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# DIGITAL SOBRIETY IN THE BUILDING SECTOR, THE FRENCH LAW PARADIGM

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**Summary**

The concept of *digital sobriety* in the building sector emerged as a response to the growing environmental and social concerns associated with digital technologies' pervasive use. As digital innovations reshape buildings into smart and efficient entities, there is a pressing need to balance technological advancements with sustainability and legal considerations.

Efforts towards digital sobriety are bolstered by legislative initiatives and practical measures aimed at reducing energy consumption, enhancing energy transition, and promoting responsible digital practices. These initiatives span from building codes to financial incentives and public awareness campaigns.

While digital sobriety entails a deliberate reduction in our digital footprint, advocating for more mindful and efficient use of technology in buildings, critical questions are raised about the guarantees of the rule of law and fundamental rights, necessitating robust legal frameworks to address these challenges. Public policies play a pivotal role in promoting sustainable practices, aligning individual behaviour with collective goals, and ensuring equitable access to environmentally friendly buildings.

**Keywords:** digital sobriety, energy sobriety, buildings, legal framework, technology, energy transition, human rights.

## SOBRIETAT DIGITAL EN EL SECTOR DE LA CONSTRUCCIÓ: EL PARADIGMA DEL DRET FRANCÈS

**Resum**

El concepte de *sobrietat digital* en el sector de la construcció ha emergit com a resposta a les creixents preocupacions ambientals i socials associades a l'ús penetrant de les tecnologies digitals. Així com les innovacions digitals remodelen els edificis per a fer-ne entitats intel·ligents i eficients, hi ha una necessitat urgent d'equilibrar els avenços tecnològics amb la sostenibilitat i les consideracions legals.

Els esforços per a la sobrietat digital són sostinguts per iniciatives legislatives i mesures pràctiques destinades a reduir el consum d'energia, millorar la transició energètica i promoure pràctiques digitals responsables. Aquestes iniciatives abracen des de codis de construcció fins a incentius financers i campanyes de conscienciació públiques.

Mentre que la sobrietat digital implica una reducció reflexiva de la nostra empremta digital, ja que advoca per un ús més conscient i eficient de l'ús de la tecnologia en els edificis, s'han plantejat algunes crítiques en relació amb les garanties de l'estat de dret i dels drets fonamentals, la qual cosa ha permès observar que calen marcs legals sòlids per a abordar aquests desafiaments. Les polítiques públiques tenen un paper essencial en la promoció de pràctiques sostenibles que alineïn el comportament individual amb els objectius col·lectius i assegurin un accés equitatiu als edificis respectuosos amb el medi ambient.

**Paraules clau:** sobrietat digital, sobrietat energètica, edificis, marc legal, tecnologia, transició energètica, drets humans.

## SOBRIEDAD DIGITAL EN EL SECTOR DE LA CONSTRUCCIÓN: EL PARADIGMA DEL DERECHO FRANCÉS

**Resumen**

El concepto de *sobriedad digital* en el sector de la construcción ha emergido como respuesta a las crecientes preocupaciones ambientales y sociales asociadas al uso penetrante de las tecnologías digitales. Así como las innovaciones digitales remodelan los edificios para convertirlos en entidades inteligentes y eficientes, hay una necesidad urgente de equilibrar los avances tecnológicos con la sostenibilidad y las consideraciones legales.

Los esfuerzos para la sobriedad digital son sostenidos por iniciativas legislativas y medidas prácticas destinadas a reducir el consumo de energía, mejorar la transición energética y promover prácticas digitales responsables. Estas iniciativas abarcan desde códigos de construcción hasta incentivos financieros y campañas de concienciación públicas.

