

The potential of car advertising in pursuing transport policy goals: Code of good practices in the Spanish context

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Abstract

Climate change, which is mostly caused by CO₂ emissions, continues to be a serious environmental problem. The dissemination of correct information regarding the environmental impact of car CO₂ emissions and fuel consumption promoted by responsible advertising plays an important role in this problem. This article proposes that the promotion of responsible car advertising could serve as a tool for reducing climate change and decarbonizing transport. Thus, a qualitative and quantitative study was performed to analyse the influence of car advertising on CO₂ emissions and attitudes regarding such emissions. The results of this study add value to the limited literature in the field of advertising, cars, and the environment. The analysis of the car advertising sector in Spain in 2007, 2015, and 2016 detected a low presence of good practices. Advertisements lack information regarding energy problems related to mobility, emissions, and climate change. There is an effort to hide CO₂ emissions and fuel consumption information in advertising, energy labels are not presented, and information related to efficient driving or moderate vehicle use is lacking. Although the evolution of information regarding emissions and consumption has improved over time with respect to size and location in the advertisements, such data remains marginal. Recent car advertising does not highlight the environmental consequences of the products or offer advice to consumers regarding habits that can help reduce

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63 pollution or emissions. Finally, based on this analysis, a detailed code of 28 good practices for
64 the responsible advertising of cars is proposed.
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68 Keywords: mobility; good practices; global warming; environmental advertising; car advertising
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70 **1. Introduction**

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73 Climate change is considered the most serious and complex environmental problem of our time
74 (Ivanaj et al., 2017). According to experts in the field, to mitigate the rate of change, a
75 substantial reduction in greenhouse gas emissions produced by human transport activities is
76 needed (Banister et al., 2012). Passenger and freight transport are responsible for nearly one
77 quarter of the global primary energy use and energy-related greenhouse gas emissions (Moriarty
78 and Honnery, 2013). To achieve the ambitious objectives that have been proposed to help
79 reduce climate change, the investment of significant financial and technological effort is
80 necessary. In addition, active collaboration among all citizens is necessary, as they play a very
81 significant dual role in climate change, being both the main creators of “diffuse emissions”
82 (Grischkat et al., 2014) and powerful political actors influencing public authorities (Blok et al.,
83 2015).
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87 Advertising can play a significant role in the promotion of attitudes, products, and services
88 associated with low CO₂ emissions (Chan and Fan, 2015). On the other hand, advertising can
89 also promote the irresponsible use of energy or products and services that generate high levels
90 of greenhouse gas emissions (Sabre, 2014). The social values, attitudes, and behaviours
91 promoted by commercial advertisements can often be considered environmentally inappropriate
92 (Leonidou et al., 2014; Nyilasy et al., 2014; Sabre, 2014). The current advertising situation has
93 led several public administrations, non-governmental organizations, and the advertising sector
94 in Spain to develop initiatives aiming to redirect, limit, and prevent some specific advertising
95 formulae or content (AUC, 2004; AUTOCONTROL, 2016; OAPNS, 2015).
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122 Kikuchi-Uehara et al. (2016) note the importance of the association between CO₂ emissions and
123 a product or service for “green” consumers, meaning those consumers who care about and
124 prioritize environmentally responsible practices and consumer decisions. This information is
125 also necessary for taking appropriate actions to reduce emissions. Grischkat et al. (2014)
126 quantify the tons of CO₂ emissions that could be saved per person by means of different
127 mobility policies. Additionally, Urry (2012) states that habits associated with low carbon
128 emissions must be promoted as “fashionable” to achieve rapid changes in the future, which
129 could be enhanced by responsible commercial advertising. Urry (2012) also provides “tipping
130 points” to obtain non-linear outputs, along with “contagious events” and phenomena, i.e., small
131 factors that could trigger large changes. If companies rigorously explained the problems entailed
132 by emissions in their advertising campaigns, they could contribute to this aim. The results from
133 several studies indicate that both instrumental factors, due to rational decisions, and symbolic-
134 affective functions of automobiles are significant dimensions underlying the attractiveness of
135 car use (Goulden et al., 2014; Lois and López-Sáez, 2009; Steg et al., 2001).
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150 Nonetheless, some strategies designed to substantially reduce greenhouse gas emissions **could**
151 address the promotion of responsible advertising concerning climate change. For example, a
152 community strategy to reduce CO₂ emissions, carried out by the Commission of the European
153 Communities, could promote a shift from passenger cars and light commercial vehicles to more
154 energy-efficient models. One of the newest proposed measures is a voluntary good practice
155 agreement among vehicle manufacturers concerning advertising and marketing aiming to
156 promote sustainable consumption patterns (CEEC, 2007). Nonetheless, eleven years have
157 passed since this proposal, and to date, it has not been implemented. According to the EU,
158 reducing emissions in the transport sector could be less costly than reductions in other sectors
159 (CEEC, 2007).
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170 Moreover, the use of non-technological innovations, such as advertising, is cheaper and
171 occasionally more effective than technological innovations (Hyard, 2013). “Green advertising”
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181 refers to “promotional messages that may appeal to the needs and desires of environmentally
182 concerned consumers” (Zinkhan and Carlson, 1995). In recent years, several articles regarding
183 the different implications of green advertising have been published (Atkinson, 2014; Atkinson
184 and Kim, 2015; Fowler III and Close, 2012; Leonidou et al., 2011, 2014; Minton et al., 2012;
185 Nylilasy et al., 2014; Pedrós Pérez and Martínez-Jiménez, 2010; Sabre, 2014; Scopa et al.,
186 2016). The size of the samples used in these generic studies investigating green advertising
187 varies by author as follows: 473 advertisements (Leonidou et al., 2011); 31 advertisements
188 (Atkinson, 2014); 383 advertisements (Leonidou et al., 2014); 319 advertisements, including
189 magazines, TV, and web (Atkinson and Kim, 2015); and 173 advertisements (Iyer and Banerjee,
190 1993). Sabre (2014) uses a sample of 172 advertisements relating to the environment, but of
191 these, only 5.8% correspond to car advertising. Scopa et al. (2016) use a sample of 902
192 advertisements published in the most popular car magazine in Italy that relate all cars to the
193 environment.
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207 However, studies linking advertising with sustainable mobility, energy saving, and climate
208 change are lacking. Some authors who recently provided a definition and addressed the uses of
209 social media in transport policies did not mention advertising (Gal-Tzur et al., 2014).
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214 As indicated by Barr and Prillwitz (2012), since the late 1980s, the approach of public policy
215 with regard to numerous social and environmental issues has begun to shift towards a greater
216 reliance on individuals as citizens and consumers who can best promote socio-environmental
217 change. Barr and Prillwitz (2012) conclude that within the citizen-consumer context, sustainable
218 mobility aims to reduce the impact of emissions due to the increasing levels of transport
219 demand, placing an emphasis on the responsibilities of citizens to discover the means to reduce
220 their impact through behavioural change related to their chosen means of transport.
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228 Some authors (Ockwell et al., 2009) have highlighted the significance of understanding how the
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230 as an element affecting improvement in social behaviour with sustainable mobility could be
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240 consistent with this approach. As a medium that carries a powerful visual and emotional load,
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242 advertising could be a significantly useful vehicle for transmitting attitudes and lifestyles linked
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247 Advertising works as a source of conveying scientific and environmental concepts in society.
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249 Some authors indicate the role of car advertising in the failure of transport policies aiming to
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251 reduce climate change (Goulden et al., 2014). In this sense, Goluden et al. (2014) emphasize the
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253 fact that the ubiquitous promotion of a car-dependent culture hampers any governmental
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255 campaign for the promotion of sustainable transport. Cars are advertised as the usual means of
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257 transport, and advertising the use of vehicles serves only to promote behaviours that are
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259 environmentally insensitive or destructive (Urry, 2012).
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262 However, very few studies analyse advertisements for automobiles, luxury cars (Jaganathan et
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264 al., 2014), or road safety campaigns (Qiu, 2013), and all studies address the issue from a
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266 linguistic rather than an environmental point of view. In fact, only the following three
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268 international works have focussed on advertising, cars, and the environment: an independent
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270 study performed in New Zealand (Wilson et al., 2008), another study performed by a public
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272 institution in Italy (Scopa et al., 2016), and the official report of the European Environment
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274 Agency on the implementation of Directive 1999/94/EC (European Environment Agency,
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276 2011).
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278 **1.1 Context**

