

Green shooting: analysis of the discourse in the press of sustainable audiovisual production in Spain (2015-2019)

Green shooting: análisis del discurso en la prensa de la producción audiovisual sostenible en España (2015-2019)

Green shooting: análise do discurso na imprensa da produção audiovisual sustentável na Espanha (2015-2019)

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ABSTRACT | The aim of this study is to analyze the treatment made by the press on sustainable audiovisual production in Spain. We conducted a quantitative and textual analysis of the news that appeared in national media and in Spanish on sustainable productions between 2015 and 2019. 108 news are obtained. The analysis of the linguistic corpus was made using textual analysis software. The results suggest that the main topics addressed are mainly linked to proposals to reduce the environmental impact of these productions, the celebration of sustainable film festivals, the use of audiovisual works to educate on ecological values, and the dissemination of sustainable trends in the audiovisual sector at European level.

KEYWORDS: Green shooting; Green filming; sustainable development goals; audiovisual; sustainability.

HOW TO CITE

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RESUMEN | *El objetivo de este estudio es analizar el tratamiento de la prensa escrita sobre la producción audiovisual sostenible en España. Se realiza un análisis cuantitativo y textual de las noticias aparecidas en medios nacionales y en lengua española sobre producciones sostenibles entre 2015 y 2019. Se obtienen 108 registros. El análisis del corpus lingüístico se realiza mediante un software de análisis textual. Los resultados sugieren que las principales temáticas informativas se asocian, principalmente, a propuestas para reducir el impacto medioambiental de estas producciones, celebración de festivales de cine sostenible, utilización de obras audiovisuales para educar en valores ecológicos y divulgación de tendencias sostenibles en el sector audiovisual a nivel europeo.*

PALABRAS CLAVE: *Green shooting; Green filming; objetivos de desarrollo sostenible; audiovisual; sostenibilidad.*

RESUMO | O objetivo deste estudo é analisar o tratamento da imprensa escrita sobre a produção audiovisual sustentável na Espanha. É realizada uma análise quantitativa e textual das notícias veiculadas na mídia nacional e em espanhol sobre produções sustentáveis entre 2015 e 2019. Foram obtidos 108 registros. A análise do corpus lingüístico é realizada por meio de um software de análise textual. Os resultados sugerem que os principais tópicos informativos estão associados, principalmente, a propostas de redução do impacto ambiental destas produções, realizando festivais de cinema sustentáveis, utilizando obras audiovisuais para educar sobre os valores ecológicos e divulgando tendências sustentáveis no sector audiovisual.

PALABRAS CLAVE: green shooting; green filming; objetivos de desenvolvimento sustentável; audiovisual; sustentabilidade.

INTRODUCTION

Sustainable development is presented as a new model in which three perspectives converge: economic, social, and environmental (Brundtland, 1987; Van Kleef & Roome, 2007; Fernandes et al., 2019). During the last few years, concern for the environment has evolved and has spread to society. There is a greater social awareness of sustainability issues (Moore, 2005) and a strong sustainable transition process has been put into place (Markard et al., 2012; Geels, 2010). In Spain, according to the Centro de Investigaciones Sociológicas, since 2014 citizen concern for the environment and sustainability has tripled (CIS, 2019).

To achieve global sustainable development, in September 2015 the member states of the United Nations approved the global framework *Transforming our World: the 2030 Agenda for Sustainable Development* (<https://www.undp.org/sustainable-development-goals>), an agreement that came into force on January 1, 2016. This agenda is comprised of 17 Sustainable Development Goals (SDGs) that form the universal roadmap for eradicating poverty and inequality, combating climate change and environmental degradation, and promoting peace and justice, among other aspects.

On the other hand, environmental issues are recognized as essential pillars in innovation strategies of different industries (Noci & Verganti, 1999; Orlitzky et al., 2011), allow designing new business models (Stubbs & Cocklin, 2008; Joyce & Paquin, 2016) and establish long-term positive changes (Aragón-Correa et al., 2008). Seeking sustainable technologies and business practices in the audiovisual industry can be identified as an opportunity to reduce the excessive energy consumption of these productions and the innovations derived could be applied to other industries (Victory, 2015).

In this context, it is necessary to deploy a communication for sustainability (Carpentier & Servaes, 2006; Barker, 2007) aimed at promoting awareness of the reality transmitted by the media (Díaz-Nosty, 2009). Following Lippmann's (2003) concept of refracted reality, the media provide citizens with information that integrates different versions of reality. Thus, they play a crucial role in the frames of reference used to interpret issues of public interest (Scheufele, 1999), being essential for structuring the social fabric and shaping public opinion (McQuail, 2000).

The aim of this analysis is to examine the evolution of media representation on sustainable audiovisual production to identify the way the Spanish media treat this issue, and to determine what sustainable practices are being developed by the audiovisual industry in Spain.

Communicating sustainability in audiovisual production

The media constitute a main interpretative system of modern societies (Schmidt et al., 2013). In the process of socializing sustainability, they build a public image of these aspects (Fernández-Reyes, 2004). Audiences demand contents that delve into facts' causes and consequences. Journalistic specialization responds to users' needs and provides quality information (Fernández del Moral & Esteve, 1993). This gives rise to sustainable journalism, which integrates techno-scientific journalism linked to information generated by science and technology, energy journalism, which deals with energy models, and ecopolitical journalism, focused on environmental issues from a political perspective (Fernández-Reyes, 2004).

