

# Measuring Museum Sustainability. A Dictionary-Based Content-Analysis of French and British National Museums' Annual Reports

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**Framing of the research.** Sustainability is intrinsically linked to each museum's mission, embedded both in its long-lasting nature as a permanent institution and in the need to serve current and future generations (Cerquetti, Montella, 2021). This connection has finally been included in the museum definition approved in Prague, on 24 August 2022. The Extraordinary General Assembly of ICOM recognized the role of sustainability both explicitly and implicitly. On the one hand, the museum definition clearly states that "museums foster sustainability"; on the other, the social dimension of sustainability is recalled by shaping museums as "accessible and inclusive" institutions, which "foster diversity" and "operate and communicate ethically, professionally and with the participation of communities, offering varied experiences for education, enjoyment, reflection and knowledge sharing" (ICOM, 2022).

As already argued (Cerquetti, Montella, 2021), a two-way relationship between museums and sustainability arises: first, social, economic and environmental sustainability can support museum development (sustainability for museums); second, museums can contribute to sustainable development (museums for sustainability). In addition, sustainability should be framed as a multifaced concept composed of intertwined dimensions - cultural, economic, social and environmental (Stylianou-Lambert et al., 2014; Magliacani, Sorrentino, 2021). Among them, culture acts as a center point for the other pillars of sustainability (Culture as Sustainability) and, therefore, "an overarching dimension of sustainability" (Soini, Dessen, 2016, p. 3).

The Covid-19 pandemic and the energy crisis have strengthened the unprecedented problems and uncertainties that emerged in the Age of Disruption (Lindqvist, 2012; Janes, 2014; Lobo Guerrero Arenas, Zuluaga Medina, 2021; Giusti, 2023), proving the environment to be one of the most pressing needs. On this matter, Pomian (2022) has recently argued that, in the long run, global warming and the need to save energy will be a threat to museums. According to the philosopher, ecological ideology opens up a perspective that is difficult to reconcile with museums. As structurally loss-making institutions, they will no longer be state priorities. However, it is worth noting that museums can greatly contribute to climate action through their use of resources and their educational and research programs (McGhie, 2020). In other words, they are responsible not only for environmentally conscious operation and use, but also for shaping environmentally conscious visitor attitudes (Ásványi et al., 2021) and promoting visitors' criticality, introspection and agency (Navas Iannini, Pedretti, 2022).

In this scenario, climate change stands out as society's largest and most complex challenge, calling for a radical transformation in all sectors and countries (NEMO, 2022; Da Silva, Walbe Ornstein, 2022). A recent survey on the climate crisis answered by 578 museums from 38 European countries between April and June 2022 reveals some weaknesses in the sector (NEMO, 2022). Even though almost 80% of museums state that SDGs are reflected in their strategic plans, only 8.9% have made an analysis of possible challenges resulting from climate change. The main causes for impeding museums' sustainable transitions are the lack of funds (59.7%), the lack of support from public administration or policy direction (38.8%) and the lack of knowledge (30.5%). Almost 70% think there is insufficient knowledge about SDGs and climate action. The survey results also suggest that "there is hardly any difference between small, mid-sized and large museums when it comes to prioritizing sustainability, emphasizing sustainability in the planning and management of the museums' premises and properties, or providing opportunities for training around climate-related issues or public actions" (NEMO, 2022, p. 17).

Aiming to contribute to the debate, in recent years, the scientific literature has been discussing how to measure, evaluate and communicate sustainability. Some scholars tried to provide evidence of the impacts of market orientation, customer value approach and innovation on museum sustainability (Recuero Virto et al., 2017). Other studies focused on sustainable criteria for evaluating museum performances and improving their results (Orea-Giner, 2021) or suggested a specific model for measuring museum sustainability (Müller, Grieshaber, 2023). Moreover, given the importance of stakeholder collaboration in the sector, effectively communicating sustainability policies and practices

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has been proven to have a strategic role for its implications across an organization's entire supply chain (Wickam, Lehman, 2015).

