



Digital environmental communication and the construction of corporate sustainability: the green UX model as an analytical framework in the energy sector

Comunicación ambiental digital y construcción de la sostenibilidad corporativa: el modelo verde de experiencia de usuario como marco analítico en el sector energético

Cristina Gallego-Gómez

Universidad Rey Juan Carlos
cristina.gallego@urjc.es

Carmen Llovet

Universidad Nebrija
cllovet@nebrija.es

Pedro Dourado

Universidade do Porto
pedrodouradopg@gmail.com

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KEYWORDS

Digital Environmental Communication; Corporate Sustainability; UX; Web Eco-Design; Energy Sector.

PALABRAS CLAVE

comunicación ambiental digital; sostenibilidad corporativa; UX; ecodiseño web; sector energético.

ABSTRACT

This article offers a critical and conceptual analysis of digital environmental communication in the context of corporate sustainability. It examines how energy companies integrate ecological values into digital interfaces and user experiences, proposing the Green UX Model as a framework for understanding this process. Drawing on literature from environmental communication, corporate social responsibility, and sustainable design, the paper bridges theoretical discussion with illustrative insights from selected energy-sector websites. Rather than assessing the aesthetic or technical features of these sites, the analysis interprets them as communicative tools that materialize organizational narratives of ecological responsibility. The study argues that genuine sustainability communication must extend beyond persuasive discourse to encompass the material and infrastructural dimensions of digital media. By reframing web eco-design as a communicative practice, the Green UX Model contributes to current debates on how organizations respond to environmental challenges through responsible digital transformation. The article concludes with implications for integrating ecological accountability into corporate communication strategies.

RESUMEN

Este artículo ofrece un análisis crítico y conceptual de la comunicación ambiental digital en el contexto de la sostenibilidad corporativa. Examina cómo las empresas energéticas integran valores ecológicos en las interfaces digitales y las experiencias de los usuarios, proponiendo el modelo verde de experiencia de usuario como un marco para comprender este proceso. Basándose en la literatura sobre comunicación ambiental, responsabilidad social corporativa y diseño sostenible, el artículo conecta la discusión teórica con ejemplos ilustrativos de sitios web seleccionados del sector energético. En lugar de evaluar las características estéticas o técnicas de estos sitios, el análisis los interpreta como herramientas comunicativas que materializan las narrativas organizacionales de responsabilidad ecológica. El estudio argumenta que la comunicación genuina sobre la sostenibilidad debe ir más allá del discurso persuasivo para abarcar las dimensiones materiales e infraestructurales de los medios digitales. Al replantear el ecodiseño web como una práctica comunicativa, el Modelo verde de experiencia de usuario contribuye a los debates actuales sobre cómo las organizaciones responden a los desafíos ambientales a través de una transformación digital responsable. El artículo concluye con implicaciones para integrar la responsabilidad ecológica en las estrategias de comunicación corporativa.

AUTORES

Cristina Gallego Gómez es Profesora Contratada Doctora por ANECA en Organización de empresas y ejerce como docente en el Departamento de Economía de la empresa de la URJC. Anteriormente ha desempeñado otros puestos docentes en una decena de universidades y trabajado en consultoras de primer nivel en el área de servicios financieros.

Carmen Llovet es Doctora europea en Comunicación por la Universidad de Navarra y profesora Titular en la Facultad de Comunicación y Artes de la Universidad Nebrija, donde forma parte del grupo de investigación INNOMEDIA. Ha sido investigadora predoctoral en Glasgow Caledonian University y posdoctoral en Southern Illinois University. Participó en programas Erasmus+ en Radboud University, ICD Business School y Universidade do Porto.

Pedro Dourado es doctor en comunicación en plataformas digitales. Con experiencia profesional en las áreas de marketing, comunicación y moda, su investigación se centra en el impacto de la comunicación digital en la promoción de la sostenibilidad. Es autor de artículos en los campos de la sostenibilidad, el valor de la marca, la moda circular y el marketing de influencers.