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280 As previously established, because of the continuity and progression of climate change (Ivanaj
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282 et al., 2017; Moriarty and Honnery, 2013), pressure has been placed on the automotive industry
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284 to become greener, particularly by its customers (Koplin et al., 2007). Thus, several authors
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286 have determined that this situation provides an opportunity for automotive companies to
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288 improve their competitiveness and differentiation (Mondéjar-Jiménez et al., 2015).
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299 Related to the subject of a competitive advantage generated by corporate actions, image and
300 reputation are among the most important intangible assets of any company (Chen et al., 2008;
301 Neslen, 2015). Studies have supported the notion that the development of environmental
302 practices leads to superior business performance (Larrán Jorge et al., 2015). Ritter (2015), on
303 the basis of an empirical study, concludes that individuals tend to reject a brand or company that
304 might have demonstrated inappropriate environmental behaviours.
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312 Among the main formulae used to promote truthful and socially responsible advertising, the
313 following are noteworthy: recommendations of codes of good practice, self-regulation and
314 voluntary agreements, advertising observatories, and governmental regulations (EASA, 2016).
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319 In Spain, a key aspect of the Spanish Strategy on Corporate Social Responsibility (2014–2020)
320 is to reduce the environmental impact of all types of organizations (public and private) by
321 promoting actions pursuing sustainability, energy efficiency, control in the consumption of
322 natural resources, and minimization of greenhouse gas emissions (Reverte, 2015). With greater
323 awareness, the general public has begun to demand greater corporate environmental
324 responsibility (Alrazi et al., 2015; Lozano, 2012).
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332 The Spanish vehicle market is a significant and growing sector, with an increase of cars sold in
333 2017 of 7.6%, or 88587 units, over the previous year (García, 2018). The vehicle sector spent
334 over 505.6 million euros on advertising in 2017, representing a growth of 7.6% compared with
335 the previous year (Infoadex, 2018). The results of this study reflect that this was the top sector
336 for advertising in 2017. Additionally, the study noted that Volkswagen ranked fourth among all
337 companies in advertising investment in that year and that six other car companies were among
338 the top 20 (Infoadex, 2018).
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346 Furthermore, the identification of good and bad practices in regard to responsible advertising is
347 a significant first step towards positive change (Sabre, 2014). Recommendations have an
348 undeniable motivational value and can be useful in encouraging advertising companies and
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advertisers to include criteria for social and environmental responsibility in their advertising
campaigns. In fact, good practice recommendations are also useful for providing quality criteria
to audiences and public institutions (Leonidou et al., 2014).

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Having a convenient and broad set of recommendations for good practices is an adequate basis
on which to build self-regulation codes and voluntary agreements. The Self-Regulating Code for
Food Advertising Aimed at Children (PAOS) 2005, which consists of guidelines to be followed
by advertisers designing advertisements in this sector, is an example of such a mechanism
(González Díaz, 2014). PAOS is followed by the 27 largest companies in the nutritional market,
most of which are multinational. In addition, since 2009 this code has been followed by some
television channels, which have integrated its ethical norms (González Díaz, 2014). These
ethical rules have been applied to all advertising, regardless of whether the creators had
previously signed the agreement. Another example of a good practice code, created in other
countries, concerns the consumption of alcohol (Hastings et al., 2010; Jones and Lynch, 2007).
Although the adoption of these good practice codes by companies involves self-regulation,
being a signatory implies effort on the part of the company to be involved in communication
with the consumer about good practices.

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In contrast, some authors have criticized voluntary self-regulations and instead proposed the
creation of obligatory rules or decrees to clearly regulate company communications (Hastings et
al., 2010). For example, Goulden (2014) highlights the contrast between regulations in areas
focusing on safety and the lack of implementation of regulations linked to the economy or
climate change.

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Additionally, advertising observatories have the ability to monitor advertising in detail
concerning any aspect that might raise particular interest (Pedrós Pérez, 2005). Such monitoring
can be sector-independent by means of a panel of independent experts or can include
representatives from the advertising industry and advertisers. These observatories can analyse
advertisements and campaigns and issue assessment reports. Moreover, these observatories can

occasionally recommend modifications to publicity strategies or suggest that a specific print or broadcast advertisement be discontinued if it is considered to contain inappropriate content.

Outside of the Spanish context, some advertising agencies have received complaints related to publicity based on poor environmental practices, although no observatories are currently focussed on these topics. The annual report from the Advertising Standards Agency (ASA) shows that in 2007, the ASA received 561 complaints about environmental claims in 410 advertisements, while only 117 complaints about approximately 83 advertisements were reported the previous year, representing a greater than four-fold increase (Ashley-Cantello, 2008). The ASA has already censured several high-profile companies, including Suzuki, Shell, Ryanair, and Toyota, for the practice of “greenwashing”; i.e., these companies were found to have misled consumers regarding their environmental practices as a business or concerning the specific benefits of a product or service.

In Spain, it is important to specifically highlight the existence of non-sexist advertising observatories, including OAPNS (2015) and Autocontrol (2016), but none are devoted to environmental advertising. In addition, no observatory is devoted to mobility advertising. Nonetheless, the IPADE Foundation (IPADE, 2015) has created and maintained an advertising observatory in Spain focussing on green consumption. However, this source has not been updated in years and is rarely used (IPADE, 2015).