The process of making audiovisual works is often considered clean and generally benign (Flanigan, 2002). However, film, television, and advertising productions cause a great environmental impact, mainly due to the supply of water, use of plastic containers, use of transportation and construction of sets, among other aspects (Corbett & Turco, 2006). Several studies confirm the high level of pollution generated by an audiovisual production (Victory, 2015; Corbett & Turco, 2006). In recent years, a new trend has emerged, called green shooting or green filming, aimed at reducing energy, resources used, and seeking sustainable alternatives during pre-production, production, and post-production. Measures such as, for example, promoting energy-saving technologies, limiting waste and excessive use of single-use materials, eliminating plastic water bottles and replacing them with portable fountains, using electric vehicles and consuming local food catering, thus boosting local commerce, are promoted (Lopera-Mármol & Jiménez-Morales, 2021). Various protocols for sustainable film production have been implemented worldwide, especially in Anglo-Saxon countries (Chiarini & Khedachi, 2019). In fact, Producer's Guild of America details in its *Green Production Guide* the best practices for sustainable audiovisual production, offering a carbon footprint calculator to assess its environmental impact (Clevé, 2017). Similar initiatives exist in Europe, which accounts for the importance given to the environmental side of sustainable development in the industry (Lopera-Mármol & Jiménez-Morales, 2021). However, regulations and cultural and logistical differences in each country complicate the implementation of these measures, and there is great difficulty in unifying such protocols under a trademark (O'Brien, 2014). In Spain, the adoption of green shooting is incipient in the audiovisual sector and the initiatives that promote general sustainability policies in this area are still limited.

On the other hand, the visibility of this industry, partly due to the influence of its agents (directors, actors, etc.), could be leveraged to turn the sector into a catalyst aimed at sustainable change (Chiarini & Khedachi, 2019), since entities concerned about their reputation and eager to improve their corporate image are betting on obtaining greater visibility in the media (Castelo & Lima Rodrigues, 2008).

Thus, the media are a useful tool for stakeholders to convey their initiatives and influence public opinion (Schweinsberg, Darcy, & Cheng, 2017).

Research objectives

The objectives of this research are to examine the evolution of the media representation of news related to sustainable audiovisual production in the Spanish press, to verify the interest of the media in this topic, and to identify in these news the main initiatives linked to the SDGs of the 2030 Agenda promoted by various entities and that can serve as guides to structure the design of sustainability policies and configuration of socio-technical transitions in this sector. Thus, it will be possible to identify and analyze the repertoire of strategic options available to the audiovisual industry with the aim of contributing to its sustainable development.

METHODOLOGY

I selected the news published in the Spanish press on this topic between 2015 and 2019. This period includes the approval of the United Nations 2030 Agenda (September 2015) and its entry into force (January 1, 2016).

First, I examine the evolution of the number of news items published in national and Spanish-language media that include references to sustainable audiovisual productions. Likewise, I conduct a qualitative-quantitative textual or semantic analysis.

To explore the publications, I used Factiva, an information database that allows consultation of 264 national media outlets.

The search includes the different variants of the terms sustainable filming, sustainable audiovisual, sustainable cinema, green filming, and green shooting that appear in the headline of the news item since, according to Núñez Ladevéze (1995), headlines concentrate the main idea of the news item presented in an attractive and synthesized way.

Initially, 125 results were retrieved and examined to select those in which sustainable audiovisual production is addressed in a relevant way. Seventeen news pieces were discarded, so that the final sample comprises 108 records.

The textual analysis of the 108 news items under study was conducted using the T-LAB Plus 2020 version software. This is an application that includes statistical, graphical, and linguistic tools to examine texts by identifying word patterns. The T-LAB analysis process is based on two different categories: elementary contexts and lexical units. Elementary contexts are the result of the segmentation of the linguistic corpus to perform the analysis of the cooccurrence count.

Strictly speaking, they are proportions of the corpus text that correspond to syntagmatic units of one or more sentences or paragraphs of the different news items selected. The lexical units contain two pieces of information: word and lemma. The former is shown as it appears in the corpus, while the latter constitutes the label attributed to the lexical units grouped and classified according to customized dictionaries, semantic categories encompassing terms with the same meaning for the research or linguistic criteria. This process is called lemmatization. For example, the terms *sustainable* and *sustainability* have been grouped under the same label (lemma) *-sustainable-*, as they are considered to have the same meaning for research purposes.

The initial automatic normalization provided by T-LAB yielded 526 lexical units. After renaming and relocating the available lemmas, 48 lexical units were identified. To ensure the reliability of the statistical data during the preprocessing phase, T-LAB calculates a frequency threshold in the selection of lemmas which, on this occasion, was set at 10.

Based on the 48 lexical units established, I conducted several cooccurrence analyses, i.e., the results derived from calculating the number of times that two or more lexical units coincide in the same elementary contexts. In this way, it is possible to determine the media discourse on this topic. Specifically, I established an analysis of lemma associations and an analysis of comparisons between pairs of lemmas. Likewise, I elaborated a cluster classification to obtain a representation of the corpus contents by means of significant thematic groups, which makes it possible to determine the areas addressed when referring to sustainable productions.

RESULTS

Analysis of media representation

The descriptive analysis of the evolution of the media representation of news published on the topic under study is illustrated in figure 1. The presence of news on sustainable audiovisual production in the analyzed press increases over the years.

It is observed that during 2015 and 2016 the presence of publications addressing the subject of sustainable production of audiovisual works is incipient, with seven publications each year. This figure is explained by the fact that the 2030 Agenda was approved at the end of 2015 and started on January 1, 2016. The increase in this type of information occurs from 2017 (21 news items), with a slight increase in 2018 (25 news items). In 2019, the number practically doubles (48 news items) with respect to the previous year, and sustainability related to the audiovisual context acquires greater presence in the media agenda. These data coincide with the increase in citizen awareness of the environment and sustainability which, since 2014, has tripled (CIS, 2019).