1. Introduction

The rapid expansion of digital information and communication technologies (ICT) has transformed contemporary economies and everyday life. From online shopping and streaming services to teleworking and gaming, digital infrastructures now mediate almost all human activity. However, sustainability research and corporate practice often overlook the significant environmental costs that this connectivity brings. This oversight is connected to broader critiques of digital capitalism and platform-based labor, which highlight how digital infrastructures reproduce unequal environmental and social costs (Azhar, 2021). In the United Kingdom alone, digital consumption produces an estimated 384.2 million tonnes of CO₂ emissions annually (Stokel-Walker, 2024). Greenpeace Spain's Clicking Clean report also says that if the Internet were a country, it would be the sixth most polluted in the world (Greenpeace Spain, 2019). Clarifying what "net-zero" means in practice is non-trivial and remains contested across domains (Loveday, Morrison & Martin, 2022). Similar concerns are raised by The Shift Project (2019), which frames digital sobriety as a necessary condition for reducing the environmental footprint of information and communication technologies.

Digitalisation has become both an enabler for the energy transition and a contributor to rising energy demand. According to the International Telecommunication Union, digital companies play a dual role in the decarbonisation agenda: they invest in renewable energy while simultaneously generating vast material and energetic dependencies through data traffic, cloud computing, and e-waste (International Telecommunication Union [ITU], 2024:2). Between 2010 and 2022, global electronic waste increased by 82 per cent, reaching 62 million metric tonnes (ITU, 2024: 4). This paradox—digital tools facilitate efficiency but intensify resource consumption—calls for a systemic understanding of digital sustainability that encompasses communication, design and infrastructure (Quttainah and Ayadi, 2024). From a software-engineering standpoint, embedding sustainability into requirements and life-cycle decisions is pivotal (Verdecchia et al., 2021).

Moreover, communicating climate and energy risks to decision-makers is a core competency for organisations navigating transitional pathways (Osman, 2024). Communication is not just a way to raise awareness about the environment; it is also a social structure through which people think about, talk about, and make sustainability real. In times of ecological crises, communicators, journalists, and designers play a pivotal role in mediating the urgency of transition and the credibility of institutional responses (León et al., 2022; De Andrés and Chaparro, 2022).

Typically, research on responsible communication focusses on the integration of sustainability goals (SDGs) into organisational reporting and purpose (Barrio-Fraile

et al., 2024). However, as Fuchs et al. (2024) argue, sustainability claims within digital infrastructures often reproduce capitalist accumulation logics under a «green» guise. This critical perspective reveals that corporate sustainability discourse must be examined not only as textual content but also as forms, interfaces and material structures in digital media. The energy sector offers a particularly revealing context, since corporate legitimacy hinges on reconciling high-carbon operations with low-carbon narratives.

Emerging evidence underscores the urgency of this approach. Istrate et al. (2024) estimate that online consumption—web browsing, streaming and social media—may account for almost 40 per cent of an individual's annual carbon budget compatible with the 1.5°C target. Pasek (2023) similarly highlights the Internet's growing carbon footprint as a public concern. These studies underline the importance of interrogating how organisations communicate ecological responsibility through their digital environments. Parallel advances in smart-energy ICT further entangle digital systems with decarbonisation agendas (Zhao et al., 2023).

While the environmental impact of digital communication is marginal when compared to the material footprint of energy production, corporate digital environments play a significant symbolic and strategic role in shaping organisational legitimacy, stakeholder trust, and sustainability narratives within the sector.

In light of this context, the current study provides a critical conceptual analysis of the ways in which energy companies incorporate environmental values into their digital communication interfaces. It proposes the Green UX Model as a framework for interpreting how design, usability, and content strategies function as communicative expressions of sustainability. By reframing web eco-design as an act of environmental communication, this article contributes to ongoing debates on corporate responsibility and digital sustainability. The Green UX Model is understood here as a conceptual framework that interprets user experience design as a form of environmental communication, integrating symbolic, functional, and material dimensions of digital interfaces in relation to corporate sustainability.