The main regulatory elements governing car advertising in Spain stem from the Royal Decree 837/2002 of 2nd August (Spanish Official Gazete, 2002). This decree focussed on information about fuel consumption and CO₂ emissions that must appear in advertising for new vehicles to be sold within the Spanish territory. This decree was created to comply with the terms of Directive 80/1268/EEC.

In this sense, the European Community has a standard for the communication of these data but lacks evaluations of its effectiveness. This then represents an additional and relevant motive for performing research, such as that presented in this paper.

In addition to this decree, article 52 of Act 19/2001 of 19th December on the new wording of the Text for the Law on Traffic, Motor Vehicle Circulation, and Road Safety bans motor vehicle advertising from showing images “leading to excessive speed, reckless driving, dangerous situations, or any other circumstance which may contravene the principles of this law in their wording, sound elements, or images” (Spanish Official Gazete, 2001).

However, the energy efficiency of vehicles is a voluntary label ranging from A to G. Label A means that a vehicle consumes less than 25% of the average vehicles with the same size for sale in Spain. In Spain, vehicles with labels A and B are sold at prices 3%–5.9% higher than those with similar characteristics but lower energy-efficiency labels (Galarraga et al., 2014). Eco-labels are significant influencers of green purchase intention (Chekima et al., 2015).

In Spain, the Special Tax on certain means of transport, which is better known as the car registration tax, was restructured through Act 51/2007 on 26th December (Spanish Official Gazete, 2007). The most significant legislative change was new taxation based on CO₂ emissions instead of the cubic capacity of the vehicles.

The car registration tax is applicable to new cars bought in Spain or second-hand cars registered in Spain for the first time. The tax amount depends on the level of polluting emissions. Vehicles whose CO₂ emissions as indicated by the manufacturer do not exceed 120 g/km are exempt from the payment of this tax. Other vehicles incur tax liability depending on their levels of CO₂ emissions up to 14.75% of their taxable base, i.e., their price before tax. The amount of the tax increases according to the fuel consumption of the vehicle. Small cars with diesel, hybrid, or electric engines, low cubic capacity engines, and/or low power are subjected to a lower tax or could even be completely exempt from the tax. Car registration tax categories are as follows:

0% for emissions 120 g/km CO₂ or lower; 4.75% for emissions over 120 g/km CO₂ but below 160 g/km CO₂; 9.75% for emissions 160 g/km and above but lower than 200 g/km CO₂; and 14.75% for emissions 200 g/km CO₂ or higher. Large families in Spain (those with three or more children) are entitled to a 50% reduction in the car registration tax.

Additionally, local urban access regulations include restricting access of the vehicles to city centres in order to reduce local pollution and improve inhabitants' health (Ayuntamiento de Córdoba, 2014; Junta de Gobierno de la Ciudad de Madrid, 2018; Morton et al., 2017). Advertising appears to promote the use of vehicles in city centres, which would have a negative impact on air quality and health (Pisoni et al., 2019). Furthermore, the use of cars in these areas wastes energy due to congestion and frequent stopping (Stahan, 2014). For these and other reasons, public institutions have promoted and developed urban mobility plans, restricting accessibility to city centres (Pisoni et al., 2019). In this context, numerous local governments, including those of Paris and Madrid, have created advertising campaigns advising minimal use of cars and promoting the use of alternative transportation such as public transport or bicycles and walking paths (Buckley et al., 2013; Junta de Gobierno de la Ciudad de Madrid, 2018; Pooley et al., 2013; Taubert, 2019). Any decrease in the rate of traffic in cities is considered as a successful communications intervention.

Finally, knowledge regarding the future of mobility in cities is limited (Moriarty and Honnery, 2008a). Car advertising is a relevant element due to its effect on the mobility proposals created by the automobile industry, but these proposals do not need to match the suggestions promoted by public administration.

1.2. Objectives

Based on the previous information, two main objectives are proposed in this work. The first objective is to conduct an analysis of commercial advertising published or broadcast in Spain related to the automobile sector, which has a high incidence of greenhouse gas emissions, with a

particular focus on advertising associated with consumer options. The second objective is to draft a code of good practices to promote responsible advertising concerning climate change and prevent advertisements that might promote non-careful use of energy resources in car transport or inaccurate energy information.

2. Materials and Methods

The study methodology comprised a qualitative and quantitative analysis of a broad sample of car advertising posted in Spain and the creation of an innovative good practice code based on this analysis.

2.1 Analysis and Assessment of Advertising

This study opted to combine a qualitative-interpretative approach (Fowler III and Close, 2012) with specific quantitative analyses because some aspects were easier to quantify than were others.

The selection and interpretation of the advertisements were conditioned by the study objectives. Furthermore, the category of automobile companies was selected because it is considered a key sector concerning greenhouse gas emissions and the use of energy in transport.

Advertisements can be considered as discourses, i.e., text aimed at a given objective or target. The interpretation of these discourses and their assessment in terms of whether they contribute to the promotion of careless or wasteful attitudes and behaviours is the core issue under analysis.

The analysis was conducted by researchers who are experts in sustainable mobility. The results were evaluated by a panel of experts in environmental communication, i.e., members of the Seminar “Comunicación, Educación y Participación frente al Cambio Climático” (Communication, Education, and Participation concerning climate change). This group was created in 2004 after the initiative of the National Centre for Environmental Education

(CENEAM, 2015) and the Spanish Office for Climate Change. The most recent meeting was held in December 2017.

A varied set of advertisements was included in the discourse analysis of both the advertising and the advertised products and brands. Environmental advertising in the current study refers to advertisements that use environmental claims as the central message (Chan and Fan, 2015).

For the assessment of the advertising, the analysis created by the Association of Communication Users (AUC, 2004), which is directed specifically at the material to be analysed, was used. The following main questions were considered:

- What values related to the field of sustainable mobility and climate change are most commonly present in advertising messages from both a verbal (language related) and visual (images) point of view?
- How do advertisements characterize the problems of mobility and climate change?
- Is the protection of the environment portrayed in advertising as playing a favourable or unfavourable role in ecological topics related to sustainable mobility?

For the assessment of each advertisement, the following categories were used (Leonidou et al. 2011):

- Positive (the advertisement is considered to promote positive values or behaviour concerning saving, an efficient use of energy, and the promotion of a more sustainable mobility).
- Negative (the advertisement is considered to promote negative or inappropriate values or behaviour related to saving, the efficient use of energy, or sustainable mobility).

- Indifferent (the advertisement is considered to promote neither negative nor positive values or behaviour related to saving, the efficient use of energy, or the promotion of a more sustainable mobility).

Following the methodology described by Atkinson and Kim (2015), we implemented a quantitative analysis to establish the frequency and variety of advertisement messages for the items described in the following sections and shown in Tables 1, 2, and 3.

The sample of analysed advertisements is described in Table 1. Compared with other studies investigating advertising and the environment (Atkinson, 2014; Atkinson and Kim, 2015; Iyer and Banerjee, 1993; Leonidou et al., 2014; Scopa et al., 2016; Wilson et al., 2008), the sample proves to be wide and representative.