Mientras que la sobriedad digital implica una reducción reflexiva de nuestra huella digital, ya que advoca por un uso más consciente y eficiente del uso de la tecnología en los edificios, se han planteado algunas críticas en relación con las garantías del estado de derecho y de los derechos fundamentales, lo que ha permitido observar que se precisan marcos legales sólidos para abordar estos desafíos. Las políticas públicas tienen un papel esencial en la promoción de prácticas sostenibles que alineen el comportamiento individual con los objetivos colectivos y aseguren un acceso equitativo a los edificios respetuosos con el medio ambiente.

**Palabras clave:** sobriedad digital, sobriedad energética, edificios, marco legal, tecnología, transición energética, derechos humanos.

Digital technologies have woven themselves into the fabric of everyday life, impacting every corner of society. Yet, its excessive use has led to concerns about its environmental impacts, as their environmental footprint has grown too large to ignore. This has given rise to the concept of *digital sobriety*, a movement aimed at mitigating the environmental and social impacts of digital consumption, particularly within the urban environments, namely the big cities.

Digital sobriety refers to a conscious effort for a deliberate reduction in our digital footprint, both individually and collectively, urging a more intentional engagement with technology and its use in a more mindful way. It raises important questions and implications from a legal perspective, positioning itself as a cornerstone of sustainable development, and calls for regulation through public policies and legal frameworks towards more sustainable digital practices.

In the realm of building sector, digital sobriety translates into efforts to lessen the environmental impact of technology, ensuring that buildings maintain their functional purposes while becoming more eco-friendly. It also involves reaping the advantages of digital technologies to foster energy efficiency in both new and existing structures and achieve energy transition through energy sobriety.

Public authorities are pivotal in this endeavour and tend to become «enablers» towards energy transition through digital sobriety, enhancing energy conservation in buildings. The establishment of a supportive and effective legal framework by public authorities facilitates the pursuit of these objectives. Legal measures, including building codes, energy performance standards and environmental certifications, serve as both a guide and a mandate for the construction, renovation and use of buildings. These regulations are designed to curb the excessive energy consumption attributed to digital technology use while promoting digital solutions that reduce a building's energy demands.

This paper delves into the legal nuances of digital sobriety, emphasizing the necessity for digital technology to be used responsibly in buildings. It argues for a regulatory approach that involves public authority intervention and embraces a multidisciplinary perspective, incorporating legal, technological, and sociological insights.

Furthermore, the discussion extends to the profound implications of digital sobriety on fundamental rights and on rule of law, due to a confusion between positive laws and soft law measures.

## 1. UNDERSTANDING THE DISRUPTIVE CONCEPT OF DIGITAL SOBRIETY

### 1.1. Digital sobriety, a new dimension of energy sobriety

While technological progress is used widely and provides solutions to several technical problems, the concept of *digital sobriety* has emerged as a nuanced extension of energy sobriety, challenging the proliferation of digital technologies and their environmental footprints. In the current context of global warming, digital sobriety tends thus to become a catalyst for energy sobriety, one of the three pillars of energy transition (with energy efficiency and priority to renewable energy sources). More specifically, energy sobriety involves taking measures aimed at changing the production and supply of energy by reducing the proportion of carbon-based energy of fossil origin and increasing the proportion of energy with low greenhouse gas emissions,[1] covering three areas: dimensional sobriety, sobriety of use and cooperative sobriety.

Digital sobriety introduces thus a critical dimension to the discourse on energy conservation and consumption, highlighting the interdependence of technology use and sustainable energy practices. It represents therefore a shift in energy sobriety, advocating for a technology use that aligns with energy transition and climate change mitigation goals.

The concept of *digital sobriety*, same as the concept of *energy sobriety*, concerns changing behaviour and aiming to reduce energy consumption. It also encapsulates a dual commitment —collective and individual— towards achieving significant milestones in energy transition and climate change mitigation. In fact, on the one hand, the collective pursuit of digital sobriety is anchored in the legal and moral obligations of states and citizens to adhere to international climate and energy transition commitments, based on solid legal foundations. On the other hand, at an individual level, digital sobriety promotes a conscientious approach to technological consumption and its use in a more mindful way. This individualized commitment is also crucial for the materialization of collective goals, emphasizing the intrinsic link between personal responsibility and environmental sustainability.