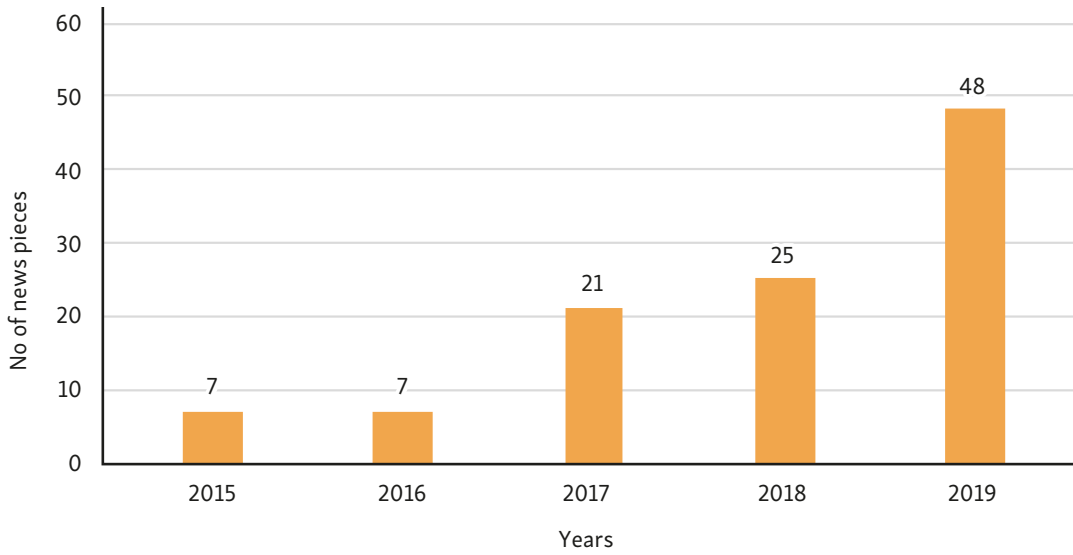


Figure 1. Number of news pieces on sustainable audiovisual by year

Source: Own elaboration.

Information source	Number of news pieces
Europa Press Agency	45
EFE Agency	12
National press (headlines)	41

Table 1. Number of news pieces published by type of media

Source: Own elaboration based on Factiva data.

Table 1 shows the media that published news on sustainable filming. The *Europa Press* news agency, followed far behind by the *EFE* agency –content providers for a large number of media (Johnston & Forde, 2011), especially regional ones (Artero & Moraes, 2008)– are the sources that produce the largest amount of news on this topic. Thus, they act as a vehicle for disseminating it to the public opinion, being the first means of transmission on socio-technical transitions in the audiovisual sector. There is a great atomization around the national press headlines. Although sustainability in audiovisual production is a topic that has penetrated the media in recent years (Lopera-Mármol & Jiménez-Morales, 2021), it is still not a generalized aspect.

Discourse analysis

Identification of main lemmas

Figure 2 shows the distribution of the most frequent lemmas in the 108 news pieces that constitute the linguistic corpus analyzed. A threshold of 50 occurrences is established.

It is observed that, after the sustainable lemma, the most repeated ones are linked to:

- The film industry (cinema, shooting, film, documentary).
- Competitions and meetings (festivals, conferences).
- Environmental actions and effects (environment, measures, reduce, impact, climate change).
- Business sectors (culture, tourism, business, audiovisuals, production).

These data show that sustainability defines companies in various sectors, including the audiovisual industry, whose main sustainable practices are linked to the SDGs related to ecological aspects (environment, climate change), as noted by Lopera-Mármol and Jiménez-Morales (2021).

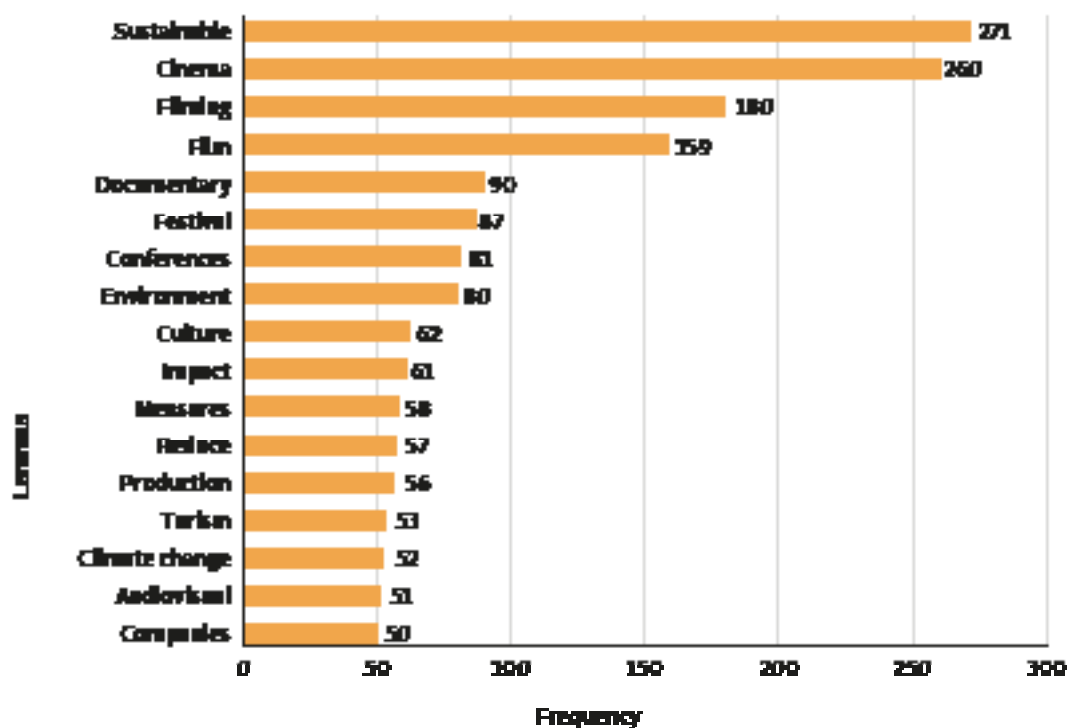


Figure 2. Most frequent lemmas Source: Own elaboration.

Fuente: Elaboración propia.

