromagnetic fields.

[146] A good example is the new website about 5G of the federal government in cooperation with the other authorities of our country: https://www.over5g.be/. This website even bases itself on an outdated advice of the HHC. It mentions an advice of the High Health Council from 2014 instead of the more recent advice from 2019. It contains statements that contradict findings and advice from bodies such as the WHO, the Council of Europe, the EPRS and other bodies, listed in Annex E, which urge caution.

4. If they do organise information campaigns (e.g. Annex E.4.a – the 2012 Flemish Government leaflet to schools[147]), these are often prepared by people with ties to industry and give a false sense of security: safe alternatives, such as the use of wired connections, are rarely or never mentioned and no advice is given to minimise exposure;
5. The defendants do not introduce special measures to protect the plaintiffs and (other) sensitive population groups such as children, the elderly and the sick;
6. The defendants still do not take the existence of EHS -suffered by a number of plaintiffs- - seriously, and this despite all the statements made by specialists during the relevant hearings in the Belgian Senate (Annex E.7) and other available information (Annex G.4);
7. The defendants are, by contrast, introducing new wireless communication technologies (5G) for which they have to further relax or even increase the applicable exposure limits.

75.

As for 5G:

1. The defendants do not or not sufficiently take into account non-thermal effects in their risk assessment (EPRS Study 2021 - Annexes E.12.a and E.12.b);
2. Health risks are based on a theoretical extrapolation of studies carried out in relation to other signals and frequency bands and do not take into account the specific technical characteristics of 5G;
3. The defendants are even considering to allow higher frequency bands, despite the fact that no proper studies have been conducted on such frequency bands (see Annex E.12.a and E.12.b (EPRS Study)[148] and D.3 (Advice NL Hoge Gezondheidsraad)[149]);
4. The defendants refuse to consider and fully exploit wired alternatives or other technologies less harmful for health.

76.

The plaintiffs therefore conclude that:

1. The defendants have access to various specialised opinions from Belgian and international authorities and advisory bodies expressing at least concerns about the health effects, including non-thermal, for the population and the environment;

Another example is the Flemish government's website about 5G. There, we read the following statements, for example: "*At present, **there is no evidence that mobile phone radiation is unhealthy if the standards are respected***." "*So far, no causal link has been demonstrated between short and long exposure to electromagnetic fields and health. The Department will continue to monitor such studies for you*."
https://omgeving.vlaanderen.be/nl/is-5g-schadelijk-voor-de-gezondheid

[147] Beperk de Straling, a Flemish non-profit organisation, has critically reviewed the Flemish campaign on Wi-Fi in schools and the study on which it is based. As often, it appears that this campaign was prepared by academics linked to industry and gave misleading information to the population. https://beperk.dobs.com/vlaamse-overheid-lanceert-desinformatiecampagne-over-wifi-op-school

[148] Ref: EPRS study - Health impact of 5G - "no adequate studies have been conducted on the non-thermal effects of the higher frequencies".

[149] Health Council of the Netherlands advice: "Health effects of 5G frequencies partially unexplored" and "Actual health risks unknown".

2. Various documents and recommendations advise the defendants to minimise or avoid exposure of certain population groups, such as children and pregnant women;
3. Despite this, the defendants do not take into account non-thermal effects of man-made EMF, mislead the public and constantly contradict one another.[150]

In other words, the defendants are constantly violating the fundamental rights of the plaintiffs, as well as the precautionary principle as enshrined in national and European legislation, even though they have access to ample and widely known warnings from national, European and international institutions and organisations.

The policies and regulations from the defendants thus constitute a manifest and unmistakable tort.

(Whenever reference is made to Belgian law in the parts below, this has been left out. The exception to this is whenever we feel that a reference to the Belgian legal order might be interesting or relevant for wider audiences.)

2. LEGAL GROUNDS AND PRINCIPLES

77.
The **violation of fundamental rights** constitutes an autonomous legal basis for the adjudication of the plaintiffs' claims. It distinguishes itself from civil liability with the classic elements of fault, damage and causation.

78.
The **principles of prevention and precaution** also form autonomous legal grounds for the claims of the plaintiffs. (…)

79.
The **violation of the standard of care** by the defendants also gives rise to a sanction. A victim of a wrongful act has the right to claim reparation in kind instead of monetary damages.

3. INFRINGEMENT OF FUNDAMENTAL RIGHTS

80.
The plaintiffs invoke a number of fundamental rights against the defendants that create subjective rights for the plaintiffs.

These fundamental rights stem from four sources of law:

1. The Belgian Constitution

[150] The new 5G website - a collaboration between the various governments of our country, including defendant parties - is a good example of this.

2. The European Convention on Human Rights
3. the Charter of Fundamental Rights of the European Union (Charter) and primary law of the European Union, and
4. The European Social Charter

These are treated in turn.

3.1 The Belgian Constitution

(…)

3.2 European Convention on Human Rights (ECHR)

3.2.1 Applicability in the Belgian legal order

83.
On 4 November 1950, Belgium signed the ECHR in Rome. On 14 June 1955, the convention was ratified without reservation on the basis of article 68, paragraph 2 of the Belgian Constitution. Since then, most articles of the ECHR have been a source of subjective rights in Belgium.[151] Belgium has also ratified all protocols to the ECHR. Protocol I was ratified on the same date as the ECHR itself. Protocols II to V were ratified on 21 September 1970.

In Belgium, the ECHR creates for the plaintiffs a series of subjective rights on which they can rely in a direct manner in relation to the defendants.

3.2.2 Practical and effective protection

84.
In the well-known *McCann* case[152] the European Court of Human Rights (ECtHR) clarified that the object and purpose of the ECHR requires that its provisions be interpreted and applied in a manner that make the protection of subjective rights practical and effective:

> *146. The Court's approach to the interpretation of Article 2 (art. 2) must be guided by the fact that the object and purpose of the Convention as an instrument for the protection of individual human beings requires that its provisions be interpreted and applied so as to make its safeguards practical and effective (see, inter alia, the Soering v. the United Kingdom judgement of 7 July 1989, Series A no. 161, p. 34, para. 87, and the Loizidou v. Turkey (Preliminary Objections) judgement of 23 March 1995, Series A no. 310, p. 27, para. 72).*

3.2.3 Executive margin of appreciation and judicial control

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[151] The general direct effect and primacy of international treaties in the Belgian legal order was recognised by the Court of Cassation in the well-known *Le Ski* judgement. Cass. 27 May 1971, Arr. Cass. 1971, 959; S.E.W. 1972, 42. The Court of Cassation has long recognised the direct effect of the ECHR in the Belgian legal order. Cass., 26 September 1978, *De Verzekering*, 1978, 247.
[152] ECHR 27 September 1995, *McCann and others v. United Kingdom*, 18984/91.

85.
According to established case law of the ECtHR, serious environmental pollution can endanger the life of citizens, affect the well-being of individuals, prevent them from leading a dignified life and violate the integrity of their home and living environment. Therefore, as the parties have pointed out in the writ of summons and in their initial submissions to the court, protection against serious environmental pollution is covered by at least Articles 2, 3 and 8 of the ECHR.[153]

Articles 2 and 8 of the ECHR impose a positive obligation on the government to set up a regulatory framework that protects the life, welfare and a quality private and family life of its citizens. Article 8 also contains a negative obligation for the government not to unnecessarily interfere in the private lives of citizens.[154] Article 3 of the ECHR prohibits the government from torturing citizens or treating them inhumanely.

86.
With regard to environmental pollution, the ECHR's jurisprudence gives the government a wide discretionary policy margin, but also not an unlimited one. The *Brincat* case[155] is relevant on this point.

In this case, which dealt with Malta's long-standing failure to provide adequate protection measures for a number of port workers coming in contact with asbestos on a daily basis, the Court ruled as follows:

> *(...) It is also common knowledge that the issues surrounding asbestos have been greatly debated amongst stakeholders all over the world, and that given the interests involved, particularly economic and commercial ones, acknowledging its harmful effects has not been easy. (...)*
>
> *106. Thus, as to whether the Maltese Government knew or ought to have known in the early seventies, the Court must rely on other factors, most evident amongst them being objective scientific research, particularly in the light of the domestic context. The Court takes account of the list, submitted by the applicants, which contains references to hundreds of articles or other publications concerning the subject at issue published from 1930 onwards - many of them taken from reputable British medical journals. (...) The Court, further, observes that it has not been submitted that there had been any specific impediment to access the necessary information. (...) Against this background, the Court concludes that for the purposes of the present case, it suffices to consider that the Maltese Government knew or ought to have known of the dangers arising from exposure to asbestos at least as from the early 1970s.*

Based on the above and other considerations, the Court concluded that Malta knew or should have known that asbestos was harmful. The measures it had taken to protect the workers from the harmful effects of asbestos were largely insufficient. The Court therefore concluded that:

> *116. The above considerations lead the Court to conclude that in view of the seriousness of the threat at issue, despite the State's margin of appreciation as to the choice of means, the Government have failed to satisfy their positive obligations, to legislate or take other practical measures, under Articles 2 and 8 in the circumstances of the present case*.

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153 Article 2: ECHR 30 November 2004, *Öneryildiz v. Turkey*, 7893/99, 71. As for Article 8, see, for example: ECHR 9 December 1994, *López Ostra v. Spain*, 16798/90, 51.
154 See, for example: ECHR 8 July 2003, *Hatton and others v. United Kingdom*, 36022/97, 98 and 119.
155 ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11.

87.
Considering the overwhelming scientific evidence, anno 2022, that electromagnetic radiation causes serious biological harm well below the maximum limits applied by the defendants, considering widely available recommendations from organisations such as the Council of Europe, which already recommended in 2011 that the public's exposure to man-made electromagnetic radiation be limited to 0.6V/m, considering the increase, also in 2011, of the danger level of such radiation to "possibly carcinogenic" by the World Health Organisation, anno 2022 electromagnetic radiation is analogous to asbestos at the end of the twentieth century.[156]

The broadly accessible publicised warnings from medical and political organisations of all kinds to drastically reduce the public's exposure to man-made electromagnetic radiation fields, together with rapidly accumulating, overwhelming evidence of ongoing harm that the maximum limits allowed by the defendants are causing to the life and well-being, as well as the private and family life of the plaintiffs, ensure that, as in the Brincat case, despite the margin of appreciation available to them under ECtHR case law, the defendants have manifestly failed to comply with their ECHR obligations. The plaintiffs are therefore convinced that, as in *Brincat,* judicial review has become a necessity.

88.
Despite the interesting content of the Brussels recommendation document as referred to under number 58 of this submission to the court, democratic majorities and participatory consultations with citizens' groups of all kinds cannot justifiably be invoked as against the individual fundamental rights cited in this submission to the court.

