

# Analyzing Sustainability Communication through the Life Cycle Assessment Approach: A Conceptual Examination of Apple's Carbon-Neutral Watch Campaign

## Yaşam Döngüsü Değerlendirmesi Yaklaşımıyla Sürdürülebilirlik İletişiminin Analizi: Apple Watch Karbonsuz Kampanyası Üzerine Kuramsal Bir İnceleme

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**Abstract:** This study aims to analyze Apple's 2023 carbon-neutral Apple Watch campaign from the perspective of Life Cycle Assessment (LCA) within communication processes. The research argues, within a conceptual framework, that sustainability-oriented advertising cannot be reduced to short-term message delivery, but should instead be understood as producing measurable environmental and social impacts throughout the entire life cycle. Although the LCA methodology was originally developed to evaluate the environmental impacts of products and services, this study adapts and applies it to communication practices. Moreover, since the LCA approach is also widely applied in fields such as agricultural economics and natural resource management, it adds an interdisciplinary dimension to the methodological framework of this research. In this context, the analysis focuses on how claims of carbon neutrality were articulated during the production, use, and disposal phases, how the emphasis on renewable energy and recycled materials was communicated, and how these strategies were reflected in both social perception and brand image. The study does not rely on surveys or field research; rather, it is based on secondary data obtained from publicly available corporate reports, legal documents, and media sources. The findings reveal that the campaign established a sustainability-oriented communication strategy; however, its reliance on carbon credits and ongoing legal processes has limited the perceived credibility of its messages. This highlights the necessity for sustainability communication to be conducted within the principles of verifiable data and transparency. By demonstrating the applicability of the LCA methodology to communication research, the study contributes to the literature both theoretically and methodologically, while also proposing a new conceptual framework for researchers seeking to evaluate the long-term impacts of sustainability-oriented advertising campaigns.

**Keywords:** Life Cycle Assessment (LCA), Sustainability Communication, Advertising Campaigns, Apple Watch, Carbon Neutrality

**Özet:** Bu çalışma, Apple'in 2023 yılında tanıttığı karbon nötr Apple Watch kampanyasını, iletişim süreçlerinin yaşam döngüsü değerlendirmesi (Life Cycle Assessment – LCA) perspektifinden analiz etmeyi amaçlamaktadır. Araştırmada, sürdürülebilirlik odaklı reklamcılığın yalnızca kısa vadeli mesaj iletimine indirgenemeyeceği, aksine tüm yaşam döngüsü boyunca ölçülebilir çevresel ve toplumsal etkiler üretebileceği kuramsal bir çerçevede tartışılmaktadır. LCA metodolojisi, geleneksel olarak ürün ve hizmetlerin çevresel etkilerini değerlendirmek amacıyla geliştirilmiş olsa da, bu çalışmada iletişim pratiklerine uyarlanarak incelenmiştir. Ayrıca LCA yaklaşımı, tarım ekonomisi ve doğal kaynak yönetimi gibi alanlarda da yaygın biçimde kullanıldığından, çalışmanın metodolojik çerçevesine disiplinlerarası bir boyut kazandırmaktadır. Bu bağlamda kampanyanın üretim, kullanım ve bertaraf aşamalarında karbon nötrlüğü iddialarının nasıl aktarıldığı, yenilenebilir enerji ve geri dönüştürülmüş malzeme kullanımının hangi yönleriyle öne çıkarıldığı ve bu stratejilerin toplumsal algı ile marka imajına nasıl yansıtıldığı irdelenmiştir. Çalışma, anket veya saha araştırmalarına dayanmamakta; bunun yerine kamuya açık kurumsal raporlar, hukuki belgeler ve medya kaynaklarından elde edilen ikincil veriler üzerinden yürütülmüştür. Bulgular, kampanyanın sürdürülebilirlik odaklı bir iletişim stratejisi geliştirdiğini, ancak karbon kredilerinin etkinliği ve hukuki süreçlerin, iletilen mesajların güvenilirlik algısını sınırlandırdığını ortaya koymaktadır. Bu durum, sürdürülebilirlik iletişiminin doğrulanabilir veriler ve şeffaflık ilkeleri çerçevesinde yürütülmesi gerektiğini açıkça göstermektedir. Çalışma, LCA metodolojisinin iletişim araştırmalarına uygulanabilirliğini ortaya koyarak literatüre hem kuramsal hem de yöntemsel katkı sunmakta; ayrıca sürdürülebilirlik odaklı reklamların etkilerini uzun vadeli bir bakış açısıyla değerlendirmek isteyen araştırmacılar için yeni bir kavramsal çerçeve önermektedir.

