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Decarbonising the Cultural Sector: The Role of Startups in Supporting Sustainable Innovation in Museums and Heritage Sites

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Abstract

This ongoing study explores the role of startups in supporting the decarbonisation of the cultural sector, focusing on museums and heritage sites in Italy. As cultural institutions face increasing pressure to align with sustainability goals, they also recognise the potential benefits of adopting green strategies, including attracting new audiences and securing funding. Startups are emerging as key actors in this transformation, offering innovative solutions in areas such as energy efficiency, waste management, and low-carbon digital technologies. However, regulatory and financial barriers hinder the adoption of these technologies, particularly in heritage conservation. By mapping the collaboration between startups and cultural institutions, this paper aims to analyse successful business models and identify challenges to the widespread adoption of sustainable solutions.

Keywords: Startups, innovation, culture, museums, decarbonisation, sustainability

1. Introduction

Cultural institutions recently face increasing pressure to align their management and marketing strategies with more sustainable practices. Like other sectors, the cultural sector recognises that adopting sustainable practices is a social responsibility and an opportunity for growth and attracting new audiences. At the same time, museums and other cultural institutions must balance their mission to preserve heritage with reducing their environmental impact (Potts, 2021; Merriman, 2024).

Current research on sustainable transitions within cultural institutions often focuses on large-scale structural changes or policy-driven approaches, yet little attention has been given to the role of startups as agile, innovation-driven partners in this context. This study addresses this gap by examining how startups contribute distinct technological solutions adaptable to museums and heritage sites' unique needs.

Furthermore, in addition to meeting the growing expectations of consumers and visitors, adopting sustainable marketing strategies offers cultural institutions access to new funding sources. In Europe, many public funds and financing programs require compliance with environmental criteria as a prerequisite for resource allocation. This pushes cultural institutions to revise their operational and marketing strategies towards sustainability, enabling them to access funds dedicated to innovation, sustainability,

and decarbonisation projects.

Within this context, as in other sectors, innovative startups play a key role in providing technological and management solutions that help cultural institutions implement sustainable practices. From energy efficiency to intelligent visitor flow management and low-impact digital technologies, collaborations with startups improve institutions' ecological footprint and offer new sustainable marketing opportunities.

This research explores the key factors driving the museum sector's transition to low-carbon approaches. It identifies the role of innovative startups in these processes and fills an important gap in the literature on the business models (Costa et al., 2023) adopted by such startups and the enabling factors that support their development.

2. Literature review

2.1 Museums, cultural institutions and decarbonisation

The literature has extensively analysed how cultural institutions, including museums, galleries, and monuments, increasingly recognise the urgency of aligning their strategies with the principles of sustainability and decarbonisation (ICOMOS, 2019). This need stems not only from regulatory or social pressures but also from the growing awareness that these changes are essential for the survival and proper functioning of the institutions themselves (Ernst et al., 2016; Fatorić & Seekamp, 2017), as well as for leading climate action by raising public awareness toward sustainable practices (NEMO, 2022).

Numerous international reports (NEMO, 2022; The Shift Project, 2021; Fondazione Santagata, 2024) highlight the increasing commitment of museums to decarbonisation processes, mapping the key areas of intervention. Essential aspects include reusing exhibition materials, introducing energy efficiency technologies and renewable energy sources, and the selection of "climate-sensitive" suppliers (Kagan & Kirchberg, 2016; Merriman, 2024). Conscious use of digital technologies also emerges as a complex challenge, given the rise of digitalisation and growing energy demands (Orr et al., 2021).

Many museums and cultural festivals also implement environmental requirements in procurement processes, prioritising suppliers that adopt sustainable practices and low-emission solutions, improving access to funding streams (Balcare, 2023; ASviS, 2024).

In addition to sustainable technologies and infrastructures, organisational adjustments are equally crucial for the ecological transition. Many institutions are rethinking their operations and internal processes by integrating "carbon literacy" into their structures (ICOMOS, 2019; Julie’s Bicycle, 2020).

Since decarbonising the cultural sector requires a multidimensional effort involving both physical infrastructure and operational practices, cultural institutions often lack the economic and human resources to fully meet this challenge and frequently rely on

external expertise to support their transformation and innovation processes (Merriman, 2024; Politecnico di Milano, 2024).

2.2 The role of startups in the decarbonisation of the cultural sector

The role of startups in supporting innovation and technological transformation processes is well-documented across various economic sectors, from healthcare to agriculture (Costa et al., 2023). In the agricultural sector, for example, startups have significantly contributed to the digitalisation of practices and the promotion of sustainable solutions (Magnin and Doré, 2024), such as efficient resource management, adopting technologies to reduce carbon emissions, and integrating advanced monitoring systems. These innovations have drastically improved the sustainability of a sector traditionally considered high-impact in terms of the environment. Thanks to their agility and ability to experiment with new solutions, startups have demonstrated their capacity to provide concrete responses to global sustainability challenges (Costa et al., 2023; Martins de Souza et al., 2024).