Indeed, like Articles 4 and 8 CFR, Articles 2 and 3 ECHR create absolute fundamental rights which the defendants must, in times of peace, respect at all times.
The attempt by Brussels Capital Region to hide behind the modalities of participatory democracy to prevent the enforcement, in law, of absolute subjective fundamental rights accruing to the plaintiffs is thus manifestly inappropriate. It goes against the very essence of a system of *individual,* directly effective absolute fundamental rights applicable in Belgium.

89.
As is evident from the cited case law of the ECtHR, the essence of not only absolute but also relative fundamental rights such as Articles 8 ECHR and 7 HRC limits the policy margin available to the government.[157] If this were not the case, the very existence of these subjective fundamental rights would lack any legal value. Such an interpretation is contrary to Article 13 ECHR - see margin 152 of these decisions - and cannot be accepted.

[156] For more information on the information available to defendants, see, for example, numbers 40 and 73 of these decisions and Annex E.

[157] According to Koen Lenaerts, President of the European Court of Justice, when acting within the framework of the European legal order, both the European institutions and national governments must at all times and fully respect the essence of both the absolute and relative fundamental rights of the Charter of the European Union. Lenaerts, K., *Limits on Limitations: The Essence of Fundamental Rights in the EU*, German Law Journal (2019), 20, pp. 779-793.

Thus, the plaintiffs are not asking the court to violate the separation of powers and take away the defendant's margin of appreciation. Rather, the plaintiffs are asking the court to impose appropriate limits on that policy margin so as to bring it into line with the subjective fundamental rights, both absolute and relative, at the plaintiffs' disposition.

3.2.4 Article 2 ECHR

3.2.4.1 Text of the article

90.
The Plaintiffs rely first of all on Article 2 ECHR, which reads as follows:

> ARTICLE 2
> **Right to life**
>
> 1. Everyone's right to life shall be protected by law. No one shall be deprived of his life intentionally save in the execution of a sentence of a court following his conviction of a crime for which this penalty is provided by law.
> 2. Deprivation of life shall not be regarded as inflicted in contravention of this Article when it results from the use of force which is no more than absolutely necessary:
> (a) in defence of any person from unlawful violence;
> (b) in order to effect a lawful arrest or to prevent the escape of a person lawfully detained;
> (c) in action lawfully taken for the purpose of quelling a riot
> or insurrection.

Only the first paragraph is relevant for the present case.

3.2.4.2 Importance and scope of Article 2

91.
The European Court of Human Rights (ECtHR) considers Article 2 ECHR to be one of the foremost articles of the convention[158] :

> *174. The Court reiterates that Article 2 ranks as one of the most fundamental provisions in the Convention, one which, in peace time, admits of no derogation under Article 15. Together with Article 3, it enshrines one of the basic values of the democratic societies making up the Council of Europe (see, among many other authorities, Andronicou and Constantinou v. Cyprus, 9 October 1997, § 171, Reports of Judgments and Decisions 1997-VI, and Solomou and Others v. Turkey, no. 36832/97, § 63, 24 June 2008).*[159]

The Court gives the article a broad interpretation. The article contains an absolute right which cannot be derogated from, except in the cases mentioned in paragraph 2 of the article itself.

3.2.4.3 Article 2 and hazardous industrial activity

[158] See also as already cited: ECHR 27 September 1995*, McCann and others v. United Kingdom*, 18984/91.
[159] ECHR 24 March 2011, *Giuliani and Gaggio v. Italy*, 23458/02.

92.
The positive obligation on the state to protect the lives of plaintiffs applies *a fortiori* to dangerous industrial activity which has the capacity to endanger their lives:

> *71. In this connection, the Court reiterates that Article 2 does not solely concern deaths resulting from the use of force by agents of the State but also, in the first sentence of its first paragraph, lays down a positive obligation on States to take appropriate steps to safeguard the lives of those within their jurisdiction (see, for example, L.C.B. v. the United Kingdom, cited above, p. 1403, § 36, and Paul and Audrey Edwards v. the United Kingdom, no. 46477/99, § 54, ECHR 2002-II).*
> *The Court considers that this obligation must be construed as applying in the context of any activity, whether public or not, in which the right to life may be at stake, and a fortiori in the case of industrial activities, which by their very nature are dangerous, such as the operation of waste-collection sites ("dangerous activities" - for the relevant European standards, see paragraphs 59-60 above).*[160]

According to the case law of the ECHR, Article 2 ECHR applies to a wide range of dangerous activities causing pollution which may endanger human health. Examples are waste processing (see above), nuclear testing[161] , toxic substances emitted by fertiliser factories[162] or, for example, exposure to asbestos at the workplace[163] . The government is always at fault if it did not, from the start, ensure adequate protection.[164,165]

3.2.4.4 Obligations of the Government

93.
As already pointed out in number 44 of the first submission to the court, Article 2 ECHR imposes a positive obligation on the government to take all measures necessary in whatever situation to protect the right to life of citizens:

> *130. The first sentence of Article 2 § 1 enjoins the State not only to refrain from the intentional and unlawful taking of life, but also to take appropriate steps to safeguard the lives of those within its jurisdiction (see L.C.B. v. the United Kingdom, 9 June 1998, § 36, Reports of Judgments and Decisions 1998-III. The positive obligations under Article 2 must be construed as applying in the context of any activity, whether public or not, in which the right to life may be at stake).* [166]

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[160] ECHR 30 November 2004, *Öneryildiz v. Turkey*, 48939/99.
[161] ECHR 9 June 1998, *L.C.B. v. United Kingdom*, 23413/94.
[162] ECHR 16 February 1998, *Guerra and others v. Italy*, 14967/89.
[163] ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11.
[164] ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11, 80-81.
[165] The ECtHR has already pronounced on the issues at stake. ECHR 3 July 2007, *Gaida v. Germany*, 32015/02 and ECHR 16 January 2006, *Luginbühl v. Switzerland*, 42756/02. These cases were rendered in 2007 and 2006 respectively, and thus long before the cumulative technologies used today were rolled out. At the time these judgments were rendered, the ECHR was not yet aware of the results of hundreds of independent studies that have since unequivocally indicated serious biological harm from in-service wireless technology at exposure levels used by the defendants, nor of the Council of Europe's 2011 recommendation (Exhibit E.9) or the World Health Organisation's raising of the categorisation of mobile telephony to "possibly carcinogenic" in the same year. Therefore, the plaintiffs consider the mentioned decisions to be outdated and not relevant anymore in 2022.
[166] ECHR 17 July 2014, *Center of legal resources on behalf of Valentin Campeanu v. Romania*, 47848/08. In the case of *Tàtar* v. Romania, the Court stated that: "*The existence of a serious and substantial risk to the health and well-being of the claimants placed on the public authorities the positive obligation to take reasonable and*

On the basis of Article 2 ECHR, the state is obliged to preventively establish a legal and administrative framework effectively protecting citizens against inherent risks of life-threatening activities or situations:

> *89. The positive obligation to take all appropriate steps to safeguard life for the purposes of Article 2 (see paragraph 71 above) entails above all a primary duty on the State to put in place a legislative and administrative framework designed to provide effective deterrence against threats to the right to life (see, for example, mutatis mutandis, Osman, cited above, p. 3159, § 115; Paul and Audrey Edwards, cited above, § 54; İlhan v. Turkey [GC], no. 22277/93, § 91, ECHR 2000-VII; Kılıç v. Turkey, no. 22492/93, § 62, ECHR 2000-III; and Mahmut Kaya v. Turkey, no. 22535/93, § 85, ECHR 2000-III).* [167]

94.
Regulations must take into account not only established risks, but also potential risks, and cover all relevant stages of the purported activity:

> *90. This obligation indisputably applies in the particular context of dangerous activities, where, in addition, special emphasis must be placed on regulations geared to the special features of the activity in question, particularly with regard to the level of the potential risk to human lives. They must govern the licensing, setting up, operation, security and supervision of the activity and must make it compulsory for all those concerned to take practical measures to ensure the effective protection of citizens whose lives might be endangered by the inherent risks.* [168] *(own emphasis)*

95.
Because of the fundamental importance of the right to life in a democratic society, obligations arising must be strictly construed:

> *147. It must also be borne in mind that, as a provision (art. 2) which not only safeguards the right to life but sets out the circumstances when the deprivation of life may be justified, Article 2 (art. 2) ranks as one of the most fundamental provisions in the Convention - indeed one which, in peacetime, admits of no derogation under Article 15 (art. 15). Together with Article 3 (art. 15+3) of the Convention, it also enshrines one of the basic values of the democratic societies making up the Council of Europe (see the above-mentioned Soering judgement, p. 34, para. 88). As such, its provisions must be strictly construed*. [169]

96.
For its obligations under Article 2, it is important that the government *knew or should have known* that the activity in question was dangerous and life-threatening. In this respect, the ECHR states the following in the already cited *Brincat* case:

> *105. The Court must also consider whether the Government knew or ought to have known of the dangers arising from exposure to asbestos at the relevant time (from the entry into force of the Convention for Malta in 1967 onwards) (see, in a different context, O'Keeffe v. Ireland [GC] no. 35810/09, 28 January 2014, §§ 152 and 168).*

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adequate measures to protect their right to respect for their private life and home and, more generally, to the enjoyment of a healthy and protected environment". ECHR 27 January 2009, *Tàtar v. Romania*, 67021/01, 107.

[167] ECHR 30 November 2004, *Öneryildiz v. Turkey*, 48939/99.

[168] ECHR 30 November 2004, *Öneryildiz v. Turkey*, 48939/99.

[169] ECHR 27 September 1995*, McCann and others v. United Kingdom*, 18984/91.

97.
This submission to the court has shown that both the Flemish and Brussels authorities have known for a long time, or should have known, of the serious risks to which continuous exposure to electromagnetic fields on their territory would lead (see section 1.6 of Part V. of these decisions). The fact that the defendants are well aware of the biological effects that exposure to their limits can cause is demonstrated, for example, by the fact that several scientific studies cited by the plaintiffs can be found in their own documents.