**Anahtar Kelimeler:** Yaşam Döngüsü Değerlendirmesi (LCA), Sürdürülebilirlik İletişimi, Reklam Kampanyaları, Apple Watch, Karbon Nötrlüğü

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## 1. Introduction

The central role of sustainability-oriented corporate practices and environmental responsibility in business and society redefines the function of communication processes. Brands are not only tasked with reducing the environmental impacts of their products but also face the imperative of communicating these efforts transparently and credibly to target audiences. In this context, communication must be considered not merely as a tool for message delivery but as a holistic process generating both environmental and social impacts. Communication cannot be reduced to the mere transmission of messages between a sender and a receiver; rather, it encompasses multidimensional processes such as meaning production, channel selection, interaction with target audiences, and broader social or environmental impacts (Craig, 1999). Today, communication has become an effective tool not only for information delivery but also for fostering social responsibility and constructing brand image, particularly in the context of sustainability and environmental awareness (Schultz et al., 2013). Nevertheless, the systematic analysis of the impacts that emerge throughout the life cycle of communication processes remains relatively limited in the academic literature.

Life Cycle Assessment (LCA) has traditionally been developed as a method for evaluating the environmental impacts of products and services from raw material extraction to end-of-life disposal (European Commission, 2010; U.S. Environmental Protection Agency [EPA], 2006). The four fundamental phases of LCA are: goal and scope definition, life cycle inventory analysis (LCI), life cycle impact assessment (LCIA), and interpretation. When adapted to communication practices, this framework enables a systematic analysis of the resources consumed, the outputs generated, and the potential social impacts throughout the life cycle of an advertising campaign (Prado et al., 2022). Moreover, the LCA approach is widely applied in the fields of agricultural economics and natural resource management, thereby adding an interdisciplinary dimension to the methodological framework of this study.

There are studies demonstrating that LCA data can be used as a tool in marketing communication to convey data-driven environmental messages. In this context, the use of LCA information has been proposed to enhance the effectiveness of environmental and sustainability claims; however, scholars emphasize that the quality and accuracy of such communication must be critically examined (Vizzoto et al., 2021; Nguyen, 2023; Prado et al., 2022). In particular, within the scope of sustainability communication, it is argued that the credibility of green marketing strategies should be reinforced through a “life cycle thinking” perspective. Furthermore, presenting transparent and comparable LCA results to external stakeholders may also reduce the challenges associated with the transmission of information within internal management processes (Prado et al., 2022).

Within the scope of this study, Apple’s 2023 “carbon-neutral” Apple Watch campaign is evaluated in this context. On September 12, 2023, Apple introduced the Apple Watch Series 9, SE, and Ultra 2 as its “first carbon-neutral products,” announcing that the production process relied on 100% clean energy, incorporated 30% recycled or renewable materials, and achieved 50% lower emissions in logistics. The company also stated that overall emissions had been reduced by at least 75%, with the remaining share offset through high-standard, nature-based carbon compensation projects (Apple, 2023). However, these claims have been subject to legal and consumer debates due to concerns over the verifiability of carbon offset projects (Dib v. Apple Inc., 2025; Reuters, 2025; The Verge, 2025). The lawsuit alleges that Apple’s offset projects failed to deliver additional CO<sub>2</sub> reductions and that the company presented them as if they were independent initiatives. In contrast, the Environmental Defense Fund, an environmental advocacy organization, endorsed Apple’s approach—combining deep decarbonization with high-quality carbon credits—as a credible model of climate action and filed an amicus brief in support (EDF, 2025).