As well as energy sobriety, digital sobriety advocates for transformative practices in building occupation and lifestyle choices, thereby positioning individual behaviour as a key element in the energy transition objective. Innovations in digital technology are hence pivotal in enhancing energy sobriety and integrating renewable energy solutions but, at the same time, they cause excessive energy consumption, particularly in buildings.

1. *Vocabulaire de l'environnement*, NOR: CTNR2313864K, 28 May 2023.

### 1.2. The concept of *digital sobriety* in buildings

Within the built environment, the integration of digital technologies has transformed traditional infrastructures into dynamic, interconnected ecosystems. Buildings have evolved into intelligent systems capable of responding to environmental stimuli, optimizing resource use, reducing energy consumption and enhancing occupant comfort through the Internet of Things, building automation systems, and smart utilities.

However, digital technologies raise significant questions as they contribute to a substantial environmental burden, from increased electronic waste (e-waste) to the carbon emissions associated with their energy use. As a matter of fact, energy consumption of digital equipment is growing fast, especially after the covid-19 crisis (especially the increase in teleworking), which leads to an energy sobriety vision on the subject. In 2022 the digital sector's greenhouse gases emissions are 37 % due to the manufacture of digital devices (extraction of resources, assembly, transport, distribution), 38 % to their use and 25 % to network infrastructures and data centres.[2] If nothing changes, the digital sector will account for 8 % of national greenhouse gas emissions in 2025, compared with 4 % in 2022.

Regarding specifically built environments, digital sobriety addresses the urgent need to reassess our reliance on digital technologies from an environmental perspective, while it advocates for a more mindful and efficient use of technology, emphasizing the reduction of digital footprints while maintaining the functionality of building operations. It is thus based on the development of environmental-friendly buildings and lifestyles, through digital technologies, and can be epitomized in the integration of user behaviour with energy-efficient building design, minimizing the negative environmental effects of technology. This integration underscores the necessity for a holistic approach that combines various disciplines, including sustainable architectural design and urban planning with mindful use of new technologies, thereby reinforcing the legal frameworks for digital sobriety.

To sum up, the adaptation of buildings to meet the standards of digital sobriety involves leveraging technology to enhance energy efficiency without compromising functional integrity and hinges on a dual commitment from both the public and individual sectors to foster environmentally friendly buildings and lifestyles. This adaptive transition is supported by legal incentives and regulations that promote environmentally friendly building practices.

Nevertheless, the role of technological progress in protecting the environment and facilitating energy transition cannot be overstated, which makes the law's intervention crucial.

2. ADEME, *En route vers la sobriété numérique*, Angers, ADEME, 2021.

## 2. A LEGAL FRAMEWORK FOR DIGITAL SOBRIETY

Digital sobriety is increasingly characterized by its compliance with existing and emerging energy and environmental legislation. These legal frameworks mandate a reduction in energy consumption and greenhouse gas emissions, extending their reach to include the digital sector and the impacts of digital technologies.

Moreover, the implications of collective and individual commitments in realizing digital sobriety are becoming important for legal frameworks, in the current context of evolution of energy transition into a legal obligation to achieve climate mitigation. As energy transition is gradually subject to compulsory rules for states and citizens and a specific legal framework is being formed creating rights and obligations on energy sobriety, digital sobriety is catching on in international, European and French law. This includes regulations on the energy efficiency of digital devices, construction and renovation of environmental-friendly buildings, energy consumption limits for the data centers and the overall carbon footprint of digital operations, revealing progressively a willingness to make digital sobriety a legal requirement rather than an optional practice.