The analysis of advertisements in 2007 focusses on climate change because of three relevant facts: a) three of the four highest peaks of coverage of climate change in the Spanish media between 2000 and 2014 occurred in specified months in 2007 (Fernández Reyes et al., 2015); b) Anderegg and Goldsmith (2014) use the results obtained from Google Trends to analyse the global public interest in climate change and detect a significant reduction in public attention after 2007; and c) in 2007, the car industry was the largest investor in advertising in Spain, spending 913.6 million euros (Misse and Blanco, 2008).

Data collection involved detecting and recording the following elements from advertising:

- Brand and model
- Type of vehicle (car, off-road vehicle, van, etc.)
- Format of the advertisement (full page, half lower page, etc.)
- Scenario in which the vehicle appears (natural, rural, urban, etc.)
- Number of individuals in the vehicle

- Main argument of the advertisement
- Information regarding fuel consumption and emissions presented in the advertisement
- Information regarding the energy classification of the vehicle
- Type of driving style (calm or sports driving)
- Treatment of the use of the car in an urban environment
- Treatment of the use of the car in urban, rural, and natural environments
- Energy class of the vehicle
- Taxes on the prices of cars related to CO₂ emissions

The following specific information regarding CO₂ emissions was recorded:

- Size of font (height in mm)
- Legibility problems (heterogeneous background or vertical display of text)
- Declared emissions (g/km)

This structure was rigorously followed for print advertisements but only partially applied to online advertising due to the different information format. Taxes on the prices of cars related to CO₂ emissions were not studied in 2007 due to the implementation of the regulation from December 2007 (Spanish Official Gazete, 2007).

For 2015 and 2016, print and online advertising for the different car brands was used as primary source material. In 2015 and 2016, car advertising in print media decreased compared with that in 2007, but online advertising was already very significant; thus, this advertising was also analysed. The analysis focussed on 2015 and 2016 because in Spain these years are associated with a general economic recovery and because state subsidies for car purchases raised the sales figures. Additionally, the temporal range between 2007 and 2015–2016 can illuminate some

trends. The analysis also has a more quantitative aspect reflected in some of the first sections and a more qualitative aspect reflected in the listing of bad practices found in several media from the sample.

2.2. Good practice code created

The analysis allowed for the detection of the lack of an environmental approach in advertisements and the classification of bad practices that were subsequently used to build the good practice code. The detection and taxonomy of bad practices was based on several principles such as local strategies and regulations that are intended to reduce traffic circulation in city centres (Ayuntamiento de Córdoba, 2014; Civieta, 2018; Zhou, 2014), reach energy decisions (Moriarty and Honnery, 2008b), mitigate health-related problems (Pooley et al., 2013), improve air quality (Junta de Gobierno de la Ciudad de Madrid, 2018; Pisoni et al., 2019), and preserve the cultural heritage (Ayuntamiento de Córdoba, 2014; Gregor, 2016; Stahan, 2014).

This code was structured under two types of recommendations: seven general recommendations based on guidelines that can be applied to environmental advertising, and 21 specific recommendations covering seven subgroups designed according to their relevance to cars and other forms of transport.

3. Results and Discussion

3.1 Quantitative Analysis of Car Advertising

The quantitative analysis was differentiated into two periods. During February and March 2007, a specific quantitative analysis of car advertising in two Spanish national newspapers was conducted. The general information newspaper *El País* and the sports newspaper *Marca* were chosen because they have a strong national presence in print. Then the same quantitative analysis was implemented for 2015–2016 for the general information newspaper *El País* (Tables 2a, 2b, and 2c) and various websites (Table 3).

3.1.1 Quantitative Analysis of Press Advertising

An analysis of all advertisements published during one month in 2007 in *El País* (EP) and *Marca* (M) was conducted. In Spain, these newspapers have the highest daily circulation in their corresponding sectors. Analysis focussed on 356 advertisements, for which the results are shown in Tables 2a, 2b, and 2c.

The information regarding fuel consumption and emissions was as follows: 14% (EP) and 30% (M) of the analysed advertisements from 2007 contained no data regarding consumption or emissions. In contrast, a study performed in Italy showed that 96.3% of the advertisements in Italian car magazines during the period 2005–2011 presented the information obliged by the directive. Another study focussing on New Zealand showed a significant difference in reports of CO₂ in advertising between New Zealand and Europe. In fact, only 4% of advertisements in New Zealand provided CO₂ data between 2001 and 2005 (Wilson et al., 2008).

The legibility of the information regarding fuel consumption and emissions was as follows: 27% (EP) and 7% (M) of the advertisements containing these data were displayed in a font of one millimetre or even smaller, making them difficult to read. In 9.5% (EP) and 12% (M) of the analysed advertisements, the information was barely legible due to the existence of heterogeneous backgrounds or the information was placed vertically. Overall, in 36.5% (EP) and 19% (M) of the advertisements with information regarding emissions, the data were difficult to read due to one of the above reasons. In this sense, the restriction of information concerning CO₂ data and fuel consumption matches the results obtained in Italy during the period 2005–2009 (Scopa et al., 2016).

The accuracy of the information regarding fuel consumption and emissions was as follows: only 14% (EP) and 9.5% (M) of the analysed advertising presented the consumption of a specific model. The remaining advertisements only provided a range of emissions for all models (Figure 1). In 37% (EP) and 45% (M) of the cases, the range was higher than 80 g/km. This information

is neither significant nor valuable, because it is impossible to associate specific emissions with particular models. Scopa et al. (2016) also indicated the smaller presence of advertisements in which consumption information was shown for a specific model of vehicle.

The different names used to describe the declared fuel consumption type were as follows: “mixed” (40% (EP), 42% (M)), “average” (17% (EP), 8% (M)), “combined” (15% (EP), 13% (M)), “weighted” (8% (EP), 6% (M)), “combined average” (3% (EP), 1% (M)), and “on average” (2% (EP), 0% (M)). Additionally, a small percentage (2% (EP), 0% (M)) stated extra-urban consumption instead of mixed consumption.

The main arguments of the analysed advertisements were: easy financing (20% (EP), 23% (M)), sports characteristics (6% (EP), 0% (M)), power (6% (EP), 8% (M)), consumption/emissions (2% (EP), 0% (M)), technology (0% (EP), 8.5% (M)), space (10% (EP), 2% (M)), and ecology vehicles (3% (EP), 0% (M)). Thus, very few advertisements used the environment or a reduction in fuel consumption or emissions as their main argument.

Recently, regulations were developed to decrease emissions in cities across Europe. However, the best solution accepted by the automobile industry was regulations to reduce air pollution. Since its introduction in 1992, these regulations have reduced pollution. Furthermore, when Euro 5 was implemented in 2009, particulate emissions exhibited a significant reduction compared with that of previous Euro regulations primarily due to the obligation to use filters for diesel fuel (Querol and Amato, 2017).