In this context, the objective of this study is to conceptualise the Green UX Model as a framework for analysing digital environmental communication in the energy sector. Specifically, the article aims (1) to define the core dimensions through which ecological responsibility is communicated via digital interfaces, and (2) to interpret how leading European energy companies translate sustainability commitments into user experience design practices.

The paper is structured as follows: Section 2 reviews the literature on digital environmental communication and corporate sustainability; Section 3 presents the Green UX Model and interprets its application in selected energy-sector digital environments; Section 4 discusses implications and concludes with the contribution of the study to both communication strategy and sustainable digital transformation and adds limitations and future research directions.

2. Conceptual framework

2.1. Digital Environmental Communication and Corporate Sustainability

Recently, European research has highlighted the strategic role of environmental communications in the Green Deal framework. National initiatives in Spain, Italy, and France underscore the intersection of sustainability reporting and digitalisation (Marzal-Felici and Casero-Ripollés, 2024). CSR communication in stigmatised sectors, beyond reputational aims, reveals the instrumentalisation of inclusion and diversity in sustainability narratives (Alonso, Illia & Rodríguez-Cánovas, 2024). As García-Huguet and Mut-Camacho (2024) note, ethical reflection and artistic innovation have also influenced corporate narratives on sustainability, reframing them as cultural practices of accountability. Cross-industry research further shows that digitalisation and sustainability jointly reshape corporate governance structures and communication practices across sectors and countries (Capurro et al., 2023).

Environmental communication has evolved from a peripheral concern into a central research field addressing how societies negotiate the climate crisis and sustainability values (Moser, 2016; Nisbet, 2009). In the digital era, this communication extends beyond traditional media to include websites, social platforms, and user experiences, where corporate sustainability discourse increasingly unfolds (León et al., 2022). Systematic reviews also link digital transformation to measurable shifts in carbon intensities at the firm and sector level (Shen et al., 2023). The notion of digital environmental communication captures how online technologies are mobilised to engage citizens around ecological issues while shaping organisational legitimacy (Ju & Dong, 2023). Within this evolution, energy and sustainability communication have been conceptualised as strategic processes that link organisational responsibility, stakeholder engagement, and environmental narratives (Elving, 2021).

This notion echoes recent calls in Iberian communication scholarship to articulate sustainability through digital strategies and organisational culture (García-Avilés, 2022). According to De Andrés and Chaparro (2022), digitalisation not only amplifies environmental narratives but also transforms their ethical and epistemic dimensions, requiring communicators to «ecologise media cultures». In this sense, environmen-

tal journalistic coverage of climate issues no longer limits communication; it now encompasses the design of digital infrastructures, algorithms, and interfaces that communicate ecological responsibility.

Corporate actors play a pivotal role in this shift. The intersection between communication, technology, and sustainability has generated what Boykoff and Osnes (2021) describe as «creative climate communication»—processes where storytelling, design, and digital infrastructure become tools for environmental engagement. This perspective places corporate communication within a cultural and technological ecosystem that produces, circulates, and contests environmental meanings. On social platforms, CSR dialogues display patterned tensions between transparency, engagement and reputational control (Mazza et al., 2022).

Yet digitalisation also entails new material responsibilities. Servers, data centres, interface designs, and algorithmic systems all possess tangible ecological footprints. Real corporate sustainability communication must go beyond just trying to convince people to include the material conditions of the web. Lehman et al. (2024) stress that the digital infrastructures themselves embody ideological choices about accountability, transparency, and resource management. Similarly, Adomako and Tran (2022) demonstrate that stakeholder engagement and CSR commitment directly influence the coherence of corporate environmental discourse.

This implies that environmental communication in digital contexts operates on at least two interconnected levels: a symbolic layer, where sustainability narratives are articulated, and a material layer, where design and infrastructure decisions either support or contradict those narratives. Bhatti et al. (2022) highlight how internal communication and employee-orientated CSR foster organisational alignment with sustainability values, showing that credible environmental discourse requires internal consistency as well as external transparency.