When it comes to accountability tools, the quality of annual reporting by museums shows room for improvement (Botes et al., 2013; Brown, 2014; Bambagiotti-Alberti et al., 2016). According to the NEMO survey (2022), 61.8% of museums do not have methods or criteria to measure and assess their sustainable efforts and less than 20% are not required to report their sustainable or green actions to their funding organizations.

**Purpose of the paper.** This research aims to measure the degree of sustainability in European museums' annual reports and similar documents (e.g., annual reports and accounts, "rapports d'activité" and "bilans d'activité").

To have a large, representative, and comparable sample, the research focused on the United Kingdom (UK) and France national museums. As reported by the 2021 edition of the Global Attractions Attendance Report, the annual attendance study for the entertainment and museum industries, published by TEA and AECOM, these countries host the 20 most-visited museums in the world: 5 museums are located in London (UK) and registered 5.4 million visitors in 2021 and 2 in Paris (France) with an attendance of 3.8 million visitors (TEA, AECOM, 2021, pp. 74-75). Moving the focus to the EMEA (Europe, Middle East, and Africa) 20 most-visited museums provided by the same study, 55% (11) are in the UK or France (Tab. 1). Together, in 2021, these institutions registered an attendance of 13.2 million visitors, corresponding to 56.5% of the total attendance of the 20 museums included in the ranking (TEA, AECOM 2021, p. 83).

Tab. 1: EMEA top 20 most-visited museums in 2021 (source: TEA, AECOM, 2021)

Country	City	Museum	Attendance
France	Paris	Musée du Louvre	2,825,000
Russia	St Petersburg	State Hermitage	1,649,000
Spain	Madrid	Reina Sofia	1,643,000
Vatican	Vatican City	Vatican Museums	1,613,000
Russia	Moscow	State Tretyakov Gallery	1,581,000
UK	London	Natural History Museum	1,564,000
France	Paris	Centre Pompidou	1,501,000
UK	London	British Museum	1,327,000
Spain	Madrid	Museo Nacional Del Prado	1,175,000
UK	London	Tate Modern	1,156,000
France	Paris	Musée D'Orsay	1,044,000
France	Paris	Cité Des Sciences et de l'industrie	984,000
Italy	Florence	Galleria degli Uffizi	970,000
UK	London	Victoria & Albert Museum	858,000
UK	London	National Gallery	709,000
UK	Edinburgh	National Museum of Scotland	661,000
UK	London	Science Museum	646,000
Netherlands	Amsterdam	Rijksmuseum	625,000
Poland	Oświęcim	Auschwitz-Birkenau Museum	563,000
Netherlands	Amsterdam	Van Gogh Museum	366,000
<b>Total attendance</b>			<b>23,460,000</b>

Additionally, the UK and France are the countries where annual reporting practices are most deeply rooted, due to both legal and cultural issues.

Since the 1980s, the UK government has implemented a reform program across the public services aimed at differentiating activities at the core of the public sector and those functions that can be undertaken either within or outside the public sector. Along this process, national museums were asked to make and publish annual reports and financial statements through the institution of the board of trustees, thus discharging accountability to external users (Wei et al., 2008, p. 32). In England, the annual report and account (ARA) is a mandatory document for national museums sponsored by the Department for Culture, Media and Sport (DCMS). As stated by the Museums and Galleries Act 1992, each body shall prepare an annual statement of accounts giving a true and fair view of the state of its affairs (par. 9, c. 4); this document shall comply with directions given by the secretary of state in terms of form, content, methods, and principles to be followed (par. 9, c. 5). A similar situation is found in Scotland, Northern Ireland, and Wales, where national museums are supported and funded by the devolved legislatures and specific acts provide directions on annual reporting practices: the National Heritage (Scotland) Act 1985 established that the board of trustees of national museums shall prepare an annual statement following the instructions of the secretary of state (sched. 1, par. 9, c. 3); the Museums and Galleries (Northern Ireland) Order 1998 expressly refers to the annual report

as a mandatory document, to be prepared by the museum board of trustees and transmitted to the department (par. 11); in Wales, the majority of museums operates under the Public Libraries and Museums Act 1964, which placed public museums and art galleries under the superintendence of the secretary of state, thus allowing local authorities to provide and maintain museums and art galleries and establishing the obligation of annual reporting (par. 17).