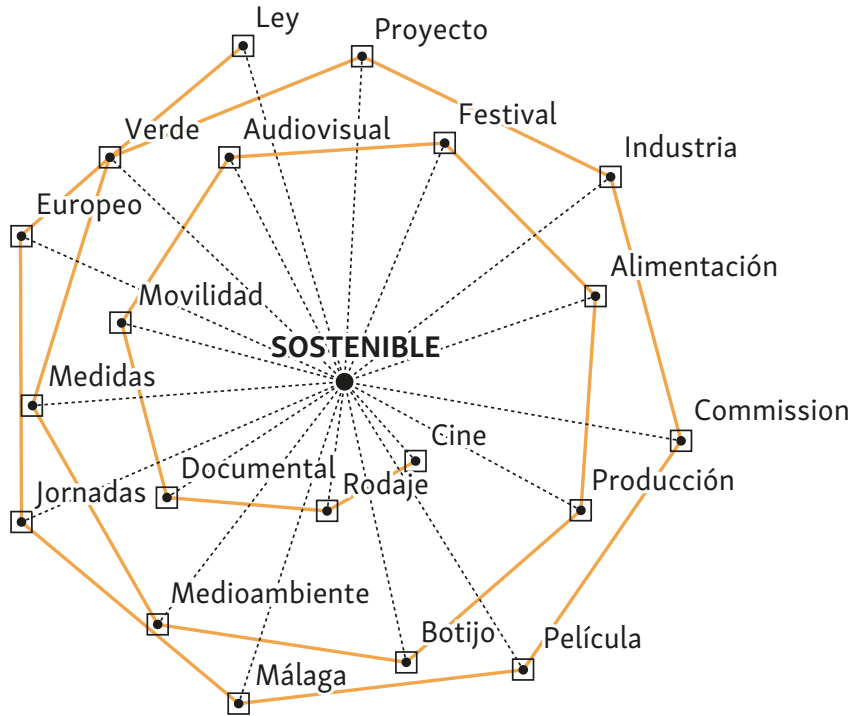


Figure 3. Radial diagram of lemma association for sustainability

Source: Own elaboration.

Word association analysis

The lexical units derived from the study allow developing a cooccurrence analysis focused on word associations, i.e., to check the similarity relations that determine the lemmas’ local meaning within the linguistic corpus. In this case, we analyze the cooccurrence of the most frequent lemma in the linguistic corpus: sustainable.

Figure 3 shows that the lemmas closer to the sustainable lemma, at the center of the diagram, present a higher level of cooccurrences. Similarly, the lemmas farther away from the central lemma have lower levels of cooccurrence.

Quantitatively, table 2 shows the association between the sustainable lemma with others whose relationship is statistically significant, i.e., those in which their association level is stronger regardless of their frequency of repetition. For this purpose, the selected association coefficient (Coef; cosine coefficient) is considered and only the cooccurrences in which the Chi² test value determines a statistically significant value ($p < 0.05$) are shown.

LEMMA_B	COEFF	CE_AB	CHI ²	(p)
Cinema	0.497	132	103.217	0.000
Filming	0.407	90	60.536	0.000
Documentary	0.256	40	15.834	0.000
Mobility	0.239	18	38.103	0.000
Audiovisual	0.213	25	13.629	0.000
Food	0.207	17	22.297	0.000
Botijo ¹	0.186	13	19.370	0.000
Green-shooting	0.152	10	10.624	0.001
Gastronomy	0.147	8	12.017	0.001
Climate change	0.034	4	10.140	0.001
Production	0.203	25	9.716	0.002
Law	0.153	11	9.606	0.002
Commission	0.161	14	7.965	0.005
European	0.155	13	7.381	0.007
Culture	0.062	8	6.443	0.011
Malaga	0.159	15	6.110	0.013
Plastic	0.147	13	4.995	0.025
Festival	0.208	32	4.914	0.027
Green	0.168	19	4.723	0.030
Project	0.165	18	4.725	0.030
Industry	0.163	18	4.237	0.040
Measures	0.175	22	3.944	0.047
Carbon	0.134	11	3.906	0.048
Short films	0.025	2	3.907	0.048

Coef: cosine coefficient used as the value of the association index.

AB: cooccurrence in the elementary contexts of those A lemmas: object of analysis (sustainable) and their associated main B lemmas, which are statistically significant ($p < 0.05$).

Chi²: statistic that helps to verify the significance of cooccurrences.

p-value: probability that the calculated Chi² statistic is possible given a true null hypothesis. The required significance value is set at $p < 0.05$.

1. A botijo, a typical element of Spanish culture, is a porous clay container that contains water; once filled, it cools the water, acting as a cooler (translator's note).

Table 2. Analysis of word associations for A lemma (sustainable)

Source: Own elaboration.

The results show that among the lemmas with the highest level of cooccurrence (AB) with the A lemma (sustainable), cinema and filming stand out, which are the ones that determine the topic under study. They are followed by the lemmas: documentary, festival, audiovisual, production, and measures. It is also noted that Malaga is the only lemma that refers to a national territory. The Andalusian region has extensive experience in national and international audiovisual production. In the 1960s, it was the setting for films of different genres, especially westerns (Checa Godoy, 2005). The filming of several sequences of the fifth, sixth, seventh, and eighth seasons of the series *Game of Thrones* confirmed Andalusia’s reputation as a territory accredited to serve any type of audiovisual production (Andalucía Film Commission, 2018). Andalusia, and specifically Malaga, has been the first Spanish territory to conduct audiovisual productions that contemplate sustainability. The Malaga-based production company Fresco Film Service S.L., in charge of the shooting in Spain of the series *Game of Thrones* and *Terminator: Dark Fate* has carried out numerous actions aimed at developing sustainable shootings, such as replacing plastic bottles with refillable and reusable containers.