Digital technologies further reshape the epistemology of sustainability communication. Lodhía et al. (2025) argue that digital tools for sustainability accounting and assurance redefine how environmental performance is represented and audited. Through dashboards, metrics, and visual interfaces, organisations translate ecological data into communicative artefacts that construct their environmental identities. This shift from narrative to data-driven communication intensifies the semiotic and ethical stakes of sustainability: digital platforms disseminate information and materialise specific worldviews about the environment.

From this theoretical standpoint, digital environmental communication can be understood as the convergence of communicative intentions, technological mediation,

and ecological accountability. The concept encompasses not only the messages that corporations disseminate, but also the infrastructure that facilitates their production and experience. The communicative power of a corporate website, for example, resides not only in its textual statements but also in its design choices, which signal low-carbon aesthetics, accessibility, and resource efficiency.

The Green UX Model conceptualises the integration of ecological responsibility into digital user experiences within this framework. By interpreting interface design as a communicative act, it connects corporate sustainability with the material dimension of digital culture. In doing so, it bridges two research traditions—environmental communication and user experience design—by providing an analytical lens to examine how organisations translate ecological values in the digital sphere.

2.2. Research Gap and Model Rationale

Despite the growing scholarship on environmental communication, the digital dimension of sustainability remains underrecognized. Most studies focus on either media coverage of climate issues or corporate sustainability reporting, neglecting the exploration of how ecological responsibility is expressed through the materiality of digital interfaces (Moser, 2016; León et al., 2022). While sustainable design frameworks address energy efficiency and user accessibility, they rarely conceptualise interface design as a communicative act (De Andrés and Chaparro, 2022).

Current studies on corporate sustainability communication often regard websites as impartial mediums for disseminating information. However, Lehman et al. (2024) assert that digital infrastructures reflect ideological presuppositions regarding accountability and control. This study indicates a theoretical gap between the symbolic construction of sustainability discourse and the material systems that sustain it. The absence of common UX-level indicators for digital emissions and sobriety across industries exacerbates this gap (Sarapure & Kumar, 2024).

This article proposes the Green UX Model to bridge this gap, interpreting digital sustainability not only as technical optimisation but also as a communicative practice. The model synthesises concepts from environmental communication (Moser, 2016; Nisbet, 2009), stakeholder management (Adomako and Tran, 2022), and critical accounting (Lehman et al. [2024]) to establish a connection between ethical responsibility and design logic. It posits that digital environments communicate environmental values through their form, interactivity and infrastructural transparency.

In this sense, the model's rationale is to bridge two research traditions that have evolved in parallel—environmental communication and user experience design—by conceptualising web ecodesign as a mode of sustainable discourse. The Green

UX Model thus provides an interpretive framework for analysing how organisations translate ecological commitments into the digital sphere and how digital infrastructures themselves become rhetorical actors within corporate sustainability narratives.

The model conceptualises each dimension as both a communicative function and a design criterion: transparency relates to informational clarity, minimalism relates to aesthetic and energy efficiency, participation relates to interactive co-creation, and material awareness relates to infrastructural accountability. These four dimensions will guide the analytical interpretation of energy-sector websites in the following section.

3. Analytical Results: The Green UX Model and Environmental Practices in the Energy Sector

3.1 Analytical approach

This study adopts a qualitative and interpretive analytical approach, using selected corporate websites as illustrative cases to support the conceptual development of the Green UX Model, rather than as a basis for empirical generalisation. The energy sector constitutes a particularly relevant context for this analysis due to the tension between its high-carbon operational structures and the increasing prominence of sustainability claims in corporate communication. The decision to conduct the study in this sector stems from the fact that its business is based on energy management and innovation in energy policy towards cleaner energy practices. Therefore, it is particularly relevant to know whether these companies apply the same philosophy internally.