Within this complex context, the current study aims to adapt the Life Cycle Assessment (LCA) approach to communication processes at a conceptual level. The research seeks to demonstrate that sustainability-oriented advertising cannot be reduced to mere message transmission; rather, it constitutes multidimensional practices that generate measurable environmental and social impacts throughout their entire life cycle.

## 2. Theoretical Framework

Life Cycle Assessment (LCA) is a holistic method developed to systematically examine the environmental impacts of products or services. This approach encompasses the environmental effects of a product or process from raw material extraction through production, distribution, use, and disposal. In doing so, it enables the analysis not only of individual processes but of the entire life cycle’s environmental impacts (European Commission, 2010; U.S. Environmental Protection Agency [EPA], 2006). The methodological structure of LCA consists of four main stages: goal and scope definition, life cycle inventory analysis (LCI), life cycle impact assessment (LCIA), and interpretation. These stages are recognized as standard in environmental decision-making processes and are widely referenced in the literature (Prado et al., 2022).

Traditionally employed in the fields of environmental engineering and sustainable production, LCA has in recent years also been adapted to marketing and communication studies. In particular, the use of LCA data in communication tools is emphasized as a means of reinforcing the credibility of environmental claims within sustainability-oriented advertising campaigns (Vizzoto et al., 2021). Research indicates that consumers respond

more positively to environmental messages; however, the persuasive power of these messages increases only when they are supported by verifiable and reliable data (Nguyen, 2023). In this regard, LCA provides a methodological framework that can mitigate the risk of “greenwashing” in sustainability communication (Vizzoto et al., 2021).

The integration of the LCA approach into communication processes enables advertising and corporate communication practices to be understood not merely as short-term message transmission, but as multidimensional processes that generate measurable social and environmental impacts throughout the life cycle. In this context, sustainability claims become not only tools for strengthening brand image but also strategic elements to be evaluated within the frameworks of social perception, environmental responsibility, and corporate transparency (Prado et al., 2022; Nguyen 2023). Moreover, addressing media planning, campaign materials, and distribution processes from a life cycle perspective contributes to a more holistic analysis of the environmental impacts of communication activities.

Apple's 2023 carbon-neutral Apple Watch campaign constitutes a significant example that demonstrates the applicability of this theoretical framework. The campaign positioned elements such as the use of renewable energy, the incorporation of recycled materials, and the reduction of carbon emissions in logistics processes at the center of its communication strategy. However, legal debates concerning the effectiveness of carbon credits and the credibility of carbon neutrality claims highlight once again the importance of the “interpretation” phase of the LCA methodology (Dib v. Apple Inc., 2025; Reuters, 2025; The Verge, 2025). Accordingly, the theoretical framework makes it possible to assess not only the strengths of the campaign but also its contested and debatable dimensions in a holistic manner.

In conclusion, the theoretical adaptation of the LCA approach to communication processes allows for a holistic analysis of the social and environmental impacts of sustainability-oriented campaigns across their entire life cycle. Within this framework, the study contributes to communication research not only at a methodological but also at a conceptual level, thereby laying the groundwork for sustainability communication to become more transparent, accountable, and measurable.

### 3. Methodology

This study aims to analyze Apple's 2023 carbon-neutral Apple Watch campaign through the lens of Life Cycle Assessment (LCA) in communication processes, thereby demonstrating that sustainability-oriented advertising goes beyond short-term message transmission and instead constitutes a practice that generates measurable environmental and social impacts throughout its entire life cycle. The significance of the research lies in establishing,

both conceptually and methodologically, that the LCA methodology can be applied not only to assess the environmental impacts of products and services but also to evaluate the credibility and accountability of communication strategies. In this way, the study offers a conceptual contribution to the relatively limited body of literature addressing the intersection of LCA and communication, while situating contemporary debates on the verifiability of environmental claims within a theoretical framework.