In addition to the previous results, none of the advertisements were compliant with rules Euro 4 or 5. In Italy between 2005 and 2009, though this omission is not that marked, the presence of these rules concerning advertising was also neglected, Euro 4 (22%) and Euro 5 (1.8%) (Scopa et al., 2016).

Most advertisements included an image of some vehicle that was usually shown over an artificial background (61% (EP), 56% (M)). Furthermore, 17% of the advertisements showed

the vehicles on a road (5% (EP), 21% (M)), in natural **scenes** (17% (EP), 0% (M)), or in urban **scenes** (14% (EP), 15% (M)).

Moreover, the data regarding the energy class of the vehicle showed that none of the analysed advertising included this particular and necessary information, which might contribute to lowering CO₂ emissions and the rate of fuel consumption.

Bad practices were detected in 26% (EP) and 22% (M) of the advertisements studied. The most significant bad practices were the following: promoting cars with more power, showing vehicles off-road in natural landscapes, providing information regarding fuel consumption or emissions that was difficult to read or expressed for a range of vehicles, showing a positive environmental effect of a particular car as representative of a variety of models instead of each vehicle, failing to capture mixed consumption, and promoting high-speed and large-sized cars as urban vehicles (Figure 2).

3.1.2. Quantitative Analysis of Print Advertising Trends

To analyse the temporal changes between 2007 and the present, a comparison of car advertisements published in *El País* in 2015 and 2016 was performed. The number of advertisements has significantly decreased, which required performing the quantitative analysis over three months, i.e., March, April, and May, to obtain totals of 57 advertisements per sample for 2015 and 122 advertisements for 2016. This decrease in the number of advertisements could be caused by the economic crisis of the written press in Spain, which has resulted in a significant decrease in advertising in this medium and a subsequent move to advertise on social networks to cut costs. The results are shown in Tables 2a, 2b, and 2c.

Concerning data about fuel consumption and CO₂ emissions, the situation has improved compared with that in 2007; 100% of the advertising in 2015–2016 included this information, and 61% (2015) and 81% (2016) of the advertising showed this information in a size larger than 2 mm. In 2014, 98% of the advertisements in Italy included information about CO₂ emissions

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1066 and consumption (Scopa et al., 2016). However, in 22% of the advertisements, the information
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1068 was shown on backgrounds that made it difficult to read, which was a significant problem.
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1070 Emissions were shown with good legibility in 78% of the advertisements, whereas in 2007, this
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1072 legibility was achieved in 63.5% of the cases. However, 100% of the advertisements in 2015–
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1074 2016 contained information regarding CO₂ emissions outside the main focus rather than in the
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1076 central position. In addition, no advertising was found to praise a car for being subject to fewer
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1078 taxes due to its smaller contribution to climate change.

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1081 Furthermore, 15% of the advertisements presented emissions only for a specific model, which
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1083 was a very similar percentage to that in 2007. In Italy, the numbers for recent years were also
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1085 low, and only 20% of the advertisements included fuel consumption and emissions data for a
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1087 specific vehicle (Scopa et al., 2016). The range of emissions over 80 g/km was presented only in
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1089 3.5% (2015) and 20% (2016) of the advertisements, compared with 37% in 2007. Additionally,
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1091 the limited presence of emissions information for a specific car model was shown to match the
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1093 actual emissions of cars in Italy (Scopa et al., 2016). This notion complicates the ability of
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1095 possible buyers to compare the emissions and fuel consumption of different cars. These issues
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1097 represent further impoverishment of information regarding the environmental performance of
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1099 cars. Some studies show that the consumer places more trust in advertising only when accurate
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1101 emissions data are included (Xie and Kronrod, 2012).

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1103 Based on these results, it can be concluded that car brands continue to marginalize emissions
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1105 data in advertising copy. In fact, very few explicit references to a reduction in CO₂ emissions
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1107 exist in the texts accompanying the advertisements, and when they are included, they are printed
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1109 in a very small type size and not highlighted in the global message of the advertisement. For
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1111 example, in an advertisement for a Fiat car in 2015, the following sentence appeared in small
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1113 letters: “*ya que has elegido el motor Twin Air de bajas emisiones de CO₂*” (because you have
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1115 chosen the Twin Air CO₂ low-emissions engine). In contrast to these results, Morgadinho et al.

(2015) concluded that there are strong implications for the car sector and the auxiliary industry with respect to the reduction in CO₂ emissions.

In 2015, the EU applied more stringent standards with the Euro 6 standard for light-duty motor vehicles (European Union, 2007). In 2015 and 2016, no references appeared in any of the advertisements, in compliance with European rule Euro 6.

The distribution of the types of fuel consumption remains diverse, as follows: mixed consumption (62.5%), average consumption (11%), combined consumption (12.5%), and average combined consumption (9%). As in 2007, in 2015–2016 the energy label of vehicles was not included in any advertisements. Therefore, consumer knowledge concerning eco-labels is quite limited, which is consistent with the results reported in previous research (Alevizou et al., 2015). The presence of LPG (liquid gas) vehicles in car advertising was also analysed. No LPG car advertising was identified in this research, which is consistent with the results obtained in Italy (Scopa et al., 2016).

The main arguments used in the analysed advertisements were technology (58%–66%), emotion (44%–12%), financing (21%–44%), sports characteristics (12%–7%), spaciousness (3.5%–4%), and family (5%–0%). No ecological benefits were mentioned, and no information related to climate change was found. Additionally, in many advertisements, the technology of the car was highlighted (engine, full LED headlights, power, parking systems, sound systems, and Internet connectivity), but none of these technologies is related to the environment. Thus, car advertising in printed media in 2015–2016 lacked good environmental practices, leading to the need to create a good practice code.

All advertisements included an image of a car that was mostly shown in urban environments (54%–38%). Thus, the use of the car in the city was promoted more than in 2007, when the percentage of cars in an urban environment amounted to only 14%. The following environments

are also noteworthy: artificial background (21%–41%), road (14%–21%), and natural environment (8.8%–0%).

Of the advertised models, 21% (2015) and 20% (2016) corresponded to off-road vehicles, showing a growth in this type of vehicle compared with the results from 2007 (8%). Furthermore, in the Italian study, the percentage of sport utility vehicles (SUVs) with a similar description was 24% between 2005 and 2007 (Scopa et al., 2016).

Unacceptable advertising or bad practices were identified to affect 26% (2015) and 17% (2016) of all advertisements, with a mean of 21.5%, which is slightly less than the 26% obtained for 2007. Among the identified bad practices were these examples: off-road vehicles parking or circulating in natural areas with a high ecological value, cars parked in lanes inside urban parks, high-powered cars promoted for urban use, vehicles parked in pedestrian areas, off-road vehicles circulating through historical city centres, and cars parked on the sand of a beach.

3.1.3 Quantitative Analysis of Car Websites

To complete the analysis of car advertising in 2015–2016, the websites for all vehicles featured in print advertising were analysed. Additionally, the websites for the most-sold cars in Spain in May 2015 and March 2016 were included. The analysis followed the criterion of choosing the best-selling car in each of the following categories: electric, hybrid, utility, minivan, and medium-sized crossover.