In France, annual reporting practices for national museums are not an explicit legal obligation. In this country, museum regulations depend on the ownership structure, specifically whether it is a non-profit organization (NPO) or a public body entity. Regarding NPOs, the decree n. 2009-540 of May 14, 2009, generically refers to associations and foundations and establishes the obligation to publish a balance sheet for those who received more than 153,000 euros of donations during the year. Thus, neither museums nor annual reports as mandatory documents are mentioned. Considering the public entity's perspective, the Code du patrimoine establishes as mandatory the annual reporting activity only for the Haut Conseil des musées de France, a national consultative body providing recommendations to French museums, which is required to make and publish an annual report (art. R430-5). Nevertheless, the number of national museums accustomed to reporting documents (mainly "rapports d'activité" or "bilans d'activité") is significantly high. This aspect, together with the continuity of these practices over time (the first public editions of these documents date back to 1973<sup>1</sup>), shows how the need for transparency and accountability is well established in the French national museums' context.

Given these premises, we compared the degree of sustainability intensity in strategic and performance reporting of national museums of the UK and France. The role of the government in managing public museums should impact on the sensitivity to sustainability of these organizations. However, it is interesting to inspect whether there are cross-country differences, especially considering that British museums are legally-bounded to report, while French museums are not. To date, no research has investigated sustainability intensity in European public museums' reporting. Furthermore, the paper aims at assessing the impact of the Covid-19 pandemic on the degree of sustainability-related reporting of public museums.

**Methodology.** In the UK, among the English museums and galleries sponsored by the DCMS, 15 are defined as "national" - as they are established by Acts of Parliament - and 5 are classed as "non-national", namely public-funded museums, other than those directly funded by the central government (NMDC, 2003). In addition, there are national museums in Scotland, Wales and Northern Ireland, supported by the devolved legislatures: national museums in Scotland are funded by the Scottish Executive Education Department and include 5 institutions; in Wales the national museums group funded by the Welsh government is called Amgueddfa Cymru and includes 7 bodies; national museums in Northern Ireland are funded by the Department of Culture, Arts and Leisure of the Northern Ireland Executive and are grouped within the National Museums NI, which looks after 4 institutions. In France, the network of national museums (Réseau des Muséaux Nationaux) includes 66 institutions. Among them, 18 are classed as "établissements publics", as they belong to public institutions, thus having administrative and financial autonomy, 17 are "services à compétence nationale", being part of institutions with national competence and 11 are under the supervision of other ministries.

For the purpose of this research, a group of 37 national museums has been considered (Tab. 2). In the case of the UK, being annual reporting practices mandatory for all museums, we considered the 15 English national museums, in addition to National Museums of Scotland, Amgueddfa Cymru and National Museums NI. Regarding France, 19 museums have been included in the analysis: 15 museums with special autonomy and 4 museums under the supervision of other ministries. A total of 120 documents in both English and French language have been analysed: 67 annual reports and accounts (ARA) and 3 annual review (AR) related to UK museums, and 44 rapports d'activité (RdA) and 6 bilans d'activité (BdA) referred to French museums. As the reporting documents in the UK straddle two years, the last four editions of each document have been considered; in the case of French museums, as the reporting activity corresponds with the solar year, the analysis included the last three editions of each document.

This timeframe also made it possible to consider the COVID-19 dimension and analyze its impact on the perception of museums about sustainability issues, by comparing documents editions published both before and after the deflagration of the pandemic.

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<sup>1</sup> Musée national d'art moderne. Centre Georges Pompidou. Bilan d'activité, <https://www.centrepompidou.fr/fr/le-centre-pompidou/bilans-activite>.