The population of the study consists of sustainability-oriented corporate communication and advertising campaigns, while the sample is represented by a single case selected from this population—namely, Apple's carbon-neutral campaign. The case was purposefully chosen due to its global visibility, its central emphasis on renewable energy and recycled materials, and the fact that its carbon neutrality claims have been subject to both legal and consumer-level debates.

This scope introduces a limitation regarding the generalizability of the findings to other similar campaigns due to the study's decision to conduct an in-depth analysis of a single specific case. However, this methodological choice enables a more detailed analysis of the transmission of environmental claims and the perception of credibility in communication through a unique approach (LCA) to the literature.

The study adopts a theoretical research design that does not rely on quantitative field data collection and is conducted through publicly available secondary sources. The data foundation consists of Apple's corporate announcements and sustainability reports, campaign materials, legal documents concerning carbon neutrality, and content published in reputable news outlets. The LCA methodology, with its four standard phases (goal and scope definition, life cycle inventory analysis [LCI], life cycle impact assessment [LCIA], and interpretation), is adapted to communication processes (European Commission, 2010; U.S. Environmental Protection Agency [EPA], 2006). The analytical insights provided by this LCA adaptation, particularly concerning the systematic evaluation of communicative impact and verifiability, suggest that LCA offers a robust framework for enhancing credibility in communication. These findings are consistent with the existing literature on consumer engagement and the mitigation of greenwashing risks (Vizzoto et al., 2021; Prado et al., 2022; Nguyen, 2023).

Within the adopted conceptual-analytical framework, the four-phase structure of the Life Cycle Assessment (LCA) methodology was systematically adapted to the context of the Apple Watch campaign, with a focus on sustainability communication. Initially, in the Goal and Scope Definition phase, the campaign's goals, message strategy, and the boundaries of its “carbon neutrality” claims were defined in terms of communication objectives. Subsequently, a Life Cycle Inventory Analysis (LCI) was conducted, assessing the emphasis on renewable energy

and recycled content in production and campaign materials, alongside the communicative implications of media and logistics choices. Furthermore, the Life Cycle Impact Assessment (LCIA) phase involved an examination of the discourse of environmental benefits alongside potential effects on social perception and brand credibility, critically discussing the limiting role of reliance on carbon credits for communicative trustworthiness. Finally, the Interpretation phase compared the findings with the LCA–communication literature, enabling a holistic analysis of the campaign’s strengths and the dimensions requiring improvement (European Commission, 2010; U.S. Environmental Protection Agency [EPA], 2006; Vizoto et al., 2021; Prado et al., 2022; Nguyen, 2023).

The assumptions underlying the research design are articulated at three levels. First, it is assumed that Apple’s publicly available corporate documents and sustainability disclosures are accurate and up to date in terms of content. Second, it is accepted that news and analyses published in reputable media sources faithfully reflect the campaign’s reception in the public sphere. Third, the transferability of the LCA methodology to communication processes is taken as a basis for analytical validity. These assumptions, given the secondary nature of the data and the theoretical orientation of the study, serve to clarify the boundaries of the evaluative framework.

While the conceptual, single-case design inherently dictates methodological boundaries such as the absence of empirical data and limited generalizability, these limitations simultaneously define a clear research agenda for future empirical and comparative studies in this field.