98.
Even if Flanders and Brussels maintain that they are not or were not aware of the biological harm to which the applicable standards give rise in the case of the Plaintiffs, they should have been aware of it pursuant to the case law of the ECHR. The Plaintiffs again cite the *Brincat* judgement:

> *106. Thus, as to whether the Maltese Government knew or ought to have known in the early seventies, the Court must rely on other factors, most evident amongst them being objective scientific research, particularly in the light of the domestic context. The Court takes account of the list, submitted by the applicants, which contains references to hundreds of articles or other publications concerning the subject at issue published from 1930 onwards - many of them taken from reputable British medical journals. The Court observes that medical studies at the then Royal University of Malta were modelled on, and followed closely upon, the corresponding United Kingdom system, with many graduates in medicine continuing their studies in England and Scotland. Particularly in view of this situation, even accepting the Government's argument - that is, that information was at the time not as readily available as it is today - it is inconceivable that there was no access to any such sources of information, at least, if by no one else, by the highest medical authorities in the country, notably the Chief Government Medical Officer and Superintendent of Public Health (as provided for in the, now repealed, Department of Health (Constitution) Ordinance, Chapter 94 of the Laws of Malta, see paragraph 42 above). In fact, according to Maltese law it was precisely the duty of the Superintendent of Public Health to remain abreast of such developments and advise the Government accordingly. The Court, further, observes that it has not been submitted that there had been any specific impediment to access the necessary information. Furthermore, the Government failed to rebut the applicants' assertion with any signed statement by a medical expert or authority, who could have attested that the medical professionals in the country were, in or around the 1970s, unaware of these worrying medically related findings at the time.*
>
> *Moreover, the Pellicano judgement by the Commercial Court (see paragraph 35 above) is in itself an implicit acknowledgement by a domestic court that in the years preceding Mr Pellicano's death in 1979 the authorities knew or ought to have known of the dangers of working with asbestos and that they had failed to provide adequate health and safety measures in that respect.*
>
> *Against this background, the Court concludes that for the purposes of the present case, it suffices to consider that the Maltese Government knew or ought to have known of the dangers arising from exposure to asbestos at least as from the early 1970s*. [170]

The same reasoning applies, mutatis mutandis, to the responsibility of Flanders and Brussels for the serious biological damage caused by the general limits on electromagnetic radiation imposed by them on their territory. After all, the independent scientific (meta-)studies cited by the defendants in this submission to the court -which together comprise many hundreds of studies- are widely available and well known to both the defendants and their scientists. The defendants are therefore aware of them

[170] ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11.

or should have been aware of them. Their failure to give those studies the weight they should have given them is a clear violation of Article 2 of the ECHR.

3.2.4.5 Health effects of the threatening activity

99.
For Article 2 to be applicable to a situation, the threat to health must be serious, actual and concrete. [171]

The ECtHR has already examined many cases of people who had not died but were suffering from serious health problems. Examples are *G.N. et al v. Italy*[172] , *L.C.B. v. U.K.*[173] , *Hristozov v. Bulgaria*[174] and so on. The Strasbourg Court often refers to this as a 'threat to physical integrity':

> *(...) Examples include cases where the physical integrity of an applicant was threatened by the action of a third party (see Osman v. the United Kingdom, 28 October 1998, §§ 115-122, Reports 1998-VIII) or as a result of a natural catastrophe which left no doubt as to the existence of a threat to the applicants' physical integrity (see Budayeva and Others v. Russia, nos. 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02, § 146, ECHR 2008 (extracts)). More particularly, the Court has repeatedly examined complaints under Article 2 from persons suffering from serious illnesses*. [175]

With regard to an inherently dangerous industrial activity, such as the one presently at stake, the plaintiffs point out once again that the positive obligation incumbent on the public authorities under Article 2 to establish a legislative and administrative framework offering effective protection of life applies not only to an *actual* but even to a ***potential*** life-threatening danger inherent in the (industrial) activity concerned.[176]

100.
As mentioned in this submission to the court, as well as previous ones, a number of the plaintiffs suffer from EHS. In number 16 plaintiffs indicate that in Belgium there is as yet no widely accepted and unified medical protocol for diagnosing EHS. This does not, however, prevent reputable scientists from openly acknowledging its existence.

In addition, all plaintiffs suffer serious biological damage that will be life-threatening in the long term as a result of the defendants' exposure limits. As cited elsewhere in this submission[177], the plaintiffs' exposure to electromagnetic radiation levels as applied by the defendants causes, among other things, DNA damage in the short term and cancers, tumours and many other possible conditions in the long term.

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[171] ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11, 89-90.
[172] ECHR 1 December 2009, *GN and others v. Italy*, 43134/05.
[173] ECHR 9 June 1998, *L.C.B. v. United Kingdom*, 23413/94.
[174] ECHR 13 November 2012, *Hristozov and others v. Bulgaria*, 47039/11 - 358/12.
[175] ECHR 24 July 2014, *Brincat and others v. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11.
[176] ECHR 30 November 2004, *Öneryildiz v. Turkey*, 48939/99, 89-90 as cited above.
[177] See in particular Chapter 1.2 under Part V. of this submission to the court.

3.2.4.6 The defendants manifestly infringe Article 2

101.
The deployment of electromagnetic networks is a dangerous industrial activity within the meaning of Article 2 of the ECHR. Pursuant to that Article, the State has a positive obligation to establish a regulatory framework offering citizens preventive and effective protection against the consequences of this activity.

The electromagnetic fields permitted by the defendants cause serious biological damage to the plaintiffs in both the short and long term. Elsewhere in this submission, and contrary to what the defendants claim, the plaintiffs prove beyond doubt that electromagnetic fields cause and/or can cause biological damage to such an extent that they are or can be life-threatening.

102.
On the basis of all the independent scientific research cited by the plaintiffs in their writ of summons, in the first and in the present submissions to the court, the government is therefore obliged under Article 2 of the ECHR to establish a regulatory framework aimed at preventing not only thermal but also biological effects.

By setting up a legal, scientific and administrative framework that establishes limit values that

1. Only or mainly take into account thermal effects, excluding serious biological effects that already occur far below the applicable standards;
2. Are based on the work of scientific bodies grappling with endemic conflicts of interest, whose output quality is poor and whose submissions are often biased, as well as scientific studies whose independence in terms of funding and implementation cannot be guaranteed; and
3. Who fail to take into account in any serious way hundreds, if not thousands, of widely available and well known independently funded and conducted studies, often by reputable institutions, which unequivocally indicate serious, even life-threatening biological damage;

the defendants manifestly default on their positive obligations under Article 2 of the ECHR vis-à-vis the plaintiffs.

3.2.4.7 Appropriate standards under Article 2 ECHR

103.
Research by the Council of Europe, the World Health Organisation and many reputable independent researchers show that a maximum exposure limit adequately mitigating the risk of potentially life-threatening biological harm to plaintiffs is 0.6V/m. Therefore, the plaintiffs believe that limiting their exposure to electromagnetic fields permitted by the defendants to 0.6V/m is the limit that Article 2 ECHR, like other fundamental rights, imposes as a positive obligation on the State.

Contrary to what the defendants claim, this does not mean that the government retains no margin of appreciation. A *maximum* limit value of 0.6V/m merely limits such margin to what is appropriate in light of the fundamental rights of the plaintiffs. The government still retains a considerable policy

margin: when setting up electronic communication networks, it has the choice between limit values of 0.0001 to 0.6 V/m.

3.2.5 Article 3 ECHR - Article 4 Charter of Fundamental Rights of the European Union (CFR)

104.
Article 3 ECHR reads as follows:

> ARTICLE 3
> Prohibition of torture
>
> No one shall be subjected to torture or to inhuman or degrading treatment or punishment.

Article 4 CFR stipulates:

> Article 4
> Prohibition of torture and inhuman or degrading treatment or punishment
>
> No one shall be subjected to torture or to inhuman or degrading treatment or punishment.

Just like the right to life of article 2 ECHR, the right of the plaintiffs under Article 3 ECHR is absolute.

3.2.5.1 Article 3 ECHR and environmental pollution

105.
The ECtHR examined many complaints that relate Article 3 ECHR to environmental pollution.[178] In *Ward v. United Kingdom,* the Court ruled in this regard that:

> *As regards Article 3 of the Convention, the Court recalls that ill-treatment must attain a minimum level of severity if it is to fall within the scope of Article 3. The assessment of this minimum is relative: it depends on all the circumstances of the case, such as the duration of the treatment, its physical and/or mental effects and, in some cases, the sex, age and state of health of the victim (see, among other authorities, Tekin v. Turkey, judgment of 9 June 1998, Reports of Judgments and Decisions 1998-IV, p. 1517, § 52).* [179]

3.2.5.2 Article 3 in the present proceedings

106.
In light of all the elements brought to light in this submission and its Annexes, the regulatory framework of the defendants may be considered a form of electromagnetic torture and/or inhuman treatment within the meaning of Article 3 ECHR. This applies to all claimants, but in particular to claimants suffering from electromagnetic hypersensitivity.

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[178] See inter alia ECHR 9 December 1994, *López Ostra v. Spain*, 16798/90 ; ECHR 24 July 2014, *Brincat and others V. Malta*, 60908/11 - 62110/11 - 62129/11 - 62312/11 - 62338/11.
[179] ECHR 9 November 2004, *Ward v. United Kingdom,* 31888/03, p. 5.

The misleading, scientifically inappropriate and also contradictory communication - viewed as a whole - from the defendants about the dangers of electromagnetic radiation - as extensively recalled elsewhere in this submission to the court- as well as the systematic brushing under the carpet of studies indicating serious biological harm far below the currently applicable limit values in Flanders and Brussels, prove that the defendants are, or should be, fully aware of the multiple biological harms caused by the current regulatory framework to plaintiffs and, more generally, to humans, plants, animals and nature.

Following the Court's observation in *Brincat* with regard to asbestos, also in the case of man-made electromagnetic fields (EMF) budgetary and economic interests may play a decisive role in the pursuit of a policy that does not take biological effects into account.

All of this leads the plaintiffs to conclude that the defendants, in the service of budgetary and economic interests of all kinds, knowingly subject them to electromagnetic torture or at least treat them inhumanely within the meaning of Article 3 of the ECHR.

This will increase with the additional relaxation and/or increase of the limit values in both the Flemish and Brussels Capital Regions to enable the rollout of 5G.

Judicial intervention is therefore not only necessary, it is urgent.

3.2.5.3 Article 4 CFR

107.
This activates not just Article 3 ECHR but also Article 4 CFR - which, pursuant to Article 52(3) of the Charter, contains at least the same subjective right as Article 3 ECHR - prohibiting the government from subjecting its citizens to inhumane practices and torture in any way. The plaintiffs therefore invoke not only Article 3 ECHR, but also Article 4 CFR.

3.2.6 Article 8 ECHR

108.
Article 8 of the ECHR reads as follows:

ARTICLE 8
Right to respect for private and family life

1. Everyone has the right to respect for his private and family life, his home and his correspondence.
2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

3.2.6.1 The link between Articles 2 and 8 ECHR

109.
As regards protection against environmental pollution, Articles 2 and 8 of the ECHR may overlap in certain circumstances. Therefore, principles developed in the context of Article 8 may also apply to Article 2 and *vice versa*.