The aim was to detect the environmental information shown on the websites for these models (Table 3). The initial hypothesis was that due to the much larger space available on websites, companies would offer consumers environmental information that could not be included in print advertising. Under these criteria, the websites of 36 (2015) and 46 (2016) different models were analysed, including 21 brands (2015) and 20 brands (2016).

The main arguments were essentially related to the sophisticated technology of the vehicles (100% of the models), and there was no mention of any environmental improvement from this

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technology. There were also many references to gadgetry, representing 75% (2015) and 89% (2016) of the global car references. Because of the gadgets' influence on the youngest potential customers (Ruiz-del-Olmo and Belmonte-Jiménez, 2014), the car industry is attempting to catch these consumers' attention to increase sales. In fact, this focus on gadgets, a high proportion of which is linked to Internet use, could be justified by the tendency of the youngest consumers to use cars less frequently (Klein and Smart, 2017). Other studies show how new innovations, such as the "EcoBoost engine", have resulted in an improvement in fuel consumption and emissions (Wu et al., 2016), but this type of information was not included in advertising.

Another argument that was constantly present in advertising was the beauty of the design, accounting for 58% (2015) and 80% (2016) of advertising. Additionally, although to a lesser extent, comfort was mentioned in 11% (2015) and 20% (2016) of advertising, and only one model noted its almost noiseless operation in both years.

The scarce information regarding environmental issues was generic and not applicable to any specific model. For instance, the brand Opel mentioned "gaining power despite reducing emissions and consumption". Within each section, there was a paragraph discussing alternative fuels and electric cars that included a long statement regarding environmental impact, using the word "pollution" repeatedly, although the term "climate change" was not mentioned. Toyota, which also presented a generic environmental section with only a mute cartoon video for children, was another example. Thus, only two brands had an easily accessible environmental section.

Primary arguments related to CO₂ emissions appeared in 0% (2015) and 4.3% (2016) of advertising. As previously noted, stating the CO₂ emissions per kilometre is compulsory in car advertising; the results of the analysis of print advertising showed how this obligation was followed in 2015 and 2016. However, the brands appeared to forget this obligation on their websites. On these websites, emissions information appeared on the homepage in only 5.5% (2015) and 24% (2016) of the cases. Some notices were posted in a very small font size, making

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1302 access to this information more difficult, as in the case of VW in 2016. Therefore, for most
1303 vehicles, the emissions information was well hidden, could be found in very secondary sections
1304 of the websites, and occasionally did not even appear.
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1309 Alternatively, the Euro 6 regulations on these websites were studied using another
1310 environmental framework. These results showed that only two models of the same brand
1311 (Citroën) informed the prospective buyer of the fact that they complied with the Euro 6
1312 regulations. Thus, only 5.5% (2015) and 6.5% (2016) of the websites contained the Euro 6 rule
1313 on the main page.
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1319 Furthermore, the brands that manufactured hybrid or electric cars focussed more on technology
1320 in their advertising and did not mention emissions or the environment. Previous researchers
1321 have acknowledged the role of electric cars in reducing climate change and decreasing the rate
1322 of pollution and noise (Jochem et al., 2016). Nevertheless, these previously mentioned
1323 advantages, which are considered the main pillar of positive environmental change from the
1324 users' perspective, were neglected in advertising. Thus, an author noted the need to create
1325 advertising campaigns related to this environmental topic that focussed on the advantages of
1326 using these vehicles (Cagliano et al., 2017). **Nonetheless, the lack of information concerning the
1327 effects on the environment could be justified as the result of manufactures anticipating higher
1328 sales if the advertising message focused on lowering local taxes for this type of car (Sánchez-
1329 Braza et al., 2014) or the possibility of parking or circulating in the centre city (Costas, 2016).**
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1342 In contrast, the analysis found that 100% and 57% of the advertisements in 2015 and 2016
1343 promoted large and medium off-road vehicles as urban vehicles. These results showed the same
1344 tendency reflected in the results of the analyses of print advertising. These off-road vehicles,
1345 whose weights in some cases reach 1,600 kg, were advertised by the brands as urban cars. Yet
1346 due to their high momentum, these vehicles are very inefficient in urban traffic and increase the
1347 potential damage to pedestrians in the event of a collision. Although these environmental
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1361 problems and issues with road traffic safety persist, the industry currently insists on the
1362 promotion of SUV sales (Gómez-Blanco, 2018).
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1366 Furthermore, this trend in which cars are shown in city centres should not be allowed because
1367 this practice decreases the quality of the air. In fact, the same car industry has expressed that the
1368 future relies on increasing restrictions on fossil fuel internal combustion engine vehicles from
1369 accessing inner cities. Moreover, for ICE vehicles circulation tends to be limited to certain
1370 streets if not completely forbidden in concentrated public areas (Morgadinho et al., 2015).
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1376 Additional qualitative data emphasizing low consumption were obtained and analysed, and the
1377 results showed more frequent mentions on websites than in print advertising. Data were
1378 presented on 14% of websites in 2015 and 11% in 2016. However, such information was
1379 missing in print media during this period. Because this information is usually associated with
1380 technological advances, the positive environmental consequences were not normally mentioned.
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1387 **3.2 Transport Infrastructure Advertising**

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1390 During the first phase, 57 transport infrastructure advertisements in print media between 2004
1391 and 2007 were analysed. The second phase focussed on the 2015–2016 period, during which
1392 this type of advertising almost disappeared in Spain due to budget cuts. This analysis is related
1393 to the data previously described and the topic of automobiles, which is presented in other
1394 studies (Goulden et al., 2014).
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1400 Advertising related to road transport infrastructure largely valued the continuous increase in
1401 mobility and speed for motorized journeys. Mobility was presented as a value without any
1402 environmental consequences. Thus, excessive and unsustainable mobility was promoted.
1403 According to Banister (2008), the need to travel or the tendency towards a model dominated by
1404 hypermobility is not even questioned. The myth of connection to the whole territory is
1405 nevertheless used in advertising to promote a good image of infrastructure. However, regardless
1406 of how many kilometres of highways are built in Spain, they never appear sufficient.
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Infrastructure is considered to constitute goods and resources that must be promoted and increased. Automobile advertising in general does not mention the expensive investment required or the environmental impact of infrastructure (i.e., atmospheric or noise pollution, occupancy of the land, destruction of valuable ecosystems, and fragmentation of habitats) or the consequences related to emissions (Hanson and Noland, 2015). Moreover, advertisements do not question the high cost of infrastructure-funds that could be devoted to public transport investments or other purposes, such as education, health care, or the care of senior citizens.