In conclusion, the methodology adopted in this research elevates the study beyond a mere description of a single campaign by systematically adapting the rigorous, phase-based structure of Life Cycle Assessment (LCA) to communication processes, thereby constructing a conceptual framework for evaluating these processes at theoretical and analytical levels. This approach allows sustainability communication to be evaluated not only through discursive strategies but also through measurable inputs and outputs across the entire life cycle. Nevertheless, the limitation of relying on a single case analysis and the absence of empirical data (such as surveys or experiments) naturally restrict the generalizability of the findings. However, this limitation does not diminish the value of the study; rather, it provides a foundation for future research involving comparative analyses of campaigns across different sectors and the direct measurement of consumer perceptions. Moreover, the study addresses a gap in the communication literature where the life cycle approach has not been systematically applied, offering an original methodological framework for evaluating sustainability communication not only at a theoretical level but also in practical terms. In this context, Table 1 summarizes how the LCA phases were adapted to communication research. Thus, the study contributes to international debates in terms of both methodological

transparency and theoretical advancement, while providing a robust basis for future empirical research.

**Table 1.** Phases of LCA-based communication analysis and their application in this study

LCA Phase	Definition	Application in This Study
Goal and Scope Definition	Identification of the objectives and boundaries of the study	Analysis of the communicative objectives of Apple’s carbon-neutral Apple Watch campaign and the boundaries of its carbon neutrality claims
Life Cycle Inventory Analysis (LCI)	Identification of inputs and processes used	Assessment of renewable energy usage, proportions of recycled materials, and choices related to media/logistics
Life Cycle Impact Assessment (LCIA)	Measurement of the environmental, social, and brand-level impacts of inputs	Analysis of the credibility of carbon credits, environmental benefit discourse, and the effects on social perception and brand credibility
Interpretation	Synthesis of findings, evaluation of strengths/weaknesses and uncertainties	Discussion of the campaign’s sustainability-oriented strengths alongside the limitations arising from reliance on carbon offsets

## 4. Findings

The synthesis of the analysis across the Life Cycle Assessment (LCA) phases suggests that Apple’s sustainability communication is fundamentally structured around a tension between verifiable input claims and controversial financial mechanisms. This core structure dictated that the communicative focus, while centered on Carbon Neutrality Visibility in the Goal and Scope Definition phase, was constrained in terms of accuracy and credibility by the heavy reliance on carbon credits in the Life Cycle Inventory Analysis phase. Ultimately, this duality resulted in an Impact Assessment that reinforced the brand’s sustainability leadership discourse while simultaneously limiting its persuasive power due to ongoing scrutiny. The first stage of the research, goal and scope definition, reveals how Apple structured sustainability-oriented communication in its carbon-neutral Apple Watch campaign. The primary objective of the campaign was to make the company’s commitment to carbon neutrality visible and to communicate this pledge to consumers on a global scale. In the Series 9, SE, and Ultra 2 models introduced on September 12, 2023, Apple announced the use of 100% clean energy in production, an increase in the proportion of recycled or renewable materials to 30%, and a target of 50% lower emissions in logistics. The company further stated that total emissions had been reduced by at least 75%, with the remaining share offset through nature-based carbon compensation projects (Apple, 2023). This approach illustrates how efforts to reduce environmental impacts were instrumentalized in the construction of corporate identity. Moreover, the scope of the campaign extended beyond environmental aspects to include a social dimension. Specifically, the

campaign aimed to create a brand perception aligned with sustainability values, thereby seeking to establish a strong link between consumers' environmental awareness and brand loyalty.

The second stage, life cycle inventory analysis, evaluates the production processes, media channels, and distribution methods employed within the campaign. In its promotional materials, Apple highlighted elements such as energy efficiency, recycled aluminum, and bio-based components (Apple, 2023). The media strategy was also designed to reinforce this discourse, emphasizing green logistics practices aimed at reducing carbon emissions. However, the findings at this stage indicate that carbon credits constituted a central component of the campaign, raising questions about the credibility of its sustainability narrative. In particular, the limited ecological effectiveness of carbon offset mechanisms brought into question the extent to which the campaign's environmental promises were substantive (Reuters, 2025; The Verge, 2025).