On this point the European Court of Human Rights states the following in *Budayeva*:

> "*It has been held that, in the field of dangerous activities, the scope of the positive obligations under Article 2 of the Convention and that of the positive obligations under Article 8 broadly overlap. (see Öneryıldız, cited above, §§ 90 and 160). Consequently, the principles developed by the Court in its case-law on the environment and land-use planning may also be invoked to protect the right to life in cases where privacy and the home are infringed*." [180]

3.2.6.2 Admissibility

110.
In the well-known *López Ostra* case -already mentioned by the plaintiffs in their first submission to the court- the Strasbourg Court ruled that serious environmental pollution can affect the well-being of individuals, and can burden the enjoyment of their living environment to such an extent that it violates their private and family life:

> "*It is self-evident that serious environmental degradation can impair a person's well-being and deprive him of the enjoyment of his home in such a way as to affect his private and family life without, however, seriously endangering his health*"[181]

This applies not just to concrete and physical environmental pollution but also to, for example, noise pollution, odour nuisance and all kinds of other forms of environmental pollution such as electromagnetic radiation.[182]

111.
There is no doubt that electromagnetic radiation as such, and certainly with limit values as applied by the defendants, affects the living environment and the family and private life of my clients. After all, electromagnetic radiation passes freely through walls. If that were not the case, wireless devices would not be able to connect to base stations in the vicinity of the plaintiff's homes.

It is further clear that the regulations of the defendants allow radiation levels that far exceed the maximum limits for avoiding biological effects. The intensity of the electromagnetic field strength allowed by the defendants permeates the residence of the plaintiffs continuously and 24/7. Therefore, because of the nature of the regulations created by the defendants and the levels of radiation they

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[180] ECHR 20 March 2008, *Budayeva and Others v. Russia*, 15339/02, 21166/02, 20058/02, 11673/02 and 15343/02, 133.
[181] ECHR 9 December 1994, *López Ostra v. Spain*, 16798/90, 51.
[182] ECHR 16 January 2006, *Luginbühl v. Switzerland*, 42756/02.

allow, there is a direct and ongoing violation not only of the health but also of the private and family life of the plaintiffs.

The kind of serious environmental damage at issue in this case thus not only endangers the lives of the complainants in the long term, but also has a negative impact on their well-being and quality of life in their daily lives. This is sufficient for the European Court of Human Rights to declare Article 8 applicable.[183]

Article 8 ECHR is therefore applicable to the present case.

3.2.6.3 Violation of Article 8 ECHR

112.
A violation of Article 8 is not dependent on consequences for the health of the claimants, contrary to article 2 ECHR. However, according to the ECtHR, a violation of Article 8 ECHR is evident if the violation also involves serious damage to health, which is the case for all plaintiffs.

It is not necessary that the persons suffering such damage prove concretely that their reduced quality of life is a direct result of the environmental pollution in question. Thus, in *Fadeyeva v. Russia,* the Court assumed that, once environmental pollution exceeds maximum health standards on a long-term basis and on a large scale, this gives rise to a rebuttable presumption of possible damage to health and well-being. This also applies if the person in question cannot conclusively demonstrate that the damage to health suffered is directly caused by the environmental pollution in question.[184]

All plaintiffs experience a set of symptoms that reduce not only their health but also their general well-being in their living environment. These are, without exception, typical symptoms linked in the scientific literature to overexposure to electromagnetic fields.
Plaintiffs suffering from EHS also experience a range of other serious health effects that de facto make normal private and family life difficult or impossible.

3.2.6.4 Obligations of the Government

113.
Under Article 8, the State has a positive obligation[185] to provide a regulatory framework that maintains an appropriate balance between the right of plaintiffs to a quality private and family life and other interests of the community, such as economic and technological development.

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[183] See for example ECHR 9 December 1994, *López Ostra v. Spain*, 16798/90, 50-51 and ECHR 7 April 2009, *Branduse v. Romania*, 6586/03, 67.

[184] ECHR 9 June 2005, *Fadeyeva v. Russia*, 55723/00, 80-88.

[185] For example, in *Tàtar* v. Romania, the Strasbourg Court ruled: "*The existence of a serious and substantial risk to the health and well-being of the claimants placed the State under a positive obligation to take reasonable and appropriate measures to protect their right to respect for their private life and home and, more generally, to the enjoyment of a healthy and protected environment*". ECHR 27 January 2009, *Tàtar v. Romania*, 67021/01, 107.

Although the government has a considerable margin of appreciation on this point, as discussed earlier this margin does not escape judicial review. On several occasions the ECtHR has already examined whether the competent authority has made a manifest error of assessment in the search for an appropriate balance between the interests of the individual and those of the community.[186]

3.2.6.5 Manifest violation of government's margin of appreciation

114.
In this case, the defendants have manifestly failed to strike a proper balance between the interests of the applicants and those of society.

As this submission amply demonstrates, the defendants rely on scientific studies and scientific committees that are not independent of industry in setting maximum exposure limits. The results of independent science finding biological effects are consistently ignored by both the defendants and their scientists. By clinging to the thermal dogma in the face of mounting scientific evidence to the contrary, both defendants and the scientific committees that advise them refuse to take biological effects of electromagnetic fields seriously. As a result, the defendants set far too high limit values that manifestly break the balance with the right to private and family life of the plaintiffs. This imbalance is exacerbated by the new relaxation (Flanders) or planned increase (Brussels) of exposure limits.

115.
Contrary to what Brussels Capital Region writes in its second submission to the court about the government's policy margin, such manifest and gross violation of its margin of appreciation activates the judge's power to protect the essence of the right to private and family life of the plaintiffs and to oblige the defendants to look for a more appropriate regulatory framework. It goes without saying that such a framework must take full account of the frequent and ongoing biological damage that man-made electromagnetic radiation causes, according to numerous independent scientific studies, not only to my clients but also to plants, animals and the environment.

3.2.7 Appropriate standards pursuant to Articles 2, 3 and 8 of the ECHR

116.
According to research by the Council of Europe and many renowned, independent researchers - see elsewhere in this submission- a maximum exposure value adequately limiting the risk of potentially life-threatening biological damage for the plaintiffs is 0.6V/m.

According to the plaintiffs, any limit value higher than this maximum standard is therefore a serious infringement not only of their health and dignity, but also of their daily quality of life.

Thus, the plaintiffs consider that limiting their exposure to 0.6V/m is the upper limit that Articles 2, 3 and 8 ECHR, like other fundamental rights, impose as a positive obligation on the government. Such a limit is the outer rim limiting the policy space available to the defendants in court.

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[186] See, for example: ECHR 3 May 2001, *Maatschap Smits and others v. the Netherlands*, 39032/97, 2001 ; ECHR 13 December 2012, *Flammenbaum et autres v. France*, 3675/04 & 23264/04, 150.

Taking into account their subjective (land) rights, the applicable policy margin of the defendants is therefore, according to the plaintiffs, between 0.0V/m and 0.6V/m.

3.3 The law of the European Union

3.3.1 Link with Union law

117.
The European Union does not have natural, but attributed competences. According to established case law of the European Court of Justice, there must be a link to European law for it to be applicable to a case.

From the very start the creation, management and deployment of electromagnetic fields by the defendants has been amply framed by European law.

At European level, the current regulatory framework consists mainly of Directive (EU) 2018/1972 of 11 December 2018 establishing the European Electronic Communications Code[187] and Commission Implementing Regulation (EU) 2020/1070 of 20 July 2020 on specifying the characteristics of small-area wireless access points pursuant to Article 57 paragraph 2 of Directive (EU) 2018/1972 of the European Parliament and the Council establishing the European Electronic Communications Code.[188]

This regulatory framework replaces an older regulatory framework of 5 directives dating from 2002. In addition to the aforementioned regulatory framework, there is also Recommendation 1999/519/EC.[189]

Although this framework for the deployment and management of electromagnetic fields does not itself set maximum exposure limits, it contains provisions which, as the title of Directive 2018/1972 suggests, regulate and harmonise electronic communication services in the Union.

The regulations of Flanders and Brussels must therefore be considered in the light of a European legislative framework whose provisions it must respect.

European law is therefore applicable to the present dispute.

3.3.2 Primacy of European law

118.

[187] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.321.01.0036.01.ENG
[188] https://eur-lex.europa.eu/legal-content/EN/TXT/?toc=OJ%3AL%3A2020%3A234%3ATOC&uri=uriserv%3AOJ.L_.2020.234.01.0011.01.ENG
[189] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31999H0519

According to established case law of the European Court of Justice since *Costa v. Enel* (6/64)[190], European law as a whole takes precedence over national law. The principle of primacy is also the subject of Declaration 17 by the Contracting Parties to the Lisbon Treaty.

If national legal norms violate directly effective norms of European law, the presiding court must bring its interpretation of those norms in line with European law. If that is not possible, the court must disregard the national legal norms in question. This case law has been confirmed by the European Court of Justice many times in recent decades.

In the well-known "Le Ski" judgement of 27 May 1971[191] , the Belgian Court of Cassation translated the precedence of European law into the Belgian legal order. The judgement confirms the duty of Belgian judges to set aside national rules whenever they conflict with directly applicable international legal standards.

3.3.3 Applicable Union law

3.3.3.1 Directive (EU) 2018/1972

119.
This Directive creates a harmonised regulatory framework for an internal market in electronic communications networks and services.[192] It can only be limited by:

1. the provisions of the Directive itself
2. the restrictions contained in Article 52(1) TFEU and
3. the provisions of the Charter of Fundamental Rights (CFR).[193]

According to Article 52(1) CFR, restrictions on fundamental rights must always "*respect the essence of those rights and freedoms*".[194]

Directive 2018/1972 does not itself set exposure limits for electromagnetic radiation fields, but it does give recommendations to Member States. It also imposes a number of conditions on Member States setting national limit values:

1. Article 4 requires Member States to take into account, among other considerations, '*health aspects of the Union's policies*' when developing strategic planning and coordination of radio spectrum policy.
2. Article 13(1) specifies that "*The general authorisation for the provision of electronic communications networks or services and the rights of use for radio spectrum and rights of use for numbering resources may be subject only to the conditions listed in Annex I.*"
3. The following relevant provisions can be found in Annex I:

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[190] ECJ 15 July 1964, *Costa V. Enel*, C-6/64, ECLI:EU:C:1964:66.
[191] See also footnote xxx of this submission to the court.
[192] Recitals 5 and 323, Article 1.
[193] Recital 5.
[194] See also: LENAERTS, K., *Limits on Limitations: The Essence of Fundamental Rights in the EU*, German Law Journal (2019), 20, pp. 779-793.