This section analyses how energy companies represent environmental responsibility through their digital interfaces. The approach is qualitative and interpretive: corporate websites are treated as communicative tools, where sustainability values are encoded in design, structure, and narrative. External benchmarking resources assist in corroborating assertions of carbon neutrality and offsetting (Climate Impact Partner, n.d.; New Climate Institute, n.d.). Rather than measuring quantitative indicators, the analysis interprets how visual, linguistic and interactive choices communicate ecological commitment. The energy sector is a relevant field of study, as these organisations face strong social expectations to decarbonise while remaining heavily dependent on fossil infrastructure.

We examined the websites of leading European energy corporations between March and May 2025, following the logic of interpretive content analysis. We focused on textual claims, design aesthetics, navigational structure, accessibility features, and sustainability reporting tools. We compared these online environments to the conceptual dimensions of the Green UX Model, based on literature (Kiourtis, et al., 2024)

where the following study factors apply: transparency, minimalism, interactivity, and low-carbon design. The selected companies are the leading energy companies in terms of business volume.

3.2 Dimensions of the Green UX Model

3.2.1. Transparency and traceability

Transparency concerns how companies make environmental information accessible and verifiable. Some energy firms provide dedicated “Sustainability Dashboards” that visualise carbon data and renewable-energy metrics. According to Lodhía et al. (2025), digital tools for sustainability reporting transform data into communicative artefacts that construct corporate identities. Infographics and interactive sliders often frame transparency in the analysed cases, inviting user participation while subtly controlling the narrative. Experiments show that surfacing explicit sustainability information within interfaces can increase trust and pro-environmental choices (Penkert & Gröschel, 2023). This tension illustrates Lehman et al. (2024) argument that accountability in the digital age is both ethical and performative, dependent on how information is mediated rather than on its factual depth.

In several analysed cases, this principle materialises through the structuring and visual framing of sustainability information in ways that foreground environmental performance, data visibility, and narrative coherence.

3.2.2. Minimalist and low-carbon aesthetics

Visual minimalism emerges as a key rhetorical strategy. Websites are increasingly adopting pale backgrounds, short text blocks, and static imagery to signal ecological restraint. However, as Ju and Dong (2023) observe in their study of dialogic communication, such aesthetic choices can mask rather than reveal engagement: the appearance of simplicity may conceal complex infrastructures of energy use. The Green UX Model interprets minimalist aesthetics as a communicative claim — a semiotic expression of sustainability that must be evaluated in relation to the actual carbon intensity of digital operations. Classroom and workplace initiatives around “digital wellbeing” likewise point to design choices that reduce attention- and energy-intensive usage patterns (Monge Roffarello & De Russis, 2023).

In several analysed cases, this principle materialises through restrained visual compositions, simplified page architectures, and design choices that prioritise clarity and sobriety over visual density.

3.2.3. Participatory design and stakeholder dialogue

Digital sustainability also involves ways in which corporations enable users to interact with or question sustainability claims. Several analysed websites incorporate feedback tools, virtual assistants and links to social networks framed as “dialogue spaces”. This resonates with Adomako and Tran (2022), who emphasise the importance of stakeholder management and CSR commitments in credible sustainability communications. Yet many of these interfaces restrict participation to predefined options, turning dialogue into a curated performance rather than an open exchange. Case studies of green app interfaces suggest that design-thinking processes can scaffold more meaningful, task-orientated participation (Sarto et al., 2024).

As Bhatti et al. (2022) demonstrate, authentic engagement depends on an internal organisational culture as well as external messaging. Adoption dynamics are influenced by perceived usefulness and ease of use—fundamental factors of uptake that continue to be relevant for sustainable UX (Venkatesh et al., 2003). From this perspective, the Green UX Model underscores that dialogic features must be supported by genuine responsiveness to stakeholders. Social-media interaction in the ESG arena intensifies these tensions, as firms strike a balance between engagement and compliance-driven messaging (Casalegno et al., 2024). The diffusion of sustainable design know-how—from UI patterns to component libraries—is accelerating across professional and educational contexts (Sarapure & Kumar, 2024).