Tab 1: Museums and documents considered for the analysis (source: authors 'elaboration)

Country	City	Museum	Type	Document	Editions
England (UK)	London	British Museum	Historical	ARA	2018/19 - 2021/22
England (UK)	London	Imperial War Museums	Historical	ARA	2018/19 - 2021/22
England (UK)	London	National Gallery	Artistic	ARA	2018/19 - 2021/22
England (UK)	London	Royal Museums Greenwich	Historical	ARA	2018/19 - 2021/22
England (UK)	Liverpool	National Museums Liverpool	Artistic	ARA	2018/19 - 2020/21
England (UK)	London	Science Museum Group	Scientific	ARA	2018/19 - 2021/22
England (UK)	London	National Portrait Gallery	Artistic	ARA	2018/19 - 2021/22
England (UK)	London	Natural History Museum	Scientific	ARA	2018/19 - 2021/22
England (UK)	London	Royal Armouries	Historical	ARA	2018/19 - 2021/22
England (UK)	London	Sir John Soane's Museum	Artistic	ARA	2018/19 - 2021/22
England (UK)	London	Tate	Artistic	ARA	2018/19 - 2021/22
England (UK)	London	Victoria and Albert Museum	Artistic	ARA	2018/19 - 2021/22
England (UK)	London	Wallace Collection	Artistic	ARA	2018/19 - 2020/21
England (UK)	London	Geffrye Museum of the Home	Historical	ARA	2018/19 - 2021/22
England (UK)	London	Horniman Museum	Historical	ARA	2018/19 - 2021/22
Scotland (UK)	Edinburgh	National Museums of Scotland <sup>2</sup>	Group of museums	ARA	2018/19 - 2021/22
Wales (UK)	Cardiff	National Museums of Wales <sup>3</sup>	Group of museums	ARew	2018/19 - 2021/22
Northern Ireland (UK)	Cultra	National Museums NI <sup>4</sup>	Group of museums	ARA	2018/19 - 2021/22
France	Paris	Musée du Louvre	Artistic	RdA	2019 - 2021
France	Paris	Musée d'Orsay	Artistic	RdA <sup>5</sup>	2019 - 2021
France	Paris	Musée de l'Orangerie des Tuileries	Artistic	RdA	2019 - 2021
France	Paris	Musée national d'art moderne. Centre Georges Pompidou	Artistic	BdA	2019 - 2021
France	Paris	Musée du quai Branly «Jacques Chirac»	Historical	RdA	2019 - 2021
France	Versailles	Musée national des châteaux de Versailles et de Trianon	Artistic	RdA	2019 - 2021
France	Paris	Musée Picasso	Artistic	RdA	2019 - 2021
France	Paris	Musée des civilisations de l'Europe et de la Méditerranée (MUCEM)	Historical	RdA	2019 - 2021
France	Paris	Musée Rodin	Artistic	RdA	2019 - 2021
France	Paris	Musée national de l'histoire et des cultures de l'immigration	Historical	RdA	2019 - 2021
France	Fontainebleau	Musée national du château de Fontainebleau	Artistic	RdA	2019 - 2020
France	Sevres	Musée national de la céramique à Sèvres	Artistic	RdA <sup>6</sup>	2019 - 2021
France	Limoges	Musée de la porcelaine Adrien Dubouché à Limoges	Artistic	RdA	2019 - 2021
France	Paris	Musée de la musique	Historical	BdA	2019 - 2021
France	Paris	Musée de l'École nationale des beaux arts	Artistic	RdA	2019 - 2021
France	Paris	Musée de l'Armée	Historical	RdA	2019 - 2021
France	Paris	Musée de l'air et de l'espace	Historical	RdA	2019 - 2021
France	Paris	Musée national de la Marine	Historical	RdA	2019 - 2021
France	Paris	Musée des monnaies et médailles	Historical	RdA	2019 - 2021

Depending on the main focus of the museum, we categorized each museum into one of 4 possible types: artistic, historical (including ethnographical museums), scientific, or group of museums. We adopted a dictionary-based approach to test the hypotheses. Therefore, we constructed a dictionary of expressions related to sustainability. A first panel of words and expressions was constructed starting from the glossary of GRI standards and from the inspection of the most frequent sustainability-related words of the non-financial reporting documents of two well-known international organizations (the annual report of the Van Gogh Museum, and the sustainability report of the Ferrero

<sup>2</sup> It includes the National Museum of Scotland, the National Museum of Flight, the National War Museum, the National Museum of Rural Life, and the National Museums Collection Centre.