ANNEX I

LIST OF CONDITIONS WHICH MAY BE ATTACHED TO GENERAL AUTHORISATIONS, RIGHTS OF USE FOR RADIO SPECTRUM AND RIGHTS OF USE FOR NUMBERING RESOURCES

This Annex provides for the maximum list of conditions which may be attached to general authorisations for electronic communications networks and services, except number-independent interpersonal communications services (Part A), electronic communications networks (Part B), electronic communications services, except number-independent interpersonal communications services (Part C), rights of use for radio spectrum (Part D), and rights of use for numbering resources (Part E)

(...)

B. Specific conditions which may be attached to a general authorisation for the provision of electronic communications networks

3. Measures for the protection of public health against electromagnetic fields caused by electronic communications networks in accordance with Union law, taking utmost account of Recommendation 1999/519/EC.

(...)

D. Conditions which may be attached to rights of use for radio spectrum

3. Technical and operational conditions necessary for the avoidance of harmful interference and for the protection of public health against electromagnetic fields, taking utmost account of Recommendation 1999/519/EC where such conditions are different from those included in the general authorisation.

4. Furthermore, Article 45 entitled "*Management of Radio Spectrum*" contains the following provisions:
    a. *"2. Member States shall promote the harmonisation of use of radio spectrum by electronic communications networks and services across the Union, consistent with the need to ensure effective and efficient use thereof and in pursuit of benefits for the consumer such as competition, economies of scale and interoperability of networks and services. In so doing, they shall act in accordance with Article 4 of this Directive and with Decision No 676/2002/EC, inter alia, by:*
    (h) pursuing consistency and predictability throughout the Union regarding the way the use of radio spectrum is authorised in protecting public health taking into account Recommendation 1999/519/EC."
    b. *4. Without prejudice to the second subparagraph, Member States shall ensure that all types of technology used for the provision of electronic communications networks or services may be used in the radio spectrum declared available for electronic communications services in their National Frequency Allocation Plan in accordance with Union law.*
    Member States may, however, provide for proportionate and non-discriminatory restrictions to the types of radio network or wireless access technology used for electronic communications services where this is necessary to:

(b) protect public health against electromagnetic fields, taking utmost account of Recommendation 1999/519/EC;

5. Recital 110 explains this as follows: "*The need to ensure that citizens are not exposed to electromagnetic fields at a level harmful to public health is imperative. Member States should pursue consistency across the Union to address this issue, having particular regard to the precautionary approach taken in Recommendation 1999/519/EC, in order to work towards ensuring more consistent deployment conditions. Member States should apply the procedure set out in Directive (EU) 2015/1535, where relevant, with a view also to providing transparency to stakeholders and to allow other Member States and the Commission to react.*"
6. Recital 114 further clarifies that: "*Restrictions to the principle of technology neutrality should be appropriate and justified by the need to avoid harmful interference, for example by imposing emission masks and power levels, to ensure the protection of public health by limiting public exposure to electromagnetic fields, to ensure the proper functioning of services through an adequate level of technical quality of service, while not necessarily precluding the possibility of using more than one service in the same radio spectrum band, to ensure proper sharing of radio spectrum, in particular where its use is subject only to general authorisations, to safeguard efficient use of radio spectrum, or to fulfil a general interest objective in accordance with Union law.*"
7. As regards smaller wireless access points, Recital 139 specifies the following: " *Since low power small-area wireless access points, such as femtocells, picocells, metrocells or microcells, can be very small and make use of unobtrusive equipment similar to that of domestic RLAN routers, which do not require any permits beyond those necessary for the use of radio spectrum, and considering the positive impact of such access points on the use of radio spectrum and on the development of wireless communications, any restriction to their deployment should be limited to the greatest extent possible. As a result, in order to facilitate the deployment of small-area wireless access points, and without prejudice to any applicable requirement related to radio spectrum management, Member States should not subject to any individual permits the deployment of such devices on buildings which are not officially protected as part of a designated environment or because of their special architectural or historical merit, except for reasons of public safety. To that end, their characteristics, such as maximum size, weight and emission characteristics, should be specified at Union level in a proportionate way for local deployment and to ensure a high level of protection of public health, as laid down in Recommendation 1999/519/EC."* These provisions are translated into law by articles 57 and 58 of the Directive.
8. As regards the link between Member States' measures and the CFR, Article 100 reads as follows:

"Article 100
Fundamental rights safeguard

1. National measures regarding end-users' access to, or use of, services and applications through electronic communications networks shall respect the Charter of Fundamental Rights of the Union (the 'Charter') and general principles of Union law.
2. Any measure regarding end-users' access to, or use of, services and applications through electronic communications networks liable to limit the exercise of the rights or freedoms recognised by the Charter shall be imposed only if it is provided for by law and respects those rights or freedoms, is proportionate, necessary, and genuinely meets general interest objectives recognised by Union law or the need to protect the rights and freedoms of others

in line with Article 52(1) of the Charter and with general principles of Union law, including the right to an effective remedy and to a fair trial. Accordingly, such measures shall be taken only with due respect for the principle of the presumption of innocence and the right to privacy. A prior, fair and impartial procedure shall be guaranteed, including the right to be heard of the person or persons concerned, subject to the need for appropriate conditions and procedural arrangements in duly substantiated cases of urgency in accordance with the Charter."

9. As regards the environment, the directive contains the following relevant provisions:
    a. Recital (22) stipulates: "*The tasks assigned to competent authorities by this Directive contribute to the fulfilment of broader policies in the areas of culture, employment, the environment, social cohesion and town and country planning.*"
    b. Recital 105 goes on to say that: "*It is necessary to strengthen the powers of the Member States as regards holders of rights of way to ensure the entry or roll-out of a new network in a fair, efficient and environmentally responsible way and independently of any obligation on an undertaking designated as having significant market power to grant access to its electronic communications network. Improving facility sharing can lower the environmental cost of deploying electronic communications infrastructure and serve public health, public security and meet town and country planning objectives. Competent authorities should be empowered to require that the undertakings which have benefitted from rights to install facilities on, over or under public or private property share such facilities or property, including physical co-location, after an appropriate period of public consultation, during which all interested parties should be given the opportunity to state their views, in the specific areas where such general interest reasons impose such sharing. That can be the case for instance where the subsoil is highly congested or where a natural barrier needs to be crossed. Competent authorities should in particular be able to impose the sharing of network elements and associated facilities, such as ducts, conduits, masts, manholes, cabinets, antennae, towers and other supporting constructions, buildings or entries into buildings, and a better coordination of civil works on environmental or other public policy grounds. On the contrary, it should be for national regulatory authorities to define rules for apportioning the costs of the facility or property sharing, to ensure that there is an appropriate reward of risk for the undertakings concerned. In light of the obligations imposed by Directive 2014/61/EU, the competent authorities, in particular, local authorities, should also establish appropriate coordination procedures, in cooperation with national regulatory authorities, with respect to public works and other appropriate public facilities or property which should be able to include procedures that ensure that interested parties have information concerning appropriate public facilities or property and ongoing and planned public works, that they are notified in a timely manner of such works, and that sharing is facilitated to the maximum extent possible*."
    c. Recital (106): "*Where mobile operators are required to share towers or masts for environmental reasons, such mandated sharing could lead to a reduction in the maximum transmitted power levels allowed for each operator for reasons of public health, and this in turn could require operators to install more transmission sites to ensure national coverage. Competent authorities should seek to reconcile the*

environmental and public health considerations in question, taking due account of the precautionary approach set out in Council Recommendation 1999/519/EC."

d. Article 44(1) states as follows:

Article 44
Co-location and sharing of network elements and associated facilities for providers of electronic communications networks

1. Where an operator has exercised the right under national law to install facilities on, over or under public or private property, or has taken advantage of a procedure for the expropriation or use of property, competent authorities may impose co-location and sharing of the network elements and associated facilities installed on that basis, in order to protect the environment, public health, public security or to meet town- and country-planning objectives.

3.3.3.2 Article 168 TFEU and Recommendation 1999/519/EC

120.
Recommendation 1999/519/EC was based on then Article 152 TEC, today Article 168 TFEU. It is therefore a recommendation in the context of public health.

Article 168 TFEU states that:

TITLE XIV
PUBLIC HEALTH

Article 168
(ex Article 152 TEC)

1. A high level of human health protection shall be ensured in the definition and implementation of all Union policies and activities.

Union action, which shall complement national policies, shall be directed towards improving public health, preventing physical and mental illness and diseases, and obviating sources of danger to physical and mental health. Such action shall cover the fight against the major health scourges, by promoting research into their causes, their transmission and their prevention, as well as health information and education, and monitoring, early warning of and combating serious cross-border threats to health.

121.
Based on Article 152 TEC, Recommendation 1999/519/EC copies ICNIRP exposure limits as well as the reasoning behind them. Only heating and not biological effects are taken into account.

Recommendation 1999/519/EC thus enshrines the thermal dogma in EU law. It dates back to 1999 and focuses only on the thermal effects of short-term exposure of 6 minutes.

That is plainly outdated and does not take into account incremental scientific understanding building up over the past decades.

3.3.3 Charter of Fundamental Rights (CFR)

122.
Article 51(1) of the Charter contains the following provision:

Article 51
Scope

1. The provisions of this Charter are addressed to the institutions and bodies of the Union with due regard for the principle of subsidiarity and to the Member States only when they are implementing Union law. They shall therefore respect the rights, observe the principles and promote the application thereof in accordance with their respective powers.

Pursuant to this Article, as well as established case-law of the Court of Justice[195] , both Union institutions and the Member States when implementing the provisions of Directive (EU) 2018/1972 must at all times comply with the CFR. [196]

123.
As regards the content of the rights in the Charter of Fundamental Rights, the Charter contains, in particular, the following relevant provisions:

Article 52
Scope of guaranteed rights

1. Any limitation on the exercise of the rights and freedoms recognised by this Charter must be provided for by law and respect the essence of those rights and freedoms. Subject to the principle of proportionality, limitations may be made only if they are necessary and genuinely meet objectives of general interest recognised by the Union or the need to protect the rights and freedoms of others.
2. Rights recognised by this Charter which are based on the Community Treaties or the Treaty on European Union shall be exercised under the conditions and within the limits defined by those Treaties.
3. In so far as this Charter contains rights which correspond to rights guaranteed by the Convention for the Protection of Human Rights and Fundamental Freedoms, the meaning and scope of those rights shall be the same as those laid down by the said Convention. This provision shall not prevent Union law providing more extensive protection.