Consequently, digital sobriety is not merely a voluntary or ethical initiative; it is increasingly becoming subject to a specific policies, legal measures and even legal rules. Legal instruments, ranging from international treaties to national laws, now thus incorporate provisions that directly or indirectly promote digital sobriety.

More specifically, to facilitate the transition towards digital sobriety, the Senate Committee on Spatial Planning and Sustainable Development presented in June 2020 its roadmap for ecological digital transition, aiming to raise awareness about the environmental impacts of technology and the importance of public policies.[3]

Thereafter, the Act of November 15th 2021 specifically targets the reduction of the digital environment's ecological footprint in France,[4] establishing a legal basis for advancing digital sobriety and succeed climate mitigation, as aimed by the «Climate and Resilience» law of August 22nd, 2021.

By January 1st, 2025, municipalities and inter-municipal cooperation establishments (EPCI) with a population exceeding 50.000 are mandated to devise a responsible digital strategy. This strategy will outline specific goals for minimizing the digital sector's environmental impact and detail the actions to be taken to achieve these objectives, with the strategy's content to be further specified by decree.[5] The objectives of the strategy may relate in particular to local and sustainable public procurement, with a focus on reuse, repair and combating obsolescence, sustainable, local man-

3. Senate Information Report num. 555, 24 June 2020.
4. REEN Act, num. 2021-1485, 15 November 2021.
5. Act num. 2021-1485, 15 November 2021, art. 35, I; CGCT, art. D. 2311-15-1.

agement of the lifecycle of IT equipment, eco-design of digital sites and services, the introduction of a policy to raise awareness of responsible digital use and IT security among elected representatives and public servants, the introduction of a responsible digital approach aimed at everyone, to raise public awareness of the environmental challenges of digital technology and digital inclusion and implementing a sustainable, connected territory approach in conjunction with an open data approach.

Further reinforcing this legal structure, a subsequent law was enacted to enhance ARCEP's (Autorité de Régulation des Communications Électroniques, des Postes et de la Distribution de la Presse) regulatory capabilities over the digital sector's environmental regulations.[6] In a move towards responsible digital practices, major telecommunications operators (Bouygues, Free, Orange, and SFR) also pledged their commitment by signing a charter for sustainable digital practices in December 2021.

An observatory on the environmental impact of digital technology has also been established within ADEME and ARCEP. This body is tasked with the comprehensive analysis of the direct and indirect environmental impacts of digital technologies and their potential contributions to an ecologically and socially responsible transition. Part of its mandate includes formulating a clear definition of digital sobriety and recommending strategies to lessen the digital sector's environmental footprint.

Consumer awareness about the energy consumption and greenhouse gas emissions associated with digital service usage, particularly video-on-demand (VOD) services, is set to improve. The CSA, in collaboration with ARCEP and ADEME has also issued guidelines to inform consumers about the environmental impact of their digital consumption, facilitated by television and various online platforms.[7]

The government is leading by example in energy transition, with a goal to cut its own energy consumption from 20 TWh/year by 2 TWh by 2024. This reduction will be achieved through various means, including optimizing energy use in buildings, enhancing mobility, making responsible purchases, and adopting eco-friendly digital technologies. In that context, the 2022 Energy Sobriety Plan,[8] initiated by the prime minister and the minister for Energy Transition and carried forward to 2023,[9] targets a 10 % reduction in energy usage within two years relative to 2019 levels, including the digital sector. This initiative not only aims to secure energy supply in the short term, especially in light of the war in Ukraine, but also to transition France away from fossil fuels by 2050.

6. Law num. 2021-1755, 23 December 2021.

7. <www.arcep.fr/fileadmin/user_upload/pole-numerique-arcep-arcom/referentiel-usages-numeriques-arcep-arcom_mars2022.pdf> (consulta: 27 March 2023).

8. <www.ecologie.gouv.fr/sites/default/files/dp-plan-sobriete.pdf> (consulta: 27 March 2023).