<sup>3</sup> It includes the National Museum Cardiff, the St. Fagans National Museum of History Cardiff, the Big Pit National Coal Museum, the Blaenavon National Wool Museum, the Dre-fach Felindre near Llandysul National Slate Museum, the Llanberis National Roman Legion Museum, the Caerleon National Waterfront Museum and Swansea.

<sup>4</sup> It includes the Ulster Museum, the Ulster Folk Museum, the Ulster Transport Museum and the Ulster American Folk Park.

<sup>5</sup> A unique "rapport d'activité" for the "établissement public des musées d'Orsay et de l'Orangerie" is produced.

<sup>6</sup> A unique "rapport d'activité" for the "établissement public des musées nationaux de la céramique à Sèvres et de la porcelaine Adrien Dubouché à Limoges" is produced.

Group). This initial bag of expressions was enriched with additions made by the authors individually and through collective brainstorming. Finally, each of the authors categorized each expression into one of four categories: the three categories of ESG reporting (Environmental, Social, and Governance) and a Transversal category, encompassing general sustainability-related terms. The inter-coder agreement (De Swert, 2012) was deemed satisfactory (Krippendorff's alpha = 0.71), and any disagreement on the categorization of specific expressions was solved through collective discussion. The sustainability dictionary was then translated into French, paying attention to preserving the original meaning of words. In translating to French, all relevant synonyms were considered, while some English expressions resulted in duplicated French occurrences, that were dropped from the final list. For these reasons, the English and French dictionaries did not include the exact same number of words.

Each document was tokenized and, in addition to unigrams (individual words), also relevant n-grams (multiple-words expressions) were preserved as meaningful tokens and not divided into individual words. This procedure was employed to allow the subsequent computation of frequencies of both single-word and multiple-words sustainability-related expressions.

Following the textual editing stage, for each document we computed the E (Environmental), S (Social), G (Governance) and T (Transversal) scores, as the percentage of category frequencies over the number of the document's total occurrences. Then, a comprehensive sustainability score (ESG score) was calculated as the average of the four category-scores. The ESG score was used as the dependent variable (DV) of a mixed-models with random intercept and the museum ID as the grouping variable. As independent variables, we considered two fixed-effect variables at the museum level and two fixed-effect variables at the document level. The museum-level variables were the country of origin (UK or France), and the museum type (historical, artistic, science, or mixed), while the document-level variables were the cut-off year (i.e., whether the document was published before or after than 2020, the year of insurgence of the pandemic), and Covid text relevance (i.e., the presence of Covid-related words within the document).

**Results.** The findings show that the museums' country of origin and the presence of Covid-related words within the documents had a statistically significant influence on the ESG score (Tab. 3).

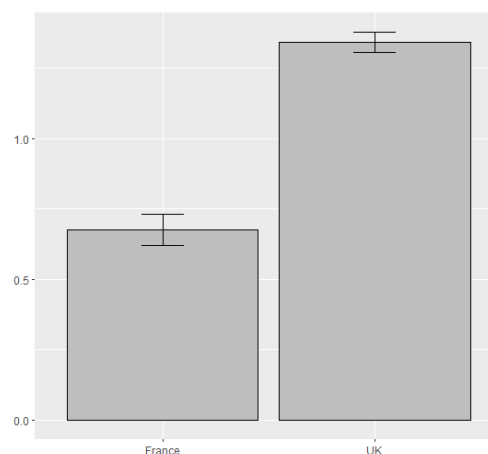
Tab. 3: ANOVA table; DV: ESG score (source: authors 'elaboration)

	MS	NumDF	DenDF	F-value
Country	5.142	1	36.337	168.222***
Museum type	0.033	3	23.857	1.095
Cut-off year	0.099	1	81.569	3.228
Covid relevance	0.297	1	86.412	9.605**

Significance codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 1

More specifically, British museums' reports had significantly higher scores ( $M = 1.343$ ,  $SE = 0.0355$ ) than French museums' reports ( $M = 0.675$ ,  $SE = 0.055$ ;  $t$ -ratio =  $-12.950$ ,  $p$ -value .0001; Fig. 1).