Precisely, this initiative is linked to the botijo lemma, which also has a prominent position in this analysis. When examining this term in the linguistic corpus, its linkage with the news items dealing with the implementation of the botijo law in filming, to eliminate the use of thousands of single-use plastic water bottles and to develop more sustainable production processes, is noted.

Madrid hosts the II Another Way Film **Festival**, dedicated to sustainable **cinema**. Thirteen **documentary** films will be screened around social, economic and environmental sustainability, and parallel activities for children and adults (La Vanguardia, 06/10/2016).

More **sustainable filming** with measures such as the “**botijo law**”. In recent years, representatives of the **cinema** industry have fostered various **measures** to promote **filming** sustainability, reduce their ecological footprint and reduce their environmental impact. sustainability of filming, reduce their ecological footprint, and reduce their environmental impact (ABC, 28/10/2019).

Cinema and television students learn how to make **filming** more sustainable. More than 90 students from different disciplines of the **audiovisual** sector have participated this Friday in a day of awareness on sustainability and respect for the environment in which they have acquired a series of knowledge to apply in **filming** to make shootings more eco-sustainable (Europa Press Andalucía, 09/11/2018).

Malaga is positioning itself as a leading European city in the promotion of sustainable **cinema** and television **filming**. The **audiovisual** sector, like so many others, can generate an environmental impact in its production and distribution processes that could be significantly reduced by establishing common standards and more “green” policies and, therefore, less aggressive with our environment (Europa Press Andalucía, 26/11/2019).

* Originals are in Spanish.

Table 3. Examples of cooccurrences

Source: Own elaboration.

Table 3 shows several elementary contexts that illustrate the associations between the sustainable lemma with the most cooccurring lemmas (cinema, filming, documentary, festival, audiovisual, production, and measures). Elementary contexts associating the sustainable slogan with Malaga and botijo are also incorporated.

Comparison between pairs of lemmas

The next test conducted was the analysis of cooccurrences focused on the comparison between pairs of lemmas or keywords, which makes it possible to compare elementary contexts in which two specific lemmas are present and thus determine the most frequent lemmas that appear in the intersection of the pair of selected lemmas.

Firstly, I compare the cinema-sustainable lemmas, since they are the most related to the topic under study and, in turn, are the most frequent in the linguistic corpus. The results are shown in histograms (figure 4). The left part shows the lemmas that cooccur for the selected pair of lemmas. In the upper part, the number of elementary contexts in which each lemma cooccurs with the term “A” (cinema - red), with the term “B” (sustainable - blue) and with both “AB” (green) is shown.

The lemmas with the highest number of repetitions with the cinema lemma (in red) are filming, conferences, climate change, industry, and measures. In turn, the cooccurrence with the sustainable slogan (in blue) occurs especially with the filming lemma. It is followed by audiovisual and impact. Likewise, there are lemmas that cooccur with the keyword pair cinema - sustainable (in green). The main lemmas that appear at this intersection are filming, conferences, industry, and measures.

These results confirm that, when news reports address issues related to sustainable audiovisual, the majority of them focus on the measures that the industry establishes during the filming period.

Since the filming lemma was the one that presented the highest level of cooccurrence in the previous analysis, a second comparison was made, between the pair of filming - sustainable slogans, since it is interesting to determine which aspects stand out in terms of sustainability in this specific stage of production.

The lemmas with the highest number of repetitions with the filming lemma (in red) are measures, reduce, cinema, and impact. Cooccurrence with the term sustainable (in blue) occurs especially in the cinema lemma. It is followed by festival and film. In the same way, the lemmas in which they cooccur with the pair of slogans filming - sustainable are observed; the main lemmas present in this intersection (in green) are: cinema, measures, environment, Commission, botijo, and Malaga.

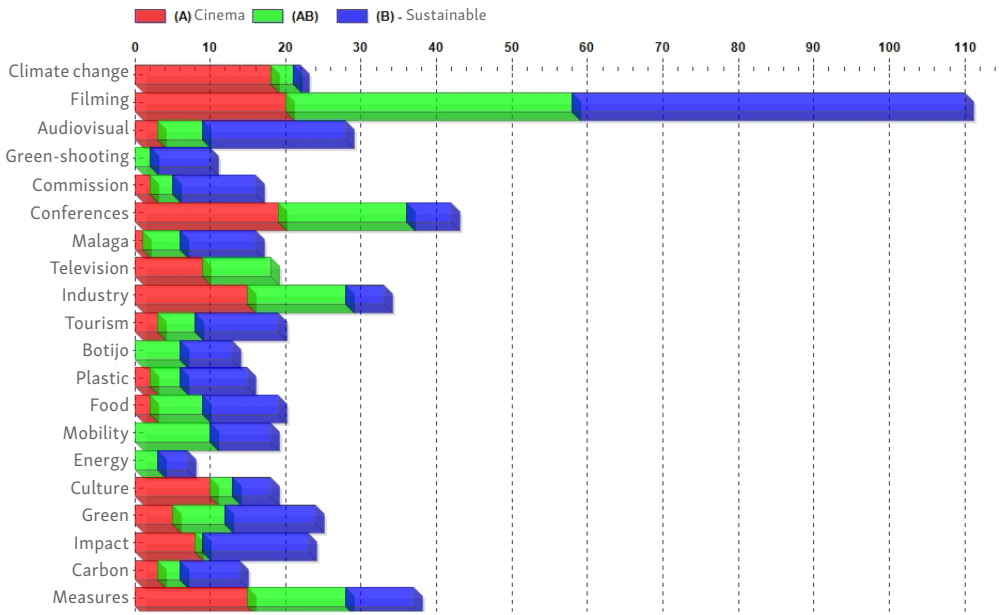


Figure 4. Comparison between the pair of cinema - sustainable lemmas

Source: Own elaboration.