The third stage, life cycle impact assessment, encompasses the environmental, social, and brand-level outcomes of the campaign. From an environmental perspective, the campaign created a positive impression by promoting the use of renewable energy and recycled materials. However, its reliance on carbon credits emerged as a factor that limited the campaign's actual environmental performance. From a social perspective, the campaign succeeded in raising consumer environmental awareness through extensive media coverage; yet, the lawsuits and legal debates undermined perceptions of credibility (Dib v. Apple Inc., 2025). At the brand level, Apple reinforced its sustainability-oriented leadership discourse, but criticism of its carbon neutrality claims constrained the campaign's persuasive power on a global scale. Nevertheless, the Environmental Defense Fund, an environmental advocacy organization, evaluated Apple's approach—combining deep decarbonization with high-quality carbon credits—as an innovative strategy and presented it as a credible example of climate action (EDF, 2025). As Bubicz et al. (2019) point out, the integration of social dimensions and transparency into sustainable supply chains represents essential elements for enhancing the credibility of corporate communication and strengthening the persuasive power of environmental claims.

The final stage, interpretation, provides a holistic assessment of the strengths and weaknesses of the campaign. When analyzed through the LCA approach, the findings suggest that the campaign was not merely a short-term advertising effort, but rather a communication strategy that generated measurable impacts throughout the entire life cycle of the campaign. Nonetheless, uncertainties regarding the effectiveness of carbon credits once again highlighted the importance of verifiable data and transparency in communication processes. While Apple's campaign can be regarded as a strong example of sustainability communication, it also demonstrates that

ensuring the social credibility of environmental claims requires a stricter and more transparent application of the life cycle approach. In this context, the strengths and weaknesses of the campaign are summarized in Table 2. A detailed examination of Table 2 reveals that the communication strategy was defined by a critical tension across all LCA phases. The Goal and Scope phase successfully established global visibility for the carbon neutrality claim, yet subsequent phases highlight structural weaknesses. The Inventory Analysis indicates a clear strength in communicating verifiable inputs, such as 100% clean energy and recycled materials, but its core weakness lies in the extensive reliance on carbon credits, immediately raising concerns over the verifiability of offset projects. This foundational weakness, introduced at the inventory level, directly manifested in the Impact Assessment and Interpretation phases: while the communication successfully boosted consumer awareness and reinforced the sustainability leadership discourse (Strengths), the dependence on carbon credits limited the actual environmental performance, leading to legal debates and a constrained persuasive power at the global level (Weaknesses). Ultimately, Table 2 illustrates how the successful communication of material and energy efficiency was systematically undermined by the perceived lack of transparency and legal scrutiny associated with the carbon compensation mechanism.

**Table 2.** Strengths and weaknesses of Apple's carbon-neutral Apple watch campaign by LCA phases

LCA Phase	Strengths	Weaknesses
Goal and Scope	Making the goal of achieving carbon neutrality visible on a global scale	Objectives focused primarily on environmental aspects, with social impacts remaining secondary
Inventory Analysis	Use of 100% clean energy, 30% recycled materials, and 50% emission reduction in logistics	Central role of carbon credits; concerns over the verifiability of offset projects
Impact Assessment	Positive perception created through renewable energy and recycled materials; increased consumer awareness	Legal debates undermining credibility; dependence on carbon credits limiting actual environmental performance
Interpretation	Strengthening of sustainability leadership discourse; positive support from stakeholders such as EDF	Carbon neutrality claims becoming subject to lawsuits; limited persuasive power at the global level