Cultural institutions can benefit from these companies' expertise to improve their resource management and reduce the environmental impact of their activities. However, the cultural sector has always presented unique challenges in terms of technological innovation (Miglietta, 2022; Palumbo, 2022). Managing historical and artistic heritage often imposes constraints that limit the adoption of technological solutions. Additionally, many cultural institutions, particularly small and medium-sized ones, have limited resources, making it difficult to adopt large-scale technological solutions without external support (Politecnico di Milano, 2024). On the other hand, for supplier companies, it is challenging to secure investments that would foster innovation in this sector (Friel and Borrione, 2020).

In light of these considerations and the scarce literature on the subject, this study has a dual objective: to map the areas of collaboration between innovative startups and cultural institutions in the decarbonisation field and analyse the modalities of these collaborations and the business models adopted by the startups. This also aims to identify successful models and any issues hindering the widespread adoption of sustainable solutions by cultural institutions.

3. Methodology

To meet the research objectives, this study adopts a multi-phase approach focused on the Italian context, given the country's significant number of museums and the cultural sector’s importance.

The first phase involved a desk-based mapping of startups in Italy, specifically those addressing decarbonisation challenges, with a subsequent focus on those offering services in the cultural sector. Data were collected from secondary sources such as

innovative startup databases[1] and sector reports like those from Symbola-Unioncamere (2020-2023). Preliminary interviews were also conducted with innovation, culture, and sustainability experts.

Information such as name, sector, location, revenue, and services offered were collected for each startup. The second phase, currently underway, involves a qualitative analysis of selected startups, focusing on their business models, technologies, and decarbonisation strategies. This analysis, guided by the literature review findings, examines how startups tackle environmental issues in the cultural sector.

Semi-structured interviews with startup founders and managers will explore innovation processes, future implementation challenges, and integration expectations.

4. Discussion

The preliminary results of this research highlight the growing involvement of Italian startups in developing decarbonisation solutions within the cultural sector. The mapping of active startups in Italy identified several innovative initiatives addressing climate change challenges in the context of museums and cultural institutions. Consistent with the literature review, the main areas where startups are making significant contributions include the reuse of exhibition setups, energy management through renewable sources, and optimising visitor flows using big data and artificial intelligence.

For example, NonSiButtaViaNiente has developed a model for reusing exhibition setups, promoting a circular economy approach that helps cultural institutions reduce waste and minimise the environmental impact of temporary exhibitions. Another notable startup is UP2YOU, which has developed digital tools to encourage sustainable behaviours among cultural institutions and visitors, allowing for the measurement and compensation of carbon emissions generated by cultural activities.

In addition to operational benefits, adopting sustainable practices can redefine marketing strategies for cultural institutions, presenting a unique brand image that resonates with environmentally conscious audiences. This alignment can enhance visitor loyalty and strengthen the institution's identity as a forward-looking, responsible actor in cultural preservation.

Despite the innovative potential of startups' solutions, several significant challenges have emerged. While many technologies are scalable, they face adoption difficulties due to regulatory and financial barriers. Startups, especially smaller ones, struggle with the strict regulations governing the Italian cultural sector and the limited financial resources available to cultural institutions for investing in innovative solutions despite the presence of public funds and European sustainability-focused grants. Adopting startup-driven sustainability solutions in cultural institutions, therefore, is frequently hindered by stringent regulatory requirements and limited funding. Addressing these

[1] registroimprese.it; crunchbase and others.

challenges requires flexible regulatory frameworks that encourage innovation while respecting heritage conservation standards. Additionally, incentivising public-private partnerships or establishing dedicated funding streams could enable startups to bring scalable solutions to institutions facing budget constraints.

The analysis of startups' business models shows that the scalability of solutions is key to their large-scale implementation. Startups that have found cross-sector applications, not only in the cultural field but also in areas such as tourism and energy, appear to have a higher likelihood of success. However, there remains a need to establish closer collaboration models between startups and cultural institutions, particularly regarding the implementation of solutions tailored to the specific needs of cultural heritage.

5. Conclusion and future research

The preliminary results of this ongoing research indicate that Italian startups are playing an increasingly significant role in supporting sustainability in the cultural sector, offering solutions ranging from the reuse of exhibition setups to energy management and optimising visitor flows. However, regulatory and financial barriers present significant obstacles that limit the widespread adoption of these technologies.