In several analysed cases, this principle materialises through interface features that frame sustainability as an interactive concern, encouraging user engagement while delimiting the scope and direction of participation.

3.2.4. Material awareness and infrastructural responsibility

Environmental communication in digital contexts cannot ignore the physical infrastructures that sustain online presence. Data centres, servers and algorithmic processes consume energy and generate emissions. Bibliometric mapping shows a rapid proliferation of cross-sector tools for carbon footprint tracking and reporting (Adhikari, Li & Gopalakrishnan, 2025). Lehman et al. (2024) argue that communication technologies embody ideological choices about resource allocation and accountability. Integrating material awareness into interface design—for example, low-energy coding, compressed images, or renewable-powered hosting—represents an ethical extension of environmental communication. Sector-level audits demonstrate that even ostensibly low-impact sites can exhibit sizeable footprints without targeted optimisation (Sánchez-Cuadrado & Morato, 2024). This approach corresponds to Moser’s (2016) call for communication research to address not only messages but also the systemic conditions of sustainability discourse.

In several analysed cases, this principle materialises through implicit or explicit signals of digital restraint, efficiency, or infrastructural responsibility embedded in the design and performance of the websites.

3.3. Interpretive synthesis

The analysis reveals that corporate sustainability communication in the energy sector operates through a delicate balance between symbolic and material dimensions. Websites present sustainability as an interactive narrative, but the communicative depth varies widely. Some firms use data visualisation and storytelling to promote behavioural change, while others produce formulaic messages aligned with regulatory compliance. Urban-infrastructure perspectives remind us that digital sustainability interacts with broader resilience strategies and place-based constraints (Umoh et al., 2024).

The Green UX Model synthesises these findings by proposing that credible digital environmental communication depends on three interrelated principles:

1. Consistency between the organisation's environmental claims and the digital infrastructures that support them;
2. Transparency in how ecological information is produced and visualised;
3. The model fosters stakeholder involvement in sustainability governance through participation that extends beyond simulated dialogue.

By linking these principles, the model advances a communicative understanding of digital sustainability that integrates ethics, design and environmental performance. It responds to what León, Negrodo, and Erviti (2022) describe as the need for "new narratives of climate communication" that can translate complexity into meaningful public engagement.

Ultimately, the analysis suggests that energy-sector websites function as laboratories of environmental communication, where organisations negotiate legitimacy through design. The Green UX Model does not seek to dictate aesthetic standards but to illuminate the communicative consequences of digital decisions. In doing so, it bridges the gap between sustainability discourse and the environmental footprint of the very media that convey it.

In this context, the Green UX Model helps connect environmental communication and digital design. It conceptualises websites as hybrid artefacts where organisational identity, ecological accountability, and technological mediation converge. By

interpreting UX choices as communicative acts, the model extends existing theories of sustainability communication into the digital realm.

For communication professionals, the findings emphasise the need to align sustainability with UX design teams. Regulatory bodies could promote common disclosure standards for digital emissions, while universities should integrate digital environmental literacy into communication curricula. Industry alliances might develop carbon-label systems for websites, allowing users to compare digital footprints much as they compare energy efficiency in appliances. Such steps would transform sustainability from a rhetorical goal into a measurable communicative practice.

4. Discussion and conclusions

4.1. Discussion

The analysis of energy-sector digital environments reveals that corporate sustainability communication operates within a complicated framework of rhetoric and materiality. The Green UX Model has shown that sustainability discourse is not confined to the textual or visual layers of corporate websites but extends to the very design principles and infrastructural choices that underpin them. This insight echoes Lehman et al. (2024) argument that digital infrastructures perform ideological work, shaping both the content and credibility of sustainability communications. Emerging ICTs for smart grids and flexible demand illustrate how technical architectures co-produce communicative claims of transition (Zhao et al., 2023).