## 5. Discussion

The findings of this research demonstrate that sustainability-oriented communication campaigns cannot be reduced to short-term message transmission but must instead be understood as holistic processes that generate measurable social and environmental impacts throughout their life cycle. Apple's carbon-neutral Apple Watch campaign placed elements such as the use of renewable energy, the incorporation of recycled materials,

and the reduction of emissions in logistics at the center of its communication strategy. This approach aligns with the findings of Vizzoto et al. (2021), who emphasize that consumers perceive environmental claims as credible only when they are supported by verifiable and transparent data. Nevertheless, debates over the effectiveness of carbon credits limited the campaign's persuasive power and undermined the social credibility of its sustainability communication. This conclusion is based on the systematic qualitative analysis of public discourse, specifically as reflected in global media reports (e.g., Reuters, The Verge) that document debates over efficacy and consumer lawsuits challenging the carbon neutrality claim. This outcome parallels Nguyen's (2023) caution that while LCA-based information can serve as a trust-enhancing element in green marketing strategies, it may produce the opposite effect if presented inaccurately or incompletely. A similar example can be observed in the agricultural and food sectors, where life cycle assessments are used to calculate the carbon footprint of products, and these results directly influence consumer trust. Furthermore, as highlighted in the literature on the vulnerability of sustainability communication to greenwashing practices (Delmas and Burbano, 2011; Lyon and Montgomery, 2015), the Apple case illustrates how environmental claims that remain confined to market-driven rhetoric can rapidly lead to reputational loss. The evidence for this reputational loss is directly manifested in the legal challenges (Dib v. Apple Inc., 2025) and widespread critical media coverage observed throughout the campaign's life cycle.

The findings of the study also reveal the adaptability of the LCA methodology to communication processes. Traditionally employed in fields focused on environmental engineering and production, this method, when applied to communication research, enables advertising campaigns to be analyzed not merely as aesthetic or message-oriented endeavors but as processes that generate measurable environmental inputs and outputs. The challenges identified by Prado et al. (2022) in communicating LCA results to decision-makers can similarly be understood as issues transferable to the communication context. As evidenced in the Apple case, the company's public narrative of carbon neutrality faced legal disputes, which in turn reduced the persuasive strength of the campaign's sustainability performance. In this regard, LCA can serve not only as a technical tool of analysis but also as a verification mechanism that enhances credibility among stakeholders. The methodological contribution here lies in demonstrating that LCA can function within the communication discipline not merely as a measurement instrument but also as a strategic framework for validation. This methodological conclusion is derived from the observation that the lack of transparent, LCA-verified data on carbon offsets led directly to legal and public scrutiny, confirming the necessity of using the LCA framework for stakeholder validation, rather than just internal measurement.

The study also highlights the potential contributions of the LCA approach in addressing the risk of greenwashing within sustainability communication. Consumer complaints and legal proceedings reported by Reuters (2025) and The Verge (2025) demonstrate that environmental claims must be communicated not only as part of a marketing strategy but also with a level of accuracy sufficient to sustain social trust relationships. While Apple's carbon neutrality narrative aimed to construct a strong brand image in the public sphere, the case of Dib v. Apple Inc. (2025) illustrates that such claims may threaten corporate reputation if they deviate from the principle of transparency. By contrast, the amicus brief submitted in Apple's favor by the Environmental Defense Fund (2025) argued that combining deep decarbonization with high-quality carbon credits can provide a credible example of climate action. This situation shows that the same campaign generated divergent perceptions among different stakeholders, thereby reinforcing the importance of the interpretive dimension of LCA in communication processes.

In conclusion, this study demonstrates that analyzing sustainability communication through a life cycle approach has the potential to advance a field of inquiry that has thus far been addressed only to a limited extent in the literature. While Apple's campaign illustrates the applicability of LCA in sustainability-oriented communication, it also indicates the need for situating this method within a broader conceptual framework. The limitations of the study include the absence of empirical data and the focus on a single campaign. Nevertheless, the findings provide a strong theoretical foundation for future comparative research. In this respect, the study makes an interdisciplinary contribution by bridging the literatures on sustainability communication and life cycle assessment. Furthermore, the fact that life cycle-based methodologies have not yet been systematically applied in communication research points to a significant gap in the literature; this study partially addresses that gap by offering an original theoretical contribution to the field of sustainability communication. Thus, the research goes beyond being a single case study of Apple and proposes a novel theoretical framework that may guide future empirical and comparative studies.

