

Press release

## THE ENVIRONMENT

### **Carbon impact of shutting down 2G and 3G networks: The Technical Experts Committee on mobile networks delivers its report**

Paris, 11 September 2023

Today, Arcep is publishing a report from the Technical Experts Committee on mobile networks, assessing the impact in terms of carbon footprint of shutting down 2G/3G networks and migrating their voice/texting and M2M<sup>1</sup> services to 4G/5G, using a network modelled on characteristics that are representative of the infrastructures currently deployed in France.

This independent Committee, which Arcep assembled to inform its own thinking about the technical issues and challenges surrounding mobile networks, brings together experts representing mobile network operators, manufacturers and participants from academia and French national frequency agency, ANFR.

#### **A study to contribute to the public debate**

By sharing this report, the Experts Committee is seeking to contribute – under existing circumstances and within a well-defined set of assumptions – to a better understanding of the impact in terms of carbon footprint of shutting down 2G/3G networks. The Committee is nevertheless fully aware of the study's methodological limitations, notably those tied to data availability and the chosen scope of study for connected objects – which belong to the Information and Communications Technologies (ICT) sector as defined by ITU, and do not include, for instance, on-board systems in cars or lifts.

This report focuses on carbon footprint, and does not examine other categories of environmental impact.

Lastly, shutting down 2G/3G can create other issues such as the cost to users who will have to switch devices or upgrade connected objects as a result. These issues are not included in the scope of the study.

#### **The migration from 2G/3G to 4G/5G technologies enables ongoing energy savings from year one which will offset the premature replacement of devices that have been rendered obsolete**

Despite a steady decrease in the use of the applications they support, 2G/3G networks still account for a not insignificant share of mobile networks' energy consumption, all technologies combined: between 21% and 33% of networks' base stations (aka cell towers) today and possibly around 17% by 2025. Migrating 2G/3G technologies to 4G/5G technologies will therefore enable continuous and steady energy savings.

Shutting down 2G/3G networks will, however, also result in the possible obsolescence of certain devices and connected objects that are not 4G/5G compatible (smartphones, feature phones<sup>2</sup>, PoS devices, intercoms...), and replacing them will create a carbon footprint.

The study assesses the time needed to reach the breakeven point between recurring energy savings and the carbon footprint created by the premature replacement of non-4G/5G-compatible devices and connected objects. The carbon assessment of the migration moves into the positive in close to two months, if the devices being considered include only mobile phones, and in close to six months if we also include certain connected objects such as PoS devices, smart meters and intercoms.

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<sup>1</sup> The technologies used by machines to "talk" to each other, with no direct human involvement

<sup>2</sup> They are referred to as feature phones to distinguish them from smartphones. They offer basic functions such as voice calling, texting and basic mobile applications: calendar, calculator, multimedia apps and basic mobile internet browsing.

## **Shutting down 2G/3G helps reduce mobile networks' carbon footprint, but the study also highlights several courses of action that would optimise this reduction**

In particular, the study's findings reveal the benefits of device and connected object vendors anticipating the 2G/3G shutdown, notably by working to promote the sale of 4G/5G-compatible phones and connected objects once operators have announced a timetable for shutting down 2G/3G.

From a more general perspective, the ecosystem can work to optimise the carbon footprint reduction engendered by the shutting down of 2G/3G networks, by taking forward-looking actions and being especially mindful of communicating clearly with the public and businesses. A prime example would be the automatic emergency call system installed in cars, in accordance with Europe's e-Call regulation: it would no doubt be advisable for all the systems newly put into service to be 4G/5G compatible.

## **In France, three mobile operators have provided information on their 2G/3G network shutdown timetable**

The ubiquity of 4G, combined with the steady increase in the number of devices that are compatible with 4G services, raises the question of how relevant it is to continue to maintain 2G and 3G networks in Metropolitan France. Three of the country's mobile network operators have already provided information on their expected timetable for shutting down their 2G/3G networks<sup>3</sup>.

This is part of a global trend. The Global Mobile Suppliers Association (GSA) identified 142 operators that have announced the forthcoming or already completed shutdown of their 2G and/or 3G networks.

Arcep also wants to deliver a reminder that if the decisions to shut down 2G/3G will be based on operators' own strategies, shutting down these technologies will require those same operators to provide enough information to allow users (consumers and businesses) to adapt, and supervision of the process, if warranted.

### **Associated documents**

- [The Detailed Report](#)
- [The Executive Summary](#)
- [FAQ](#)

### **Arcep at a glance**

The Regulatory Authority for Electronic Communications, Postal Affairs and Print Media Distribution (Arcep), a neutral and expert arbitrator with the status of independent administrative authority (IAA), is the architect and guardian of internet, fixed and mobile communications and postal networks in France.

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<sup>3</sup> The three mobile operators' announced network shutdowns as of the memorandum's writing: (Orange) <https://reseaux.orange-business.com/articles/arret-2g-et-3g/>, (SFR) [https://alticefrance.com/sites/default/files/pdf/20230125\\_CP\\_SFR\\_Nokia\\_5G.pdf](https://alticefrance.com/sites/default/files/pdf/20230125_CP_SFR_Nokia_5G.pdf) and (Bouygues Telecom) <https://www.bouyguetelecom-entreprises.fr/bblog/arret-programme-des-technologies-2g-et-3g-4-questions-pour-tout-comprendre/#:~:text=S'inscrivant%20dans%20ce%20mouvement,ans%20plus%20tard%2C%20fin%202029>