This excessive interest in infrastructure in Spain could be framed within the so-called “Adams Scenario”, in which, based on an increasing demand for roads, the British mobility plans for infrastructure in the 1980s led to the proposal of a scenario by 2025 in which every three-member family had a lorry on the road. The Adams Scenario describes a world in which the population could spend their days in these lorries searching for objects to consume (Goulden et al., 2014). Clearly, ever-rising mobility is more imperative for transport-related corporations than are basic human needs (Moriarty and Honnery, 2008a).

Moreover, according to a collaborative report generated by nine Spanish universities, more than 81,000 million euros were spent on “unnecessary, neglected, underused or poorly organized infrastructure” by public organizations since 1995 until 2016 (Romero et al., 2018).

3.4 Transport Logistics Advertising in the Press

Twenty-two logistic advertisements appearing between 2004 and 2007 were analysed. Logistics was another sector strongly linked to road transport in Spain. The transport logistics sector does not show good environmental practices in its advertising. Our analysis found no references to emissions, climate change, energy savings, or the impact of this continuous movement of parcels and goods on the environment (Kay et al., 2014). None of the advertisements included any reference to the fact that consuming local produce saves transport costs, thus reducing emissions.

3.5 Qualitative Bad Practices Analysis

The qualitative study of bad practices detected in the general analysis of the whole sample is discussed below.

On television, CO₂ emissions appeared in a few advertisements; moreover, when this information was provided, it was shown by means of an overprinted message that quickly crossed the screen in a very small font, making the message almost impossible to read. On urban billboards, CO₂ emission-related text appeared in such a small size that it was almost impossible to read from a normal reading distance.

As previously described, the use of cars in city centres continues to grow, although an increasing number of local authorities are recommending their limitation. Nonetheless, TV advertising promotes the urban use of cars despite the negative effect of their overuse.

Air pollution, particularly in urban areas, is clearly a potentially serious risk for health, and transport largely contributes to urban pollution levels (Molina and Molina, 2004). However, car advertising in general rarely mentions the emissions of polluting agents and promotes the city as a natural environment for cars.

In the period surrounding 2007, our analysis showed that advertisements usually conveyed the idea that moving through cities or parking was an easy task. A significant percentage of the analysed advertisements showed cars parking with little problem, even though the images often portrayed destinations that are heavily congested central locations. This misleading portrayal of urban parking largely decreased in 2015–2016 in TV advertising and websites due to the addition of assistive parking mechanisms in cars. Thus, the urban use of cars continues to be promoted in advertising, but more realistic scenarios are now used.

To make progress towards more sustainable car mobility, vehicle occupancy must be maximized. Improving the occupancy rate offers a clear advantage and can be very quickly implemented in existing vehicle fleets (Moriarty and Honnery, 2008a).

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1539 Another quantified parameter was the number of individuals travelling in vehicles. Many public
1540 administrations recommend sharing a car as an energy-saving policy and a means of reducing
1541 pollution and congestion in cities (Instituto para la Diversificación y Ahorro de la Energía
1542 (IDAE), 2007). However, television advertising showed few vehicles with many occupants; cars
1543 with space for four or five occupants appeared to be occupied by a group or family in only a
1544 small number of cases. Thus, there were no explicit or implicit recommendations concerning the
1545 desirable occupancy indexes in TV or print advertising. Nearly 100% of print advertisements
1546 did not include individuals in the images. There was only one remarkable case of a print
1547 advertisement in which Toyota included five-person groups in addition to the car.
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1557 In addition, the role of the driver as a priority in energy and environmental policies has been
1558 ignored. The appearance of hybrid and electric cars has renewed positive interest in eco-driving
1559 (Sanguinetti et al., 2017). Eco-driving is a part of a comprehensive approach to reducing the
1560 transport sector's contribution to greenhouse gas emissions (Jeffreys et al., 2018; Lai, 2015).
1561 Sivak and Schoettle (2012) conclude that certain decisions based on eco-driving could reduce
1562 the cost of fuel consumption by approximately 45%.
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1570 No example of good practices, such as advice regarding efficient driving, was found in the
1571 analysed advertising. In contrast, numerous advertisements showed vehicles moving at a high
1572 speed or in the style of sports driving—the most energy-consuming practice. In fact, aggressive
1573 driving causes a significant increase in emissions compared with efficient driving (Instituto para
1574 la Diversificación y Ahorro de la Energía (IDAE), 2007). When vehicles travel at high speeds,
1575 i.e., over 100 km/h, consumption increases gradually (Instituto para la Diversificación y Ahorro
1576 de la Energía (IDAE), 2007). Lower speed limits are associated with lower vehicle emissions,
1577 and a well-documented U-shaped relationship exists between traffic emissions and the average
1578 speed, particularly at constant speeds (Bel and Rosell, 2013). The type of sports driving
1579 promoted in advertising, with frequent changes in speed, contradicts the aim of reducing
1580 emissions (Int Panis et al., 2006). Thus, Castillo-Manzano et al. (2015) analysed several factors
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1597 that can trigger this aggressiveness among drivers, which can lead to road violence; however,
1598 these authors did not consider advertising as a possible factor affecting this behaviour.
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1602 According to Banister (2008), one measure that could be implemented is the use of the best
1603 technology (hybrid vehicles, more efficient cars, or vehicles using alternative fuels), the
1604 adoption of which could reduce CO₂ emissions per transported passenger. While some
1605 advertising for air conditioning systems gives advice regarding the appropriate temperature
1606 limits to consume less electricity, car advertising does not usually offer any advice regarding
1607 ecological driving. Numerous studies on eco-driving have found that the number of public
1608 training courses on this topic has increased (Jeffreys et al., 2018). However, no information
1609 concerning the new eco-driving style has appeared in advertising.
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1618 In many of the analysed car advertisements, vehicles were presented as the goal of a lifetime,
1619 i.e., transitioning from walking and riding a bicycle in childhood to driving a car in adulthood
1620 was shown to represent a metaphor of growth. Over the life course, driving a car was portrayed
1621 as the ultimate goal of any adult, instead of travelling by public transport or on foot. However,
1622 many people actually prefer living in a place where they do not need a car to travel to work. A
1623 study based on lifetime behaviour shows that there can be changes in mobility when spatial and
1624 accessibility contexts are modified (Schoenduwe et al., 2015). In summary, advertising always
1625 attempts to convince people that cars are the natural way to travel and that those who do not
1626 drive or travel in cars are merely outliers.
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1636 Although the literature on safe cycling and walking routes to school is growing (Buckley et al.,
1637 2013; Park et al., 2013; Pérez-Martín et al., 2018), many advertisements were found to have
1638 icons and messages based on transporting children to school by car. This phenomenon is known
1639 as infant motorization and aims to link infancy with cars by means of advertising. Thus, in
1640 many advertisements, the prizes appeared to be motorized vehicles for children. This type of
1641 publicity promotes sedentary habits in childhood, resulting in an increase in child obesity, which
1642 is a health issue of concern in Spain (González Díaz, 2014).
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Moreover, the data analysis identified that advertising treated other types of mobility differently. Thus, some advertisements in the car sector offered a negative image of sustainable mobility formulae and types (i.e., public transport, walking, and cycling), or they promoted a particularly concerning feeling of superiority over those alternatives. In some cases, the tone was even clearly contemptuous or pejorative with respect to these mobility alternatives.