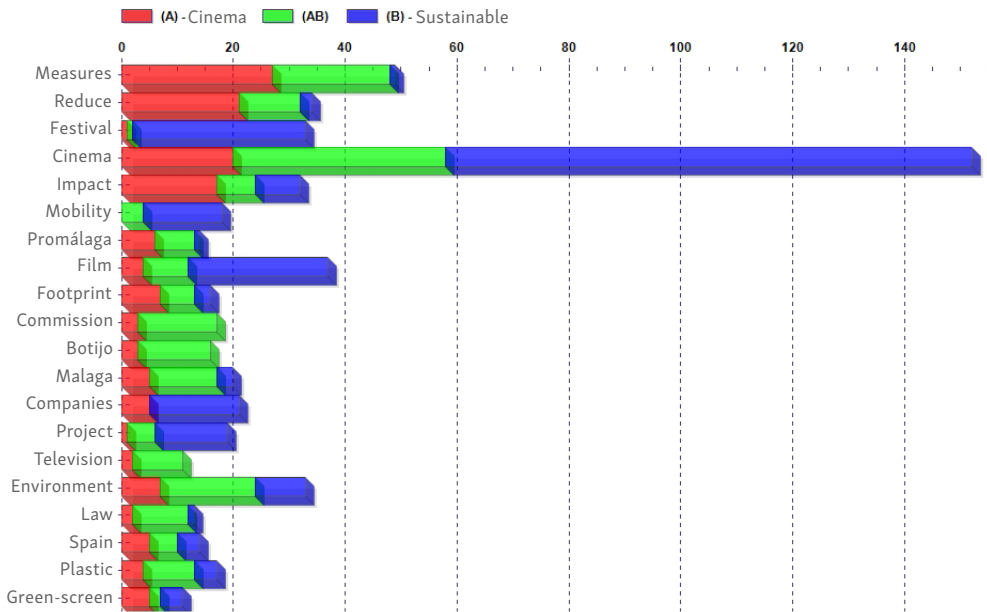


Figure 5. Comparison between the pair of shooting-sustainable lemmas

Source: Own elaboration.

It is therefore confirmed that the contents associated with sustainable filming are linked to measures and regulations, such as the botijo law, aimed at reducing the environmental impact of such productions. The leading role played by the Film Commissions, non-profit associations aimed at positioning the national territory as a stage for audiovisual productions (<http://shootinginspain.info/>), stands out.

Lemmas resulting from the intersection	Cinema - sustainable	Filming -sustainable
Climate change	+++	
Filming	++	
Audiovisual	++	
Green-shooting	+	
Commission	+	
Conferences	+	
Measures		+++
Reduce		+++
Festival		+++
Film		+++
Impact		++
Mobility		++
Promálaga		++

+ 0.01 < p-valor < 0.05

++ 0.001 < p-valor < 0.01

+++ p-valor < 0.001

Table 4. Significant relationships in the intersection between pairs of lemmas

Source: Own elaboration.

Table 4 shows the statistically significant relationships in the intersection of the comparison of the pairs of cinema-sustainable and filming-sustainable lemmas, classified according to their statistical significance. The most relevant lemma (+++) derived from the intersection between the pairs of cinema-sustainable lemmas is climate change, while for the pair of filming-sustainable lemmas the lemmas measures, reduce, festival, and cinema stand out.

The data suggest that the news reference to sustainable audiovisual production is mainly related to specific proposals and actions, some of them already materialized, to reduce the environmental impact of this industry during filming. Likewise, the importance of film festivals linked to sustainability actions is confirmed.

Once again, this analysis shows the crucial role played by the Malaga area in the design of sustainable audiovisual initiatives. The slogan *Promálaga* refers to the municipal company of the city of Malaga, which coordinates sustainable filming in the area and represents the city in European projects aimed at promoting the sustainability of the audiovisual industry (<https://www.promalaga.es/>).

Cluster 1. Proposals to reduce environmental impact

Lemma	Cluster (Total)	Chi ²	p
Filming	192(224)	398.128	0.000
Measures	62(64)	152.269	0.000
Botijo	22(22)	56.310	0.000
Commission	23(30)	35.066	0.000
Plastic	23(30)	35.066	0.000
Law	15(19)	24.249	0.000
Green-shooting	8(13)	7.136	0.008
Malaga	19(41)	6.714	0.010
Recycling	6(10)	4.987	0.026
Reduce	25(63)	4.152	0.042

Cluster 2. Sustainable cinema events

Lemma	Cluster (Total)	Chi ²	p
Documentary	92(92)	229.392	0.000
Festival	91(92)	222.388	0.000
Film	112(113)	203.195	0.000
Cinema	146(317)	48.438	0.000
Gastronomy	19(19)	46.069	0.000
Short films	22(24)	45.360	0.000
Mobility	15(18)	25.472	0.000
Sustainable	124(331)	12.000	0.001

Cluster 3. Fostering ecological values

Lemma	Cluster (Total)	Chi ²	p
Culture	63(71)	216.228	0.000
Tourism	49(64)	131.693	0.000
Heritage	16(16)	64.628	0.000
University	26(37)	59.537	0.000
Education	17(19)	57.957	0.000
World	22(31)	51.157	0.000
Conferences	35(68)	43.455	0.000
Policy	14(18)	37.975	0.000
Food	18(28)	34.858	0.000
Spain	20(47)	15.325	0.000
Environment	28(79)	12.257	0.000
Companies	18(47)	10.100	0.001
Climate change	17(44)	9.796	0.002

Cluster 4. Sustainable audiovisual trends in Europe

Lemma	Cluster (Total)	Chi ²	p
European	28(32)	78.714	0.000
Audiovisual	38(54)	72.690	0.000
Green screen	20(22)	59.710	0.000
Footprint	28(38)	58.116	0.000
Reduce	38(63)	53.138	0.000
Production	34(56)	48.100	0.000
Carbon	20(26)	44.746	0.000
Awareness	20(28)	38.986	0.000
Industry	26(45)	32.808	0.000
Malaga	22(41)	23.292	0.000
Promálaga	15(25)	20.436	0.000
Television	13(23)	15.468	0.000
Green	22(48)	15.349	0.000
Energy	12(22)	13.124	0.000
Impact	25(61)	12.315	0.000

Cluster (total): number of elementary contexts that include a given lemma and, in parentheses, the total number of elementary contexts that include the same lemma.