Fig. 1: Mean difference in ESG score by country (source: our elaboration)

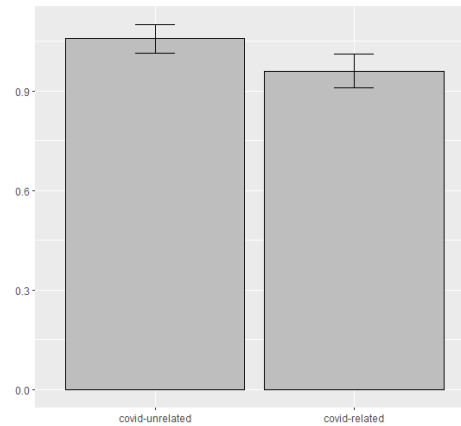


In addition, the documents mentioning Covid-19 or related words had significantly higher ESG scores ( $M = 1.117$ ,  $SE = 0.0389$ ) than Covid-unrelated documents ( $M = 0.901$ ,  $SE = 0.0629$ ;  $t$ -ratio =  $-3.075$ ;  $p$ -value = 0,0028, Fig. 2). Instead, museum typology and the cut-off year had no effect on the ESG score.

Therefore, it seems that British museums had in general a greater awareness of the sustainability impact of their activities, as compared to French museums. This might be due to contextual differences, and especially to the fact that in the UK annual reports are mandatory, while in France they are not. Being required by law to publish the annual report, British organizations might feel increased pressure to comply with the law by putting greater emphasis on the positive externalities of their activities. Furthermore, this sensitivity to sustainability reporting might also be the result of higher efforts in sustainable activities.

As for the impact of Covid-19, our results provide interesting insights. Indeed, it turns out that the insurgence of the pandemic is not a sufficient condition to spur sustainability intensity in reporting, since the cut-off year did not have a significant effect on the ESG score. However, when the reports mentioned the Covid theme, they ended up having higher ESG score. Thus, awareness of the pandemic seems to imply greater sensitivity to the environment and the social implications of business activities.

Fig. 2: Mean difference in ESG by Covid relevance (source: our elaboration)



**Research limitations.** This study shed light on aspects of sustainability reporting that have been neglected by previous literature. However, it is limited in the scope of the analysis. Further research is needed to extend the boundary of investigation toward different national contexts and private museums. For instance, local museums might have a very different perspective on the relevance of the community than national museums have. Similarly, further investigation is needed to inspect how different aspects of sustainability are affected by contextual and textual variables. Finally, we did not delve into the relationship between the textual ESG score that we computed and the actual sustainability performance of museums. About this issue, future studies might focus on measuring the actual level of sustainable activities carried out by museums, so to uncover potential greenwashing issues.

**Managerial implications.** Our findings can be translated in policy and managerial advice. Firstly, from a policy point of view, the research suggests the need to support museums' annual reporting, its culture and methods as a tool to improve museum awareness of sustainability issues and the active role each institution can play in facing climate change (museums for sustainability). Secondly, a strengthened culture of accountability can have a significant impact on museum sustainability, fostering better use of resources, value creation for different stakeholders and caring for the environment (sustainability for museums). More implications can be better detailed after further investigation.

**Originality of the paper.** To date, this is the first paper to focus on the sustainability reporting of public museums. The study adopts a dictionary-based content-analysis approach to measure the level of sustainability expressed by strategic and performance reports (annual reports and accounts, annual report and accounts, rapports d'activité, bilans d'activité) of the national museums of the UK and France. The cross-nation sample allows to inspect the embeddedness impact on sustainability reporting. The study takes into account the effect of exogenous environmental shock (i.e., the Covid pandemic) and assesses its influence on national museums' sustainability reporting.

**Keywords:** museum sustainability; dictionary-based content-analysis; sustainability reporting; ESG

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