

precious rare resources, compared to just 20 or so a decade ago. Moreover, currently, the recycling of electronic components is difficult, if not impossible, and can have a negative environmental impact.

The mining and refining of minerals pollute water and soil. The consequences are hardly visible in our Western societies because these activities were relocated in the 1980s, particularly to China (where 80% of the earth's rare resources are found).

### Conclusion

The 5G wanted by the telecommunications and digital industries and promoted by our governments is an unjustifiable threat to our health and that of all living beings. It goes against an environmentally responsible policy and the objectives set by the European Union and the signatories of the COP21 agreement in 2015 in the fight against global warming. Nor does it respect the agreement on the protection of biodiversity signed by 190 countries in 2010 in Nagoya.

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**1G, 2G, 3G, 4G, 5G: ALL GUINEA PIGS!**

1. The WHO, the EU and most countries rely on the recommendations of the ICNIRP (International Commission on Non-Ionising Radiation Protection). The ICNIRP is a private institution under German law which operates like a closed club: its members alone decide who may enter and only those who advocate the idea that if there are no thermal effects after a few minutes (tissue heating according to the microwave principle), there can be no health consequences. Recently, two Members of the European Parliament published a report on the ICNIRP whose main conclusion is: «For a truly independent scientific opinion, we cannot and should not rely on the ICNIRP» (Klaus Buchner and Michèle Rivasi, June 2020: [michele-rivasi.eu/...](http://michele-rivasi.eu/))
2. See for example the Biointiative Report 2012, the work of 29 independent scientists from 10 countries. It presents a state of knowledge of the effect of electromagnetic fields (EMF) on humans and living organisms, based on several thousand scientific studies, covering more than 1,500 pages. See [www.biointiative.org](http://www.biointiative.org) and the French summary of the report, [www.electrosmog.grappe.be/doc/BIR/](http://www.electrosmog.grappe.be/doc/BIR/)
3. Neufeld and Kuster, *Systematic Derivation of Safety Limits for Time-Varying 5G Radiofrequency*. Health Physics, 2018.
4. Betzalal et al, *The human skin as a sub-THz receiver – Does 5G pose a danger to it or not?* Environmental Research, 2018.
5. Thielens et al, *Exposure of insects to Radio-Frequency Electromagnetic fields from 2 to 120 GHz*. Scientific Reports, 2018.

# 5G ?

The deployment of 5G:  
an unprecedented global experiment  
that threatens humankind,  
biodiversity and  
planetary balances

## The Collectif **stop5G.be**:

- Against an irresponsible obstination, the destruction of nature and waste of resources.
- For the protection of our health, a decent society and the preservation of climate.
- Because the 5G technology is both unnecessary and harmful.

[www.stop5G.be](http://www.stop5G.be) – [info@stop5G.be](mailto:info@stop5G.be) – Visit the website for the member associations of the Collective, to join as an association and to support us. 9/2020

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In September 2016, the European Commission published an ambitious action plan for 5G (5th generation of mobile phone standards), a technology presented as an unprecedented progress for all, while investing hundreds of millions of public funds. It would constitute a decisive step and an essential economic opportunity (*5G for Europe: an action plan, 2017, ec.europa.eu*).

Since then, official speeches have been trying to convince us that the only stake is to be part of the group of the dominant players in the global economic competition. Thanks to this new telecommunication technology that will ensure a ubiquitous interconnection of humans as well as all the objects and animals of their daily lives (IoT, Internet of Things).

The propaganda of **5G-PPP.eu**, the public-private partnership between the European Commission and the telecommunications industry, tells us that 5G would increase the capacity of the wireless telecommunications network by a factor of 1000, connecting 7 trillion objects serving more than 7 billion people with a connection time perceived as zero. The icing on the cake is that all these services would be provided with a 90% energy gain.

We are at the threshold of some sort of Brave New World: 5G is a radical break with the world we know. We only have to be aware that in order to implement the 5G, we will have to:

- Multiply by 3 to 5 the number of base stations (antenna or group of antenna) to achieve the Internet of Things and make all sectors of society that were not ‘smart’ (cities and towns, farming, or health care) ‘smart’.
- Use a new kind of antenna, with electronic scanning, capable of targeting smartphones and other connected objects (beamforming). Some of them are very small, the size of a shoe box, and can be easily placed everywhere, every 100 meters in an urban environment: on public benches and even inside buildings.
- Increase exposure limits to those of the ICNIRP<sup>1</sup> where this is not already the case. In Brussels, for example, this would mean multiplying the current limits by 50 (from 0.095 to 4.5 W/m<sup>2</sup>, at 900 MHz). The ICNIRP limit values are 100,000 times higher than those recommended by independent experts such as the BioInitiative group and the European Academy of environmental medicine and are about 1 billion billion

times the natural level. The exact opposite should therefore be done to protect the population: sharply reduce these limit values. 5G uses the frequencies of the previous standards (4G, etc.), but also higher frequency waves, i.e. the 26 GHz band and millimetre waves (30 GHz and above), which up to now have been little used by the industry. Millimetre waves are strongly attenuated by obstacles, leaves, rain, etc. Hence the need to multiply the number of antennas, to raise emission power levels and to make massive use of beamforming to compensate (so that the maximum exposure level at a point is random).