Chi²: statistic that helps to verify significance.

p-value: probability that the calculated Chi² statistic is possible given a true null hypothesis. The required significance value is set at $p < 0.05$.

Table 5. Analysis of statistically significant lemmas integrated into each cluster

Source: Own elaboration.

Cluster analysis

The content was classified into meaningful thematic groups or clusters using an unsupervised clustering method (k-means bisecting algorithm) of the T-LAB software, which performs a cooccurrence analysis and then a comparative analysis. Context units that do not include a minimum of two cooccurrences of the initially selected lemmas have been eliminated. The partition that has offered the best match to the statistical adherence of the sample corresponds to four clusters.

Table 5 (previous page) shows the lemmas that constitute each cluster and identifies the following areas: proposals to reduce the environmental impact of these productions, sustainable cinema events, promotion of ecological values, and sustainable audiovisual trends in Europe.

Cluster 1. Proposals to reduce environmental impact

The cluster Proposals to reduce environmental impact integrates the lemmas filming, measures, botijo, Commission, plastic, law, green-shooting, Malaga, recycling, and reduce.

In this thematic group all the lemmas are in line with the initiatives developed in the city of Malaga to promote sustainable filming.

The lemma Commission refers to the Spain Film Commission, a non-profit association that since 2001 has been leading the management of the country's positioning as a destination for audiovisual filming. It coordinates the actions of a wide network of film commissions and film offices (public services of municipalities) throughout Spain (Spain Film Commission, 2020).

Several examples illustrating this cluster are given below (table 6).

The "**botijo law**" has been implemented on **filming** to put an end to the "nonsense" of using thousands of single-use **plastic** water bottles and even the fact that each member of the film crew had a reusable bottle. "The botijo is back in filming. It's better, it's cheaper, greener, and more sustainable" (Europa Press, 25/10/2019).

"Our interest is not only to capture **filming**, but that they are integrated into the **sustainable** balance", explained the president of Spain Film **Commission**, Carlos Rosado, during the signing of the agreement with the City of **Malaga** to promote the **measures** of ecological **filming** developed from Promálaga, in collaboration with **Malaga** Film Office. (Griñán, F., Diario Sur, 26/11/2019).

Mallorca Film Commission is working to make filming less aggressive with the environment. Despite the lack of institutional support, sustainable filming (**green shooting**) is being introduced, little by little and with some reluctance on the part of production companies, on the island (Rodas, G., Diario de Mallorca, 06/12/2019).

* Originals are in Spanish.

Table 6. Examples of cluster 1 elementary contexts

Source: Own elaboration.

Cluster 2. Sustainable cinema events

Cluster 2, Sustainable cinema events, incorporates lemmas linked to the celebration of festivals for the exhibition of audiovisual works related to sustainable development. The main lemmas are: documentary, festival, film, short films, gastronomy, and mobility.

Noteworthy festivals are those to promote sustainable audiovisual filming and implement sustainability criteria in the entire field of audiovisual production, such as the *Festival Internacional de Cine del Medio Ambiente (FICMA)*, which has been held in Barcelona for 26 years. There are also festivals that screen audiovisual content linked to the environment, such as the *Festival Internacional de Cine Medioambiental de Canarias (FICMEC)* which, in the 2019 edition, bet on sustainable mobility. Table 7 illustrates some examples of this cluster.

The municipality of Garachico will host from May 25 to June 3, in the convent of San Francisco, the 20th edition of the **Festival** Internacional de Cine Medioambiental de Canarias (FICMEC), whose main theme will be sustainable **mobility** (La Vanguardia, 15/02/2018).

El huerto de Lucas, in collaboration with Karma Films, organizes the second edition of '**Documentaries** to change the planet', a cycle that will deal with ecological **gastronomy** and committed cinema, in the central courtyard of El huerto during the three Thursdays of August. (Europa Press, 02/08/2017).

The City Council of Las Palmas de Gran Canaria sponsors one more year the **Festival** Cine + Food. 50 "sustainable" films. The **Festival**, which takes place from August 30 to September 2, in Santa Catalina Park, is transformed into a sustainable event with the Zero Plastic cycle (La Provincia, 09/08/2018).

* Originals are in Spanish.

Table 7. Examples of cluster 2 elementary contexts

Source: Own elaboration.

Cluster 3. Fostering ecological values

The slogans that make up the thematic group Fostering ecological values are very heterogeneous, since they refer to different professional sectors. The main lemmas are culture, tourism, university, education, politics, food, heritage, conferences, and companies.

The contents related to public or private projects and initiatives in which audiovisual works are the vehicle for educating in values aimed at preserving the environment, combating climate change, and developing sustainable practices in any field stand out.

The proposals included in this cluster have a markedly educational character, unlike the previous one, Sustainable cinema events, in which the initiatives, in addition to being engaged, have a certain recreational component.

Some of the elementary contexts that describe this thematic group are shown in table 8.

Ibicine will represent **Spain** in the Movie Travel film routes; Ibiza is one of the Spanish Unesco **Heritage** cities that will be part of the Movie Travel film routes, a project funded by the EU that is committed to a model of sustainable **cultural tourism** in southern Europe with cinema as leitmotiv. The project, driven by Inmedia Solutions, offers itineraries and **cultural** travel experiences in cities in Europe that are World **Heritage** Sites, where films have been shot or that host festival. (Nou Diari, 22/03/2019).