Article 53
Level of protection

Nothing in this Charter shall be interpreted as restricting or adversely affecting human rights and

[195] See, for example: CJEU 15 May 1986, *Johnston*, ECLI:EU:C:1986:206, 18 or CJEU 26 February 2013, *Akerberg Fransson*, C-617/10, ECLI:EU:C:2013:105, 21-22.
[196] Lenaerts, K. and Van Nuffel, P., *European Law*, Intersentia, 2018, margin number 724.

fundamental freedoms as recognised, in their respective fields of application, by Union law and international law and by international agreements to which the Union, the Community or all the Member States are party, including the European Convention for the Protection of Human Rights and Fundamental Freedoms, and by the Member States' constitutions.

124.
In the present case, the plaintiffs rely, in particular, on the following Charter rights:

Article 2
Right to life

1. Everyone has the right to life.

Article 3
Right to the integrity of the person

1. Everyone has the right to respect for his or her physical and mental integrity.
2. In the fields of medicine and biology, the following must be respected in particular:
- *the free and informed consent of the person concerned, according to the procedures laid down by law,*

Article 4
Prohibition of torture and inhuman or degrading treatment or punishment

No one shall be subjected to torture or to inhuman or degrading treatment or punishment.

Article 6
Right to liberty and security

Everyone has the right to liberty and security of person.

Article 7
Respect for private and family life

Everyone has the right to respect for his or her private and family life, home and communications.

3.3.4 Relevant obligations of the Member States and the European institutions

125.
Since their policies are framed by European law, exposure limits set by Member States must at all times respect the CFR, even if Member States are not bound by the Union's 1999 Recommendation. The European institutions must also always respect the CFR.

On the basis of the above Union law, both Member States and Union institutions must ensure that the general public is not exposed to electromagnetic radiation fields which are harmful to health.

According to Directive 2018/1972, Recommendation 1999/519/EC, which reflects the views of the European institutions to this day, still sets the appropriate standard.

3.3.5 Charter of Fundamental Rights: Proper implementation of the legal protection granted [197]

126.
The Plaintiffs rely in particular on Articles 2, 3, 4, 6 and 7 of the Charter.

Articles 2, 3 and 4 CFR are absolute fundamental rights.[198] Articles 6 and 7 are relative fundamental rights.

Under Article 52(1), the relative fundamental rights contained in the Charter may be restricted, but such restrictions must always respect the essence of those rights.[199]

As regards the content and scope of fundamental rights in the Charter, Article 52(3) provides that they shall be the same as corresponding fundamental rights in the ECHR. The Article further provides that the Union may offer greater protection than the ECHR.

3.3.3.5.1 General

127.
In the light of all the elements cited in this and previous submissions to the court, the concluding parties consider that the CFR, like the ECHR, must be read to require both the Union and its Member States, when deploying a policy for electronic communication services or any other relevant policy, to take full account not only of heating effects but also of the biological activity of man-made electromagnetic fields.

3.3.3.5.2 Articles 2, 4 and 7

128.
Following Article 52(3), what has been said above about Articles 2, 3 and 8 ECHR is also the content of Articles 2, 4 and 7 HCHR. In other words, when designing and implementing European and national/regional policies for electronic communications networks, both the Union and its Member States must take into account not only the relevant fundamental rights of the Charter, but the content and scope of those fundamental rights, in so far as they correspond to corresponding rights of the ECHR, is also determined by the ECHR.

According to established case law of the ECtHR, Articles 2 and 3 of the ECHR contain absolute fundamental rights, so this applies mutatis mutandis to Articles 2 and 4 of the CFR. Neither the

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[197] In broadly the same sense as for plaintiffs suffering from EHS: EESC, 2015, *Opinion of the Section for Transport, Energy, Infrastructure and the Information Society on Electromagnetic Hypersensitivity*, TEN/559, paragraphs 1.17 and 1.33. The paragraphs quoted from this Opinion refer only to relative fundamental rights in the Charter, whereas the applicants also invoke absolute fundamental rights. Annexes G.4.3.a and G.4.3.b

[198] ECJ 12 June 2003, C-112/00, *Schmidberger v. Austria*, ECLI:EU:C:2003:333, para. 80.

[199] Lenaerts, K., *Limits on Limitations: The Essence of Fundamental Rights in the EU*, German Law Journal (2019), 20, pp. 779-793.

European nor the national/regional legislative or executive powers may detract from them in any way. The relevant case law of the Strasbourg Court is binding on both the European and the Flemish and Brussels governments.

According to established case law of the ECtHR, Article 8 ECHR is not an absolute but a relative fundamental right. It can therefore be restricted under certain conditions. This applies mutatis mutandis to Article 7 CFR, adding that Article 52 (1) also applies to the latter: restrictions on the right to private, family and family life must always respect the essence of that right.

Based on the interpretation of Articles 2, 3 and 8 of the ECHR by the plaintiffs, and the correspondence of those articles with Articles 2, 4 and 7 of the CFR, the European, Flemish and Brussels legislators violate Articles 2, 4 and (the essential content of) 7 CFR.

3.3.3.5.3 Article 3 CFR

129.
Article 3 CFR contains provisions that have no corresponding provision in the ECHR.

For the plaintiffs, it is obvious that Article 3 CFR applies to the present case.

Applied to the present case, a correct reading of paragraphs 1 and 2 of Article 3 in the light of the totality of the elements cited in this submission to the court, would require that the European Union and the Member States, in so far as they implement European law, not only protect the plaintiffs from the effects of tissue heating, but also establish a policy to protect their biological and physical integrity from biological harm.

3.3.6 Articles 168 and 191 TFEU

3.3.6.1 Precautionary principle (Article 191 TFEU)

130.
Finally, when implementing Union law, Union institutions and Member States must respect the precautionary principle laid down in Article 191 TFEU. That article reads as follows:

TITLE XX
ENVIRONMENT

Article 191
(former Article 174 of the EC Treaty)

> *2. Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that environmental damage should as a priority be rectified at source and that the polluter should pay.*

According to my clients, an interpretation of European law taking full account of not just thermal but also biological effects is inherent in the obligations that Articles 168 (safeguarding public health) and 191 (precautionary principle) TFEU impose on both the European Union institutions and the Member States.

Article 191 TFEU does not specify the scope of the above principle, but as interpreted by the case-law of the Court of Justice, it implies that when there is uncertainty as to the existence and extent of risks to human health, protective measures are to be taken without having to wait until the reality and seriousness of those risks have been fully demonstrated.[200] Although the Court of Justice has already ruled that the assessment of risk cannot be based on purely theoretical considerations, it has added that, where it is impossible to determine with certainty the existence or extent of the alleged risk because the results of studies are insufficient, inconclusive or imprecise, but where actual damage to human health remains probable in the event that the risk materialises, the precautionary principle justifies the adoption of restrictive measures.[201]

3.3.7 Conclusions of the plaintiffs

131.
In the opinion of the applicants, both the European institutions and the defendants are in breach of the relevant provisions of the Charter and the TFEU.

The actual content and scope of applicable EU law, including the scope and content of the rights granted to the plaintiffs by means of Articles 2, 3, 4, 6 and 7 CFR, must be viewed solely in the light of independently funded scientific research carried out by independent researchers with no links to industry.

In view of all the elements mentioned in this and previous submissions to the court, a correct reading of articles 2, 3, 4, 6 and 7 of the Charter, as well as articles 168 and 191 TFEU as applied to the issue of electronic communication networks, requires that European, Brussels and Flemish regulators take into account not just thermal but also biological effects in proposing or setting maximum limits.

The plaintiffs consider that a correct reading of the ECHR, the CFR, and primary EU law imposes a maximum exposure value of 0.6 V/m on the Member States. The various provisions of the Directive referring to the Charter and to the protection of public health should, according to the applicants, be interpreted in this sense.

This submission shows that neither the European legislator, nor Flanders or Brussels take the biological effects that man-made electromagnetic fields have on the plaintiffs, but also on plants, animals and the environment seriously when setting or proposing exposure limits for man-made electromagnetic fields.

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200 ECJ, 9 September 2003, *MonsantoAgricoltura Italia and Others*, C-236/01, paragraph 111; 26 May 2005, *Codacons and Federconsumatori*, C-132/03, paragraph 61; 12 January 2006, *AgrarproduktionStaebelow*, C-504/04, paragraph 39; 10 April 2014, *Acino AG*, C-269/13, paragraph 57.

201 ECJ, 23 September 2003, *Commission v Denmark*, C-192/01, paragraphs 49 and 52; 28 January 2010, *Commission v France*, C-333/08, paragraph 93; 10 April 2014, *Acino AG*, C-269/13, paragraph 57.

As the plaintiffs consider that such a policy violates (the essence of) articles 2, 3, 4, 6 and 7 of the Charter and Articles 168 and 191 TFEU, they consider that:

1. Recommendation 1999/591/EC is unlawful and therefore not a legally valid basis for the applicable policies of Flanders and Brussels Capital Region;
2. The provisions of Directive 2018/1972 should be interpreted as requiring Member States to establish limit values that take full account of the biological damage that man-made electromagnetic fields can cause and;
3. The limit values in force in Flanders and Brussels today are contrary to European law as thus understood.

3.3.8 Function of national courts

132.
Article 19 TEU states:

Article 19

1. The Court of Justice of the European Union shall include the Court of Justice, the General Court and specialised courts. It shall ensure that in the interpretation and application of the Treaties the law is observed.

Member States shall provide remedies sufficient to ensure effective legal protection in the fields covered by Union law.

3. The Court of Justice of the European Union shall, in accordance with the Treaties:

(b) give preliminary rulings, at the request of courts or tribunals of the Member States, on the interpretation of Union law or the validity of acts adopted by the institutions;

Article 267 TFEU states:

Article 267
(ex-Article 234 TEC)

The Court of Justice of the European Union shall have jurisdiction to give preliminary rulings concerning:

(a) the interpretation of the Treaties;
(b) the validity and interpretation of acts of the institutions, bodies, offices or agencies of the Union;

Where such a question is raised before any court or tribunal of a Member State, that court or tribunal may, if it considers that a decision on the question is necessary to enable it to give judgement, request the Court to give a ruling thereon.

133.

According to the second subparagraph of Article 19(1) TEU, Member States shall provide remedies sufficient to ensure effective legal protection in the fields covered by Union law.

According to established case-law of the European Court of Justice, the national judge is an integral part of the judicial system of the European Union.