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As some authors have shown, this underestimation of alternative mobility options to the car reflected by some car advertising is a significant obstacle to promoting the use of bicycles or walking (Pooley et al., 2013). This study concludes that bicycle riders without a strong identity with respect to mobility could perceive themselves as outsiders and adopt the normalized pattern of travelling by car, when they are shown as “different” in advertising. This type of derogatory advertising with respect to bicycles as a means of transport contributes to increasing the “stigma”. Aldred (2013) associated a stigma in many cases with bicycle riders, complicating the creation of a positive identity for this means of transport. Another study demonstrated how some individuals who travelled regularly on foot or by bicycle were occasionally ridiculed and regarded as eccentrics (Pooley et al., 2013). In conclusion, the desirable aim should be to create a trend or social environment in which moving on foot or by bicycle in an urban environment is perceived as a logical and natural option. In addition, the usual use of the car as a means of transport should be considered exceptional.

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In contrast, car users demand not only efficient vehicles but also comfort, wide seats, and boot capacity. These requirements cause many vehicle manufacturers to present cars as if they were a continuation of the living rooms of our homes. Thus, many of the advantages achieved by engine efficiency are lost due to making cars larger and taller (Moriarty and Honnery, 2008a). In the US, some people feel that spending significant time in their cars is not a bad thing; on the contrary, these individuals appreciate time alone, which allows them to escape from their frenzied lives. People enjoying the time in their cars is not problematic. However, this

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1715 preference can become an environmental problem when considering the energy consumption
1716 and greenhouse gases emitted as a result of this behaviour (Poudenx, 2008).
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1720 As previously stated, some other advertising campaigns have showed travelling by car as a
1721 pleasurable activity without any type of transport motivation. This approach can be observed in
1722 the commercial slogans of companies, such as BMW's tagline "¿Te gusta conducir?" (Do you
1723 like driving?). This type of advertising promotes what Moriarty and Honnery (2008) call "going
1724 for a drive" without any actual transport demand or requirement.
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1730 Although the purpose of this study was not to revise advertising for motorcycles, the increasing
1731 number of riders has turned this vehicle into an important aspect of mobility in cities. In an
1732 analysis of a random sample of motorcycle advertisements, no example was found that showed
1733 the CO₂ emissions of the vehicles, the fuel consumption, or information about the noise levels
1734 produced by the vehicles. Thus, no reference was made to any of the multiple atmospheric
1735 pollutants produced by motorcycles, even though in some cases this pollution broadly exceeds
1736 the impact of cars (Vasic and Weilenmann, 2006). Concerning motorcycles, the environmental
1737 scenario in 2015 and 2016 was quite similar to that in 2007 because advertising continues to not
1738 show emissions or fuel consumption information. We found that the main argument in
1739 advertising concerning these vehicles was technology or emotion. Furthermore, adherence to
1740 Regulation Euro 3 on the emission of pollutant gases, which must be observed from 1 January
1741 2016, was not found.
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1754 **4. Policy recommendations**

1755 **4.1. General issues: The discourse of advertisements in general**

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1758 The following main issues were found in advertising:
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- 1760 - The discourse in the majority of advertisements did not inform about energy problems,
1761 emissions, or climate change. In fact, most advertising adopted a position of indifference
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towards the environment or negatively contributes to its protection, either implicitly or explicitly.

- Advertising did not promote an increase in ecological awareness among consumers and did not encourage good habits concerning energy savings, sustainable mobility, or climate change mitigation.

- There was a contrast between common commercial advertising and public service advertising (PSA) based on constant information to enhance users' awareness. PSAs are messages in the public interest that are disseminated by the media to increase awareness and change public attitudes and behaviour towards a social issue. PSA campaigns for sustainable mobility constantly change, but the promotion of the status quo of cars as the dominant means of transport remains constant.

Mondéjar-Jiménez et al. (2015) detected a group of Spanish car companies whose technological innovations exhibited the lowest orientation towards environmental aspects. These authors describe this group of companies as eco-blind because the companies do not appear to be able to identify the benefits derived from an environmental approach.

4.2. Code of good practices for responsible advertising

Based on the issues detected in the analysis discussed above, a code of good practices was created to promote sustainable mobility and provide guidance.

4.2.1. General recommendations

The general recommendations were structured based on the lack of information and bad practices detected in our analysis. The general recommendations are as follows:

1. Information regarding the energy or efficiency classification of products and services should be included in advertising. Notably, automobiles should make this information available.

2. The use of labels, signs, or symbols concerning environmental effects should not be misleading or confusing. The imitation of official eco-labels should not be allowed.
3. Any positive characteristics of a product or service concerning environmental protection should not be applicable to other products offered by the advertiser without justification.
4. If the environmental qualities of a product or service depend on specific use or consumption conditions, modes, or specific moments during their life spans, the advertising should specify this unequivocally and clearly to consumers.
5. The use of environmental arguments and slogans in advertising should be based on technical and scientific criteria. In the event of a claim, the advertiser should provide clear proof about the truthfulness of the advertising, which should be confirmed by an independent agency.
6. Advertising should not promote behaviour that damages environmental protection, promotes energy wasting, or portrays these issues in an unthinking or rash way.
7. The association of terms such as “sustainable development” with activities that do not clearly justify these terms must be prevented.

4.2.2. Recommendations for car and other motor vehicle advertising

The recommendations focussing on cars and motor vehicles were structured based on Table 4, which summarizes the bad practices detected. The specific recommendations are as follows:

1. Information regarding emissions and fuel consumption
 - a. Data related to emissions and fuel consumption must be included and clearly visible for all types of vehicles. In written advertisements, these details must be printed in a font size and type similar to the rest of the published characteristics, and a font smaller than 1.2 cm high should not be used. The emissions and

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1892 consumption information must be located centrally within the advertisement,
1893 near the elements with a higher visual weight.
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1897 b. It is imperative to include official information regarding the fuel consumption
1898 and emissions of all models in advertising. If the advertising presents several
1899 models, the official information must appear for each model.
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1903 c. Advertising for motorbikes and quads should include information regarding fuel
1904 consumption and emissions.
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1908 d. On the homepages of the websites for different models and print
1909 advertisements, the CO₂ emissions and fuel consumption information should be
1910 clearly visible. The most reasonable solution is to use a label similar to that
1911 used for other products, such as tires and refrigerators, including the
1912 consumption and emissions of the specific model.
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1917 e. It is advisable for advertising to mention the environmental taxes for vehicles
1918 and the fact that these charges depend on emissions reduction.
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1922 f. It is advisable for advertising to include information about compliance with
1923 upcoming European emissions regulations for any type of vehicles, from light
1924 commercial vehicles or passenger cars