The Film Library of the Institut Valencià de **Cultura** has programmed, on the occasion of the opening in Valencia of the World Center for Sustainable Urban **Food**, a cycle on sustainable food in cinema and the fight against uniform gastronomic models. It is a selection of films that combines three fundamental pillars of today's society such as audiovisual language, **education**, and **food**, and highlights how sustainable **food** is closely related to the defense of the territory, **ecology**, economy, and **environment** (La Vanguardia, 08/05/2019).

The ETS de Ingeniería de Caminos, Canales y Puertos of the **Universidad (University)** de Granada, in collaboration with Granada4Energy, and in the framework of the "Program 17 Challenges: An opportunity to change the world", will develop a film series and debate on this topic that will allow to visualize some of the problems that have led to establish the Sustainable Development Goals (SDGs) (Ideal, 30/07/2019).

* Originals are in Spanish.

Table 8. Examples of cluster 3 elementary contexts

Source: Own elaboration.

Cluster 4. Sustainable audiovisual trends in Europe

The cluster Sustainable audiovisual trends in Europe is made up of slogans related to projects and trends in the audiovisual industry, both in Spain and in Europe: European, Green Screen, footprint, reduce, carbon, awareness, energy, impact, Malaga, and Promálaga.

Precisely, Promálaga is part of the City Council of Malaga, and is oriented to job creation, business promotion, and attracting talent that promotes R&D investments and innovation projects, among other aspects (Promálaga, 2020). Through this municipal company and with the support of the Spain Film Commission, Malaga participates in the Green Screen project, aimed at identifying environmental policies at European level to implement them at regional level, and to share a guide of good practices to reduce the environmental impact of audiovisual productions (<https://www.interregeurope.eu/greenscreen/>).

In the same vein, The European Producers Club - EPC (<https://www.europeanproducersclub.org/>), an association of 130 independent film and television producers from all over Europe, has drawn up the *Green Production Charter* with various criteria to reduce the environmental impact of audiovisual production.

Table 9 includes some examples that illustrate this cluster.

The Spain Film Commission adopts the sustainable filming system developed in **Malaga**. The capital, the only Spanish city in the **European Green Screen** program, creates a **green** calculator to reduce the **carbon footprint** of film and series filming (Griñán, F., *Diario Sur*, 26/11/2019).

The objective is to **reduce** the environmental **impact** that may be generated by the **production** and distribution processes in film and advertising shoots. The agreement reflects the collaboration of all parties to disseminate among the Spanish and foreign **audiovisual** sector this type of **green** practices that protect the environment, with **awareness** campaigns and training (*La Opinión de Málaga*, 27/11/2019).

The Academy of Motion Picture Arts and Sciences of Spain has announced this Thursday, December 26, its adherence to the "Statute for **Green** Production", promoted by The European Producers Club (EPC), which includes a series of guidelines to **reduce** the environmental **impact** in **audiovisual production**, as well as sustainable solutions to the usual needs of a shooting (*La Vanguardia*, 26/12/2019).

* Originals are in Spanish.

Table 9. Examples of cluster 4 elementary contexts

Source: Own elaboration.

CONCLUSIONS

Sustainability is an aspect that is generating great interest in the audiovisual sector. Film, television, and advertising productions generate a high level of pollution. However, this industry is increasingly aware of the need to develop sustainable productions.

Spain is developing several initiatives aimed at promoting sustainability policies in audiovisual productions, adopting the so-called green shooting. Although the topic is relatively recent, the analysis of the news representation suggests that the media show an incipient interest in sustainable audiovisual production. The presence of this type of content over the five years of the period analyzed has grown progressively, although most of the news pieces published comes from news agencies. Their role is crucial in shaping public opinion, since they are the original link in the dissemination of sustainable practices in the audiovisual sector and contribute to raising awareness of the need to develop proposals aimed at sustainability from its three facets: environmental, social, and economic.

On the other hand, the cluster analysis of the linguistic corpus reveals a statistically significant thematic grouping around four areas: 1) proposals to reduce the environmental impact of these productions; 2) celebration of sustainable film festivals; 3) use of audiovisual works to educate in ecological values, and 4) sustainable trends in the audiovisual sector at European level. Thus, the current news discourse introduces, fundamentally, the impact of environmentally friendly measures as socio-technical factors of sustainable transitions.

Malaga stands out in the aspects of sustainable audiovisual production in clusters 1 and 4. On the one hand, as a precursor territory of green initiatives to minimize the negative effects of film and series filming and to link production companies with a sustainable discipline in their work. On the other, as a European city at the forefront in promoting sustainable film and television shoots through its adherence to the European Green Screen program, aimed at designing global policies to reduce the carbon footprint, following the implementation strategy of the SDGs for the 2030 Agenda in the environmental category. In this regard, it is confirmed that the main solutions adopted by the audiovisual industry in terms of sustainability are focused on initiatives linked to mitigating its negative impact on the environment and avoiding environmental degradation. This is followed by aspects related to education and awareness of sustainable development, especially through festivals, conferences, and film cycles. In this context, in addition to the commitment to sustainable production in the audiovisual industry, the spectrum is broadened to include tourism and food, among other sectors.

The managerial implications derived from the research can be materialized in the design of a common action guide aimed at optimizing a production's resources and materials, as established in the decalogue of good practices of the Green Screen project, providing handbooks on ecological practices and carbon footprint calculators to know the impact generated by the audiovisual production. Thus, environmentally unfriendly actions could be avoided. However, it would also be necessary to set up policies aimed at avoiding sexist and racist behavior caused by inequalities of labor or economic power in the sector; therefore, implementing more social sustainable measures could be a criterion for gaining access to subsidies or other types of funding.

On the other hand, the press should take advantage of the measures applied by audiovisual companies in their productions to generate news pieces and raise awareness of the need to promote a sustainable industry at all levels: ecologically, socially, and in terms of labor. Such information must always be deployed from a sustainability literacy perspective, and not as a commercial strategy that redeems the excesses generated during the production process. In short, it is essential to

promote these issues in the media agenda in order to generate public awareness and significant changes in society.

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