If any aspect of the European law the national judge is called to apply is unclear, the national court may -and in some cases must- refer the question to the Luxembourg Court. If a court has doubts about the validity of a provision of secondary European Union law, it must refer the question to the Court for.[202] A reference for a preliminary ruling may be made by any court or tribunal which is called upon to give a ruling in proceedings leading to a judicial decision.[203]

Since the *Simmenthal* judgement[204], all national courts are required to apply Community law in full by protecting the rights it confers on individuals, if need be by disregarding any contrary provision of national law, whether earlier or later than the infringed Union act.[205] In the parlance of the European Court of Justice, as decentralised parts of the European judiciary, national courts ensure the 'full effectiveness' of European Union law.[206]

3.3.9 Prejudicial questions

134.
According to the above-mentioned state of European law, Your Excellency cannot independently establish that Recommendation 1999/519 (EC) is unlawful. The applicants therefore request the European Court of Justice to give a preliminary ruling on the following questions:

1. *Should Articles 2, 3, 4, 6 and 7 of the Charter of Fundamental Rights and Articles 168 and 191 TFEU be read as obliging the Union and its Member States, when drawing up and defining exposure limits for man-made electromagnetic radiation, to take full account not only of the possible heating effects, but also of biological effects caused by such radiation fields?*
2. *If so, does Recommendation 1999/591/EC infringe Articles 2, 3, 4, 6 or 7 CFR, as well as Articles 168 and 194 TFEU, in so far as it recommends maximum limits for electromagnetic radiation to Member States that take into account only heating effects and not the many biological effects attested to by independent scientific research?*
3. *If so, should the relevant provisions of Directive 2018/1972 be read as obliging Member States, when devising a preventive regulatory framework which provides adequate protection against the harmful effects of man-made electromagnetic radiation, to take full account of the biological effects which such radiation has on humans, plants and animals?*

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202 ECJ 22 October 1987, *Foto-Frost*, 314/85, 12-20 and ECJ 10 January 2006, *IATA and ELFAA*, C-344/04, 27-32.
203 Lenaerts, K. and Van Nuffel, P., *European Law*, Intersentia, 2018, 642.
204 ECJ 9 March 1978, *Simmenthal*, 106/77, ECLI:EU:C:1978:49.
205 ECJ 9 March 1978, Simmenthal, 106/77, ECLI:EU:C:1978:49, 21.
206 ECJ 9 March 1978, *Simmenthal*, 106/177, ECLI:EU:C:1978:49 and ECJ 19 June 1990, *Factortame and Others*, C-213/89, ECLI:EU:C:1990:257.

In any case, in the event of conflict between the Flemish and Brussels standards and European law, it is the duty of Your Excellency to declare these standards inapplicable, as required by established case law of the European Court of Justice.

3.4 The Revised European Social Charter

135.
In addition to all of the above, the plaintiffs also rely on the following provision of the Revised European Social Charter:

Article 11 – The right to protection of health

With a view to ensuring the effective exercise of the right to protection of health, the Parties undertake, either directly or in cooperation with public or private organisations, to take appropriate measures designed inter alia:

1. to remove as far as possible the causes of ill-health;
2. to provide advisory and educational facilities for the promotion of health and the encouragement of individual responsibility in matters of health;
3. to prevent as far as possible epidemic, endemic and other diseases, as well as accidents.

4. THE DEFENDANTS' NEGLIGENCE CONSTITUTES A TORT

(...)

VI. SUBORDINATE: VIOLATION OF ARTICLE 13 EHR

152.
If it were to be held that it is not possible under Belgian law to order the defendants to reduce the exposure limits, the plaintiffs would have to conclude that they have no effective remedy to counter the violation of their rights under Articles 2, 3 and 8 ECHR.

This constitutes a breach of Article 13 ECHR, which also has direct effect in the Belgian legal order. The only way to put an end to this violation is to impose on the defendants an order to adjust their radiation standards.

FOR THESE REASONS

PLEASE INFORM THE COURT

Subject to all rights and without prejudice to any acknowledgements.

(…)

The following questions to be referred to the European Court of Justice:

1. *Should Articles 2, 3, 4, 6 and 7 of the Charter of Fundamental Rights and Articles 168 and 191 TFEU be read as obliging the Union and its Member States, when drawing up and defining radiation standards, to take full account not only of the possible warming effects of man-made electromagnetic radiation, but also of biological effects of all kinds caused by these radiation fields?*
2. *If so, does Recommendation 1999/591/EC infringe Articles 2, 3, 4, 6 or 7 CFR, as well as Articles 168 and 191 TFEU, to the extent that it recommends maximum limits for electromagnetic radiation to Member States that take into account only warming effects and not the many biological effects referred to by independent scientific research?*
3. *If so, should the relevant provisions of Directive 2018/1972 be read as obliging Member States, when devising a preventive regulatory framework which provides adequate protection against the harmful effects of man-made electromagnetic radiation, to take full account of the biological effects which such radiation has on humans, plants and animals?*

Declare that the Decision of the Flemish Government of 19 November 2010 amending the Decision of the Flemish Government of 1 June 1995 laying down general and sectoral provisions on environmental health concerning the standardisation of fixed and temporarily installed transmitter antennae for electromagnetic waves between 10 MHz and 10 GHz (Official Gazette 13 January 2011) is unlawful and must be disregarded.

Further declare that the Decision of the Flemish Government of 10 June 2022 amending the Decision of the Flemish Government of 1 June 1995 laying down general and sectoral provisions on environmental health and the Decision of the Flemish Government of 12 December 2008 implementing Title XVI of the Decree of 5 April 1995 laying down general provisions on environmental policy, with regard to permanently and temporarily installed transmitter antennae for electromagnetic waves between 100 kHz and 300 GHz (Official Gazette 25 July 2022) is unlawful and must be disregarded.

(…)

Annex: Inventory of convincing documents

LIST OF ANNEXES

A. EFFECTS OF NON-IONISING RADIATION

A.1.a Prof Olle Johansson Letter to UK parliament

A.1.b Prof Olle Johansson Letter to UK parliament ENG - NED

B. ICNIRP

B.1.a - European Parliament ICNIRP Report-FINAL-JUNE-2020 - ENG FULL

B.1.b - European Parliament ICNIRP Report-FINAL-JUNE-2020 - ENG+NED

B.2.a - EMF Alliance 2015 - Conflicts of Interest ICNIRP - ENG FULL

B.2.b - EMF-alliance 2015 - Conflicts of Interest ICNIRP - ENG+NED

B.3.a - Hardell-Carlberg 2020 - Conflicts of interest - ENG FULL

B.3.b - Hardell-Carlberg 2020 - Conflicts of interest - ENG+NED

B.4.a - Dr Magda Havas 2011 - Conflicts of Interest - ENG FULL

B.4.c - Dr Magda Havas 2011 - Conflicts of Interest - ENG+NED FULL

B.5.a - Investigate Europe 2019 - The 5G experiment - ENG FULL

B.5.b - Investigate Europe 2019 - The 5G experiment - ENG+NED FULL

B.6.a - Washington Spectator 2020 - Wireless Hazards - ENG FULL

B.6.b - Washington Spectator 2020 - Wireless Hazards - ENG+NED FULL

B.7.a - Moskowitz 2020 - ICNIRP conflicts of interest - ENG

B.7.b - Moskowitz 2020 - ICNIRP conflicts of interest - ENG+NED

B.8.a - WHO RF and health - a hard nut to crack - ENG

B.8.b - WHO RF and health - a hard nut to crack - ENG+NED

B.9.a - Pockett - Conflicts of Interest in Official Reports - ENG FULL

B.9.b - Pockett - Conflicts of Interest in Official Reports - ENG+NED

B.10.a - Starkey - Inaccurate official assessment - ENG FULL

B.10.b - Starkey - Inaccurate official assessment - ENG+NED

B.11.a - 2017 Letter to WHO from Russian NC on ICNIRP

B.11.b - 2017 Letter to WHO from Russian NC ICNIRP -ENG-NED

B.12.a - 2022 Nordhagen & Flydal - Self-referencing authorships behind the ICNIRP 2020 guidelines

B.12.b - 2022 Nordhagen & Flydal - Self-referencing - translation submission 4P.docx

B.13.a - 2020 Hardell - Aspects on ICNIRP members - ENG

B.13.b - 2020 Hardell - Aspects on ICNIRP members -ENG-NED

B.14 - ICNIRP Guidelines 1998

B.15 - ICNIRP Guidelines 2020

B.16 - ICNIRP Guidelines 2020 - Differences with 1998

B.17.a - 2015 Harvard Study - How the FCC is dominated by the industry

B.17.b - 2015 Harvard Study - How the FCC is dominated by the industry - ENG-NED

C. ADVISORY COUNCILS AND COMMITTEES ON WHICH THE AUTHORITIES RELY

C.1 - Screening of experts Flemish Region

C.1.1 - FACT CHECK_ how dangerous is 5G for our health?

C.1.2 - Dossier mobile phone masts and health Article Humo 11 April 2006

C.1.3 - Verschaeve_leader_of_Belgacom_study
C.2 - Vetting experts Brussels-Capital Region
C.3 - High Health Council Federal
C.3.1.a - 2009 Belgium - Dirk Adang - Radiation in rats ENG
C.3.1.b - 2009 Belgium - Dirk Adang - Radiation in rats ENG - NED

D. ANALYSES OF THE OPINIONS

D.1 - Flanders - Final report Dept Environment - studies 2021
D.2.1.a - Brussels - Committee report 2019-2020
D.2.1.b - Brussels - Committee report 2018-2019
D.2.1.c - Brussels - Committee report 2017-2018
D.2.2 - Brussels 2021 - 43 recommendations regarding 5G rollout
D.3.a - 2020 Health Council of the Netherlands - Background document-advice-5G-and-health
D.3.b - 2020 Health Council of the Netherlands -Summary-5G-and-Health
D.3.c - 2020 Health Council of the Netherlands Advice 5G-and-Health
D.4.a - 2018 Melnick - Env Research Commentary on the NTP Study
D.4.b - 2018 Melnick - Env Research Commentary on the ENG-NED NTP Study

E. EXISTING RECOMMENDATIONS BY GOVERNMENTS AND AGENCIES

E.1 - Overview - What do governments and advisory bodies say?
E.2 - 2014 Opinion HOG 8927-4G
E.3 - 2019 Opinion HOG 9404
E.4.a - 2012 Brochure for schools - dealing_responsiblywith_WiFi_and_gsm
E.4.b - 2010-2014 BE GSM and health brochure
E.5 - 2019-2020 Belgium - Proposed resolution Senate 7-88 recognition EHS
E.6 - 2021 Senate EHS accreditation - text adopted by the committee
E.7 - 2021 Senate EHS - Hearings
E.8.a - 2011 Resolution WHO IARC - Classification of EM radiation
E.8.b - 2011 Resolution WHO IARC - Classification of EM radiation ENG - NED
E.9.a - 2011 Council of Europe resolution
E.9.b - 2011 Resolution Council of Europe - ENG - NED
E.10.a - 2013 EEA Report - Late lessons from early warnings II
E.10.b - 2013 EEA Report - Late lessons from early warnings II - ENG - NED
E.11.a - 2020 E Parliament Briefing - Effects of 5G on human health
E.11.b - 2020 E Parliament Briefing - Effects of 5G on human health - ENG - NED
E.12.a - 2021 EPRS Study 690012 - Health impact of 5G
E.12.b - 2021 EPRS Study 690012 - Health impact of 5G -ENG-NED
E.13.a - Phone Gate Shandel-Phonegate Alert
E.13.b - Phone Gate Schandel-Phonegate Alert ENG-NL
E.13.c - Phone Gate Trader - Phone Gate Alert Pamphlet