## 6. Conclusion and Recommendations

This study examined Apple's 2023 carbon-neutral Apple Watch campaign from the perspective of Life Cycle Assessment (LCA), presenting a holistic analysis of sustainability-oriented communication processes. The findings demonstrate that the campaign should not be regarded merely as a short-term advertising strategy; rather, when evaluated within a broader framework encompassing production, use, and disposal stages, it generates measurable social and environmental impacts. This outcome reveals that sustainability communication is not solely a discursive approach but instead constitutes a multilayered process that simultaneously integrates brand image,

social perception, and environmental responsibility.

From a theoretical perspective, the study has demonstrated the adaptability of the LCA methodology to communication research. In doing so, it has enabled the systematic analysis of the impacts generated by sustainability-oriented advertising throughout its life cycle and introduced an interdisciplinary perspective. This demonstrates that, since LCA has originally been developed as a method in fields such as agricultural and natural resource economics, it can serve as a bridge between the discipline of communication and environmental-economic perspectives. In this respect, the research addresses a long-standing methodological gap in the communication discipline and makes a significant contribution to the literature. From a practical perspective, the study emphasizes that environmental claims should not be conveyed merely as marketing tools but rather within the framework of transparency, accuracy, and accountability. Otherwise, the pursuit of building a strong brand image may become subject to legal disputes and reputational loss. This critical implication is empirically grounded in the case study findings, which demonstrated that the absence of transparent, LCA-verified data directly precipitated legal challenges and intense public scrutiny. The materialized risk of reputational damage and legal disputes, observed in the form of consumer lawsuits and critical media coverage, underscores the necessity of accountability in communication strategy.

The main limitation of this research lies in its reliance on a single case study and the exclusive use of secondary data. While this constrains the generalizability of the findings, it nevertheless provides a guiding foundation for future comparative and empirical studies. In particular, the evaluation of sustainability campaigns across different sectors through a life cycle perspective would contribute to testing the applicability of the LCA approach in communication on a broader scale and within diverse contexts. Furthermore, quantitative and qualitative studies aimed at directly measuring consumer perceptions could offer stronger empirical support for the theoretical insights developed in this study.

In conclusion, the case of the Apple Watch campaign demonstrates that sustainability-oriented advertising should be evaluated not merely in terms of message transmission but across its entire life cycle. The LCA approach provides a robust analytical framework for communication research, contributing to the development of sustainability practices that are more transparent, accountable, and measurable. This perspective offers both theoretical and practical opportunities for future research and outlines a long-term roadmap for sustainability-oriented studies within the communication discipline. At the same time, the study's strongest practical contribution lies in showing that sustainability campaigns must be approached not only as tools for brand image construction but also as integral components of corporate strategies involving transparency, accountability, and

the building of social trust. Such an approach offers businesses a concrete roadmap for moving beyond discursive claims toward long-term strategies grounded in life cycle-based verifiable data, while also providing policymakers with applicable recommendations for regulating environmental claims within a framework of accuracy and transparency. This, in turn, may contribute to establishing credibility standards in sustainability communication.

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#### BİLGİ

**Çıkar Çatışması.** Yazarlar arasında çıkar çatışması yoktur.

**Türetilmiş Yayın.** Çalışma herhangi bir yayından türetilmemiş olup özgün bir çalışmadır.

**Fon Bilgileri.** Makalenin yazımı esnasında hiçbir kurumdan maddi destek alınmamıştır.

**Çalışmanın Etik Yönü.** Çalışmada yayınlanmış bilgilerin kullanımı nedeniyle etik kurul izni ve/veya yasal/özel izin gerekmemektedir.

**Katkı Oranı.** Yazarların çalışmaya katkı düzeyi eşit orandadır.

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