9. <www.ecologie.gouv.fr/plan-sobriete-acte-2-mobilisation-se-poursuit> (consulta: 27 March 2023).

To enhance a mindful use of technologies in buildings and minimize the negative effects of technology on the environment, specific measures have been taken for buildings. The inter-ministerial decree of July 23rd 2019[10] and the decision of April 10th 2020[11] aiming to reinforce the obligations to reduce final energy consumption in tertiary buildings, covering a built surface area of over 1.000 m² including data centers, have thus given a prominent place to the digital dimension of buildings.

A specific digital platform,[12] known as the OPERAT platform, managed by ADEME under State control,[13] has been developed to anonymously collect and monitor energy consumption data in buildings, especially regarding the tertiary sector. Final energy consumption data and information on usage intensity indicators collected on the OPERAT platform are capitalised and analysed in detail by type of activity.[14] In case of unjustified failure to transmit data to the digital platform, the prefect responsible for the location of the building may give formal notice to the owner (and, where applicable, the lessee) to comply with its obligations within three months. Penalties may be applied for failure to meet objectives or established action plan.

The OPERAT digital platform aids in the systematic tracking of efforts to meet energy reduction targets, providing a digital certificate that attests to a building's energy performance, in order to inform buyers and tenants about compliance with energy-saving targets. This digital certificate, alongside the Eco Energie Tertiaire rating system, is crucial for documenting compliance with energy efficiency objectives.

The Ecowatt system,[15] managed by RTE (Reseau de Transport d'Electricité), aims optimizing energy consumption by informing users (citizens, businesses and local authorities) of electricity network capacities in real time, to enable everyone to adapt their consumption. This kind of electricity «weather forecast». Ecowatt is a digital solution designed to alert to potential high-demand periods on the electrical grid, helping to prevent power outages, thanks to colour coding (orange or red signal is announced three days in advance, by text message if registered or via the RTE application) and eco-gestures suggested on a daily basis, to avoid load shedding.

Several public policies also play an important role in digital sobriety, such as the Energic application,[16] the ministerial eco-responsible public services plan[17] and

10. Decr. num. 2019-771, of 23 July 2019.

11. Arr. 10 avr. 2020, NOR: LOGL2005904A, art. 13, III-V, mod. par arr. 13 avr. 2022, NOR: LOGL 2128787A, art. 1er, XIV, 10°.

12. <https://operat.ademe.fr/#/public/home> (consulta: 27 March 2023).

13. CCH, art. L. 174-1, III, 4°, mod. by L. num. 2021-1104, 22 August 2021, art. 176, 3°.

14. CCH, art. R. 174-29.

15. <www.monecowatt.fr/> (consulta: 27 March 2023).

16. <https://web.energic.io/> (consulta: 27 March 2023).

17. <www.ecologie.gouv.fr/quatrieme-conseil-defense-ecologique-priorites-du-gouvernement-transition-ecologique> (consulta: 27 March 2023).

the Cube competition.[18] Energic is an application used to mobilize agents in the French government's ecological transformation challenge, in the form of a collaborative game which tackles the subject of ecological transition in an entertaining way thanks to a series of challenges, while encouraging participants to reduce their carbon footprint. Created in 2016, the Energic application aims to raise awareness among citizens, whether in schools, local authorities or businesses. It responds to the State's ecological transformation challenge, which will run until the end of 2025. An initial running-in phase has been underway since November 2023, and over 1.200 government employees have already installed the application and a new phase begins in February 2024.

Furthermore, the State is providing significant financial support for infrastructure improvements, encouraging large enterprises to undertake renovations using smart technologies, and launching campaigns to raise awareness. These efforts aim to achieve 200.000 energy-efficient home renovations by 2024, supported by a 50 % increase in funding to € 5 billion. Additionally, in 2024, an extra € 1,6 billion will be allocated to energy renovation grants, particularly through the MaPrimeRénov program.