F. RELAXATION OF STANDARDS

F.1 - Flanders - Preliminary design - Calculations
F.2 - Brussels - Ordinance - Calculations
F.3.a - Flanders 2021 - Preliminary draft adaptation standards Vlarem

F.3.b - Flanders 2022 - Decision to adapt standards Vlarem

F.4.a - Brussels - preliminary draft decree

F.4.b - Brussels - explanatory memorandum to the ordinance

G. RELEVANT STUDIES AND DOCUMENTS

G.1 - Annex G - Index

Risks and damage to humans

G.2.1.a EU REFLEX Study Final-Report 2004 -ENG FULL

G.2.1.b EU REFLEX Study 2004 - ENG-NED

G.2.2.a CERENAT Study 2004-2006 - Mobile phone and brain tumours - ENG

G.2.2.b CERENAT Study 2004-2006 - ENG-NED

G.2.3.a RAMAZZINI Institute Article - EM radiation Safety 2018 - ENG

G.2.3.b RAMAZZINI study 2018 - ENG-NED

G.2.3.c Investigate Europe 2020 - Ramazzini Inst - 5G experiment - ENG

G.2.3.d Investigate Europe 2020 - Ramazzini Inst - 5G experiment - ENG+NED

G.2.3.e SCIENCEDIRECT study 2018 - Ramazzini Institute - ENG

G.2.3.f SCIENCEDIRECT study 2018 - Ramazzini Institute - ENG+NED

G.2.4.a Anghileri_carcinogenesis study - FULL

G.2.4.b Anghileri et al ENG-NED

G.2.5 BioInitiative Report - Reported Biological effects Overview chart

G.2.5.a BioInitiative-2007

G.2.5.b BioInitiative Report 2007 Sec 1 - Summary Conclusion - ENG

G.2.5.c BioInitiative Report 2007 Sec 1 - Conj besl - ENG-NED

G.2.6.a BioInitiative Report 2012 - Full version -1557pages - ENG

G.2.6.b BioInitiative Report 2012 - Submission Sec 1 Table 1 - ENG

G.2.6.c BioInitiative Report 2012 - Concl Sec 1 Table 1 - ENG-NED

G.2.7.a Birks Study 2017 - ENG

G.2.7.b Birks Study 2017 - ENG+NED

G.2.8.a NTP Study 2018 - ENG

G.2.8.b NTP Study 2018 - ENG+NED

G.2.8.c Original 2020 updated NTP Study Report - ENG

G.2.9.a Meta Study Dr Martin Pall 2019 - ENG FULL

G.2.9.b Meta Study Dr Martin Pall 2019 - ENG+NED

G.2.10.a Martin Pall - Wifi is an important threat - ENG

G.2.10.b Martin Pall - Wifi is an important threat - ENG+NED

G.2.11.a Panagopoulus Study 2019 - DNA damage - ENG

G.2.11.b Panagopoulus Study 2019 - DNA damage - ENG+NED

G.2.12.a Epidemiologic Study - Austria 2006 - ENG

G.2.12.b Epidemiological study - Austria 2006 - ENG-NED

G.2.12.c Original article study Hutter 2006

G.2.13.a Epidemiological Study - Bortkiewicz 2004

G.2.13.b Epidemiologic Study - Bortkiewicz 2004 -ENG-NED.pdf

G.2.13.c Original Article Epidemiological Study - Bortkiewicz 2004 - IJOMEH2.2014_Szyjkowska

G.2.14.a Epidemiologic Study - Wolf 2004
G.2.14.b Epidemiologic Study - Wolf 2004 - ENG-NED.pdf
G.2.15.a Epidemiologic Study - Eger 2004
G.2.15.b Epidemiologic Study - Eger 2004- GER-NED.pdf
G.2.16.a Epidemiological Study - Navarro 2004
G.2.16.b Epidemiologic Study - Navarro 2004 - ENG-NED.pdf
G.2.17.a Epidemiological Study - Hutter 2006
G.2.17.b Epidemiologic Study - Hutter 2006 - ENG-NED.pdf
G.2.18.a Epidemiologic Study - Santini 2001
G.2.18.b Epidemiologic Study - Santini 2001 - ENG-NED.pdf
G.2.19.a Epidemiological Study - Germany 2004
G.2.19.b Epidemiologic Study - Germany 2004 - GER-NED.pdf
G.2.20.a Epidemiological Study - Berenis 2021 - ENG
G.2.20.b Epidemiological study - BERENIS 2021 - ENG-NED
G.2.21.a Epidemiological Study - Shinjyo 2014 - ENG
G.2.21.b Epidemiological study - Shinjyo 2014 - ENG-NED
G.2.22.a 2022 - Hessinger - Swiss analysis of 5G statements
G.2.22.b 2022 - Hessinger - Swiss analysis of 5G statements - ENG-NED
G.2.23.a Yakymenko Study 2015 - ENG FULL
G.2.23.b Yakymenko Study 2015 - ENG-NED

Risks and damage to the environment, plants and animals

G.3.1.a 2015 Mt-Nardi-Wildlife - ENG
G.3.1.b 2015 Mt-Nardi-Wildlife - ENG-NED
G.3.2.a 2018 Ulrich Warnke 2018 - GER
G.3.2.b 2018 Ulrich Warnke - GER-NED
G.3.3.a 2010 Daniel Favre - ENG FULL
G.3.3.b 2010 Daniel Favre - ENG-NED
G.3.4.a Balmori Study 2015 - ENG FULL
G.3.4.b Balmori Study 2015 - ENG-NED
G.3.5.a Shende Study 2015 - ENG FULL
G.3.5.b Shende Study 2015 - ENG-NED
G.3.6.a Waldman Study 2016 - ENG FULL
G.3.6.b Waldman Study 2016 - ENG-NED
G.3.7.a MetaStudy Halgamuge 2017 - ENG FULL
G.3.7.b MetaStudy Halgamuge 2017 - ENG-NED
G.3.8.a Thielens Study 2018 - ENG FULL
G.3.8.b Thielens Study 2018 - ENG-NED
G.3.9.a 2020 Thill - study - Impact on insects -ENG
G.3.9.b 2020 Thill - study - Impact on insects -ENG-NED
G.3.10.a 2021 Balmori - EMF as driver in Insects Decline-ENG
G.3.10.b 2021 Balmori - EMF as driver in Insects Decline-ENG-NED

Studies related to EHS

G.4.1 EHS - 2011 Review - S. Genius - EHS Fact or Fiction

G.4.2.a EHS - 2020 Preliminary Clinical Guidelines for EHS
G.4.2.b EHS - 2020 Preliminary Clinical Guidelines for EHS -ENG-NED
G.4.3.a - European Economic and Social Committee 2015 - TEN559 on EHS
G.4.3.b - European Economic and Social Committee 2015 - TEN559 on EHS - ENG-NL

Additional relevant studies

G.5.1 - 2018 Intern appeal - stop 5G on earth and in space
G.5.2 - 2021 Susan Pocket - Health effects of microwave pollution
G.5.3.a 2022 Balmori - Evidence-health-risk-by-RF-on-humans-ENG
G.5.3.b 2022 Balmori - Evidence-health-risk-by-RF-on-humans-ENG-NED
G.5.4.a 2022 Lai & Levitt
- Intensity-exposure-duration-and-modulation-on-biological-effects - ENG
G.5.4.b 2022 Lai & Levitt
- Intensity-exposure-duration-and-modulation-on-biological-effects - ENG-NED
G.5.5.a 2022 Hardell 5G Mikrovagssyndromet - Swedish
G.5.b 2022 Hardell 5G Microwave Syndrome - translation English
G.5.6.a William Frank 2021 - Precautionary Principle - ENG
G.5.6.b William Frank 2021 - Precautionary Principle - ENG-NED
G.5.7 - Henry Lai's Research Summaries - BioInitiative Report 2012
G.5.7.a - RFR12-14-researchSummary
G.5.7.b - Genetic-Effects-of-Non-Ionizing-EMF-Abstracts-2022
G.5.7.c - Genetics-Effects-Studies-Percent-Comparison-Graphic-2022
G.5.7.c.1 - Genetics-Effects-Studies-Percent-Comparison-Graphic-2022(1)EN
G.5.7.d - ELF-EMF-Static-Field-Neurological-Effects-Abstracts-2022
G.5.7.e - RFR-Neurological-Effects-Abstracts-2022
G.5.7.f - Neurologica1-Effects-Studies-Percent-Comparison-Graphic-2022-2
G.5.7.f.1 - Neurologica1-Effects-Studies-Percent-Comparison-Graphic-2022-(2)EN
G.5.7.g - ELF-EMF-Static-Field-Free-Radical-Oxidative-Damage-Abstracts-2022
G.5.7.h - RFR-Free-Radical-Oxidative-Damage-Abstracts-2022-1
G.5.7.i - Free-Radical-Studies-Percent-Comparison-Graphic-2022
G.5.7.i.1 - Free-Radical-Studies-Percent-Comparison-Graphic-2022(2)EN
G.5.7.j - 4-Table-1-RFR-Comet-Assay-Studies-2020-docx
G.5.7.j.1.k.1 - Comet-Assay-Studies-Percent-Comparison-2020 EN
G.5.7.k - 5-Table-2-Static-Field_ELF-EMF-Comet-Assay-Studies-2020
G.5.7.l - Electrohypersensitivity-50pg-2017
G.5.7.m - 10.-Comet-Assay-Studies-Percent-Comparison-2020

H. COURT RULINGS

H.1 - Annex - Index
H.1.a - 2019 Court of Appeal of Turin - Judgment summary - ENG
H.1.b - 2019 Court of Appeal of Turin - ENG+NED 3P
H.1.c.1 - 2019 Court of Appeal of Turin - Romeo c. INAIL - Italian
H.1.c.2 - 2019 Court of Appeals of Turin - Romeo v. INAIL - English
H.2 - 2020 Rechtbank Gelderland Nederland 6699
H.3 - 2021 Belgium - Constitutional Court - Roll-out of digital meters

H.4.a - 2021 US Court of Appeals - Judgment text
H.4.b - 2021 US Court of Appeals - Judgment text ENG-NED
H.4.c - 2021 US Court of Appeals - Judgment 20-1025