Despite these challenges, some generalist startups operating in the sustainability field, such as those specialising in energy management or mobility optimisation, demonstrate how their technologies can be adapted to the cultural context. These companies, which often develop solutions applicable across various sectors, can find fertile ground to extend their innovations to the cultural sector, thus contributing to the decarbonisation of institutions by implementing non-invasive technologies and advanced management solutions.

However, more effective collaboration models between startups and cultural institutions are needed so that the latter can adopt solutions better suited to their specific needs. The demand analysis, planned as part of the research's future developments, will allow for better identification of such models.

References

ASviS (Alleanza Italiana per lo Sviluppo Sostenibile). (2024). *Organizzazioni culturali e sviluppo sostenibile: le urgenze da affrontare*. Retrieved from https://asvis.it/public/asvis2/files/Pubblicazioni/PositionPaper/2024/PositionPaperCultura_OrgSos_240227.pdf

Balcare, K. (2023). Reduce, reuse, or refuse?: Pioneering sustainability in the theatre scene in Latvia. *Nordic Theatre Studies, 34*(1), 109-126. https://doi.org/10.7146/nts.v34i1.137929

Costa, E., Fontes, M., & Bento, N. (2023). Transformative Business models for Decarbonization: insights from Prize-winning start-ups at the web Summit. *Sustainability*, *15*(18), 14007.

Ernst, D., Esche, C., & Erbslöh, U. (2016). The art museum as lab to re-calibrate values towards sustainable development. *Journal of Cleaner Production, 135*, 1446–1460. https://doi.org/10.1016/j.jclepro.2016.06.196

Fatorić, S., & Seekamp, E. (2017). Are cultural heritage and resources threatened by climate change? A systematic literature review. Climatic Change, 142(1-2), 227-254.

Fondazione Santagata per l'Economia della Cultura (2024), *4C – deCarbonizzazione in Campo Culturale e Creativo*. Retrieved from https://www.fondazionesantagata.it/pubblicazioni/report-4c-impostazione-della-ricerca-1/

ICOMOS Climate Change and Heritage Working Group. (2019). *The future of our pasts: Engaging cultural heritage in climate action. Outline of Climate Change and Cultural Heritage*. Retrieved from https://indd.adobe.com/view/a9a551e3-3b23-4127-99fd-a7a80d91a29e

Julie's Bicycle (2021). *The Missing Link to Climate Action, Research summary*. The British Council.

Kaesehage, K., Leyshon, M., Ferns, G., & Leyshon, C. (2019). Seriously personal: The reasons that motivate entrepreneurs to address climate change. *Journal of Business Ethics*, 157, 1091-1109.

Magnin, L., & Doré, A. (2024). Start-ups to decarbonize agriculture? Empirical elucidation of the promise of ecologization. *Review of Agricultural, Food and Environmental Studies*, 1-25.

Martins de Souza, A., Puglieri, F. N., & de Francisco, A. C. (2024). Competitive Advantages of Sustainable Startups: Systematic Literature Review and Future Research Directions. *Sustainability*, 16(17), 7665.

Merriman, N. (2024). *Museums and the Climate Crisis*. Abingdon, Oxon and New York: Routledge.

Miglietta, A. (2022). Digitale e processi di innovazione per il mondo della cultura. In *Innovazione e Management. Omaggio a Salvio Vicari*. Egea.

NEMO – Network of European Museum Organisations. (2022). *Museums in the climate crisis: Survey results and recommendations for the sustainable transition of Europe*.

Orr, S. A., Richards, J., & Fatorić, S. (2021). Climate change and cultural heritage: A systematic literature review (2016–2020). The Historic Environment: Policy & Practice, 12(3-4), 434-477.

Palumbo, R. (2022). Enhancing museums' attractiveness through digitization: An investigation of Italian medium and large-sized museums and cultural institutions. *International Journal of Tourism Research*, 24(2), 202-215.

Potts, A. (2021). “The Role of Culture in Climate Resilient Development”, UCLG Committee on Culture Reports, n. 10.

Politecnico di Milano (2024), *L’innovazione digitale nei musei italiani nel 2024*, Retrieved from https://www.osservatori.net/it/prodotti/formato/report/innovazione-digitale-musei-italiani-2024-report

Unioncamere-Symbola (2023), *Io sono Cultura 2023. L’Italia della qualità e della bellezza sfida la crisi*. Retrieved from https://symbola.net/collana/io-sono-cultura/

The Shift Project. (2021). *Décarbonons la culture!. Plan de transformation de l’économie française (PTEF).* Retrieved from https://theshiftproject.org/article/decarboner-culture-rapport-2021/