Specifically, regarding dwellings, significant investments in infrastructure and renovations are taking place, supported by State aids and public awareness campaigns, and innovative smart buildings and devices are increasingly promoted and used. More and more homes are thus equipped with smart devices such as a digital radiator system that uses computer waste heat as a viable source of heating, and digital boiler capturing the heat released by processors or computing to repurpose the heat generated by computer processors for heating.

Moreover, the Energy Transition for Green Growth Act has introduced a new provision, article Law 111-10-5 in the construction and housing code, established a digital logbook to facilitate the monitoring and upkeep of residential properties. Additionally, article L. 232-2 in the Energy Code sets up regional platforms across France dedicated to the public service of evaluating home energy performance.

These digital tools signify a growing acknowledgment among policymakers and legal systems of the significant environmental impact associated with unchecked digital and technological usage and, furthermore, the recognition of digital sobriety's critical role in achieving energy transition and climate mitigation. This legal perspective emphasizes the responsibility of individuals, organizations, and states to adopt sustainable digital practices.

But the multiplicity and complexity of these measures and rules raise concerns, not only because of their varying nature and legal force, but also their effectiveness and accessibility to people.

18. <https://cube-championnat.org/le-concours/> (consulta: 27 March 2023).

## 3. THE LEGAL CHALLENGES OF DIGITAL SOBRIETY

While the legal evolution towards digital sobriety represents significant progress and offers numerous benefits, it also raises important questions from a legal standpoint, particularly concerning the guarantees of the rule of law and fundamental rights, due to a variety of reasons.

In fact, despite various measures for digital sobriety, there is still an absence of a unified, strong legal framework; the current initiatives consist of a blend of legally binding regulations and soft law, lacking consistent and, sometimes, enforceability. Digital sobriety remains therefore partly mandatory, leading to confusion and potentially undermining the rule of law.

Furthermore, the digitalization of buildings also implicates social dynamics, such as access to information, but also gentrification, and social exclusion. The benefits of smart technologies are often unevenly distributed, potentially exacerbating existing inequalities and contributing to energy poverty.

Legal rules for digital sobriety need hence to be clear and easy for everyone to understand and access, establishing straightforward processes and safeguards for vulnerable people. These regulations must thus address inequalities by mitigating the risks of energy and digital poverty, guaranteeing that advancements in digital sobriety do not widen the gap between different socioeconomic groups but instead promote equitable access to technology and energy resources; they must also explicitly recognize and reinforce fundamental rights, including housing rights, ensuring that digital sobriety efforts do not compromise the ability to secure safe and affordable housing.

The role of local and national policies is thus crucial to ensure fundamental rights and adequate housing, that not only meets current demographic needs and takes in account different lifestyles, but also anticipates future shifts. This includes considering the «building demography» from both quantitative and qualitative perspectives. Effective intervention by public authorities can range from individual incentives to large-scale infrastructure projects, with a focus on enabling sustainable practices, controlling development, and providing necessary expertise and investment.

Additionally, the adoption of smart building technologies brings to the forefront concerns regarding data privacy and cybersecurity, involving collection of vast amounts of personal information, from energy usage patterns to occupants' movements. Even if existing privacy laws, such as the General Data Protection Regulation (GDPR) in Europe, provide a framework for data protection, their application to smart buildings is complex and often unclear. Transparent data collection practices and securing user consent are fundamental to ethically implementing smart building solutions. Smart systems also introduce potential vulnerabilities that can be exploited by cyber-attacks, affecting not just information security but also physical safety and causing vulnerabilities. The need for robust cybersecurity protocols is therefore essential to protect against breaches, requiring ongoing investment and expertise.

Ultimately, as digital innovations continue to reshape the built environment, a multidimensional approach that considers legal, ethical, and societal implications is essential. Public policies, informed by a commitment to sustainability and fundamental rights, are expected to guide the transition towards a more equitable, secure, and sustainable digital future in buildings.

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