



Investigating the impact of electromagnetic fields on humans and biodiversity: the ETAIN project

ETAIN, an EU Horizon funded project, studies the impact of RF-EMF (Radio Frequency Electromagnetic Fields) on planetary health following a participatory approach

Barcelona, 28 of August. The European Commission Horizon Europe's funded project ETAIN has started its research to investigate the possible impact of Radio Frequency - Electromagnetic Fields (RF-EMF) on humans, insects and the planet. It develops approaches to assess the impact of exposure to RF-EMF when using mobile phones and when in proximity to antennas, while also exploring options for exposure reduction. In addition, following a citizen participation approach, ETAIN deploys an app and portal to quantify one's personal exposure to RF-EMF and to map exposure levels across European cities.

Studying the impact of RF-EMF in three areas

ETAIN aims to advance knowledge on the potential effects of Radio Frequency Electromagnetic Fields (RF-EMF) on human health, insects and biodiversity. In terms of human health, the project focuses on the effect of RF-EMF exposure on the skin and the eyes. By using specific mechanisms such as oxidative stress in cells - a phenomenon caused by an imbalance between production and accumulation of oxygen reactive species (ROS) in cells and tissues, ETAIN has already deployed different probes and tested with known ROS producer agents at the molecular level.

Regarding the research on insects, learnings about deviations around fertility, behaviour characterisation and neurological patterns are expected from this study, as well as wider conclusions about thermal effects. A pilot project is underway in Cyprus and in its first stage is installing traps at different distances from antennas to trap solitary bees and start the beehive monitoring.

University of Utrecht, the ETAIN's project coordinator, integrates these results and studies the knowledge about effects on the planet ecosystem. They have already started working on a novel, the Planetary Health Impact Assessment Framework.

A Citizen Science Approach to measure exposure

ETAIN adopts a participatory human-centred approach for the co-design and development of the app and portal on RF-EMF exposure. Communities are engaged throughout participative labs and hands-on activities following a citizen engagement



strategy. These participation hubs create a space for the scientists, researchers and developers to collaborate with citizens, building solutions based on their inputs, needs, and ideas. The labs draw on co-design and UX methods to define and validate app functionalities and interface through iterative cycles.

Nowadays, the project is working on the co-design phase of the Exposure App. These processes put in value the idea of identifying diverse motivations, possible outputs and expectations for advancing the application development and fostering its uptake. During the first year of ETAIN, actions have been undertaken in Barcelona and Eindhoven. These generate an awareness opportunity by being able to co-create the application with participants, thus guiding decisions such as how the app will function, which data is people willing to share and under what conditions, and how can the project ensure wide adoption and upscaling of the application across the EU.

A collaborative project, fruit of the work of 12 partners from all over Europe

The project builds upon the coordinated efforts of twelve partners from all over the continent. The list includes the following companies, SMEs and academic and organisations: University of Utrecht, Swiss TPH, Ghent University, Ideas for Change, Fields at Work, Eindhoven University of Technology, Agricultural University of Athens, Centre National de la Recherche Scientifique, Cyprus University of Technology, Games for Health, Ellinikos Georgikos Organismos Dimitra and Université de Montpellier.

About ETAIN

ETAIN operates under the Environment and health (2021) (HORIZON-HLTH-2021-ENVHLTH-02) funding scheme, as facilitated by HORIZON-RIA HORIZON Research and Innovation Actions. ETAIN will run until June 2027. The project has received funding from the European Union's Horizon Europe research and innovation program under grant agreement No. 101057216

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