Across the cases examined, the aesthetic of environmental responsibility—expressed through minimalism, clean typography and green-toned palettes—functions as a symbolic shorthand for ecological commitment. Yet these visual tropes can also obscure the energy-intensive realities of digital production. As Ju and Dong (2023) remind us, corporate communication in controversial industries often relies on dialogic appearance rather than genuine exchange. In the same way, eco-aesthetic design can become a rhetorical façade that masks the material emissions of online infrastructures. Risk-communication work suggests reframing interface choices as exposure-reducing interventions for stakeholders (Osman, 2024). The challenge, therefore, lies in distinguishing between communicative innovation and what may be termed ‘green digital washing’.

The findings also underscore the use of transparency mechanisms, such as dashboards, reports, and interactive charts, to visualise environmental data, yet they rarely facilitate accountability. Independent benchmarks and watchdogs can help normalise disclosure baselines for digital footprints (Climate Impact Partner, n.d.;

The New Climate Institute, n.d.). Data are framed as evidence of action, but the underlying methodologies remain opaque. This supports Adomako and Tran's (2022) view that stakeholder management and CSR commitment are decisive for ensuring that sustainability communication does not remain a symbolic exercise. Meaningful transparency, according to the Green UX Model, requires that the communicative form mirrors the ethical substance of the message.

The model also stresses how important it is for everyone to be involved in digital sustainability. Energy companies are increasingly providing user-feedback tools and links to social networks, yet these channels often cater only to pre-formulated queries or customer service. Bhatti et al. (2022) show that employees need to be on the same page with each other and with the company's long-term goals in order to be truly engaged. Extending this insight to the digital domain, participatory design in corporate websites should empower rather than merely perform stakeholder interaction.

The concept of digital pollution also emerges as a communicative paradox: the very infrastructures that host environmental discourse generate emissions through data transfer, server operations, and device obsolescence. Integrating low-carbon design principles—such as optimised images, reduced animations and renewable hosting—transforms UX design into an ethical practice. This resonates with Moser's (2016) call for communication research to address not only symbolic dimensions but also the systemic and material conditions of sustainability. Aligning development workflows with Green-IT practices can operationalise this shift at the code and architecture levels (Verdecchia et al., 2021).

4.2. Conclusions

The analysis addresses the objectives outlined at the beginning of the article by demonstrating how the Green UX Model allows for the interpretation of digital interfaces as communicative expressions of corporate environmental responsibility. The analysis identifies companies' efforts to be pioneers in redesigning their websites to have a lower environmental impact and establish leadership in their communication strategy.

This study expands our knowledge about digital environmental communication by situating web eco-design within the communicative practices of corporate sustainability. Through the Green UX Model, it argues that ecological responsibility must be embedded in both the content and the materiality of digital media. The analysis demonstrates that sustainability communication in the energy sector remains marked by tensions between innovation and inertia, transparency and control, and ethical intention and infrastructural dependence.

The article's main contribution lies in reframing digital sustainability as a communicative process rather than a purely technical one. It calls for organisations to evaluate the environmental implications of their digital strategies and align interface designs with broader sustainability commitments. For scholars, the model offers a conceptual lens through which to study the convergence of environmental discourse, corporate accountability, and digital culture.

Limitations include the focus on a small corpus of European energy companies and the qualitative nature of the analysis. Future research could expand the model to comparative contexts or integrate quantitative assessments of website carbon impact. Nevertheless, by linking environmental communication with UX design, this study provides a foundation for understanding how digital infrastructures can both express and compromise ecological responsibility.

In conclusion, facing environmental challenges, communication research must move beyond analysing messages to interrogate the material infrastructure of meaning-making. Digital sustainability, as theorised through the Green UX Model, demands an ethic of communication that is as much about energy, code, and design as it is about words and images.

Future studies should explore cross-cultural differences in Green UX narratives and how citizens interpret digital environmental cues. Comparative analyses between public institutions, NGOs and private corporations could clarify whether digital sustainability is becoming a common communicative norm or remains a branding strategy.

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