## Electromagnetic pollution is ubiquitous and on the rise

The obvious consequence of the deployment of 5G will be a major electromagnetic pollution that will add to the one that has exploded over the last 25 years following the boom in wireless technologies. Electrosmog already is a public health problem, largely denied by health authorities. A consequence proved by the insistent demands of the lobbies (BIPT included) to increase the emission limits to those of the ICNIRP, in Brussels in particular.

The limit values adopted in all legislations on the basis of ICNIRP recommendations only take into account tissue heating, which is contested by thousands of studies<sup>2</sup> showing biological effects at levels well below the above-mentioned limit values.

With regular or, worse still, permanent exposure, these biological effects are likely to lead to serious health damage, particularly for children and embryos, which are more sensitive.

### Numerous risks of health damage are identified, including :

- cellular DNA damage;
- cellular stress;
- altered gene expression;
- cancer;
- infertility and altered sperm quality;
- sleep disruption;
- heart problems, including tachycardia, arrhythmia and cardiac arrest;
- neurological disorders, including depression and autism;
- weakened immune system.

With 5G, we are entering an era where this electromagnetic pollution will take on an increased and omnipresent dimension. No living being will be safe.

## The unknown of millimeter waves

With the use of millimetre waves and 5G, we dive into the unknown. So far, very few studies have examined the biological effects of exposure to this type of radiation.

The fact that millimetre waves barely get through solid obstacles allows proponents of their use to overlook their potential harm. To conclude that they are harmless is scientifically unfounded and irresponsible. Recent publications provide new data which add more weight to the case against millimetre wave radiation:

- Temperature peaks occurred in the skin of exposed people as a result of millisecond bursts transmitted by wireless devices.<sup>3</sup>
- The sweat glands in the upper skin layers act as an antenna, which significantly increases the specific absorption of millimeter waves.<sup>4</sup>
- A study carried out on four insect populations showed that the absorption of radiation is highly dependent on its frequency and the size of the species. The authors believe that permanent exposure to millimeter waves could lead to changes in insect behaviour, physiology and morphology over time.<sup>5</sup>

## A disturbed global environment

5G has been designed to connect up to one million objects per km<sup>2</sup> 24 hours a day. To cover every cm<sup>2</sup> of the planet, low earth orbit satellite communications have been integrated into the 5G standard, unlike 4G, in addition to millions of terrestrial antennas. Private companies have already scheduled the launch of more than 100,000 satellites. In our night sky, they will appear brighter than the majority of the few thousand visible stars.

This massive deployment of telecommunication satellites, by creating a permanent electromagnetic fog, is similar to a geoengineering technique. It will pollute the ionosphere with millions of pulsed signals and is likely to disrupt the earth's natural electromagnetic environment in which living beings have evolved over millions of years and on which they depend.

## Many scientists have tried in vain to alert governments and international institutions

Appeals from scientists and doctors from all over the world have multiplied over the last 20 years.

For example, the appeal launched in 2015 and signed in April 2020 by 253 EMF experts from 44 different countries. These scientists, all of whom have published peer-reviewed research on the biological and health effects of non-ionising EMF, are calling for stricter exposure limits and for the potential biological impacts of 4G and 5G telecommunication technologies on plants, animals and humans to be reviewed (*emfscientist.org*). Another example is the international appeal launched in 2018 by doctors, scientists, environmental organisations and citizens urgently calling for a stop to the deployment of the 5G terrestrial and space network (*5gspaceappeal.org*). Mid September 2020, the appeal counted more than 299,300 signatories from 220 countries.

## Other questions

In addition to the fundamental public health problems, that governments choose to ignore, many questions remain as to the future outlined in this headlong rush to some ‘Brave New World’. The negative impact of digital proliferation on personal well-being — particularly psychosocial hazards for children — and on collective well-being has been well documented, alongside the new possibilities of monitoring, police surveillance, privacy intrusion and hacking.

The energy and climate balance of 5G looks disastrous. The energy required to emit the antennas and connected objects alone, will lead to an increase of over 2% in electricity consumption in European countries. This is just the tip of the iceberg and is nothing compared to the energy that will be needed to manufacture the billions of connected objects, the infrastructure including the tens of millions of antennas and the optical fibre network to which they will be connected, the satellites and putting them into orbit, and the operation of the data centres, whose processing capacities will have to increase substantially.

The energy consumption of new technologies such as 5G is only one aspect of their environmental impact. The number and amount of metals used in electronic components is constantly increasing as they become more efficient. Our smartphones contain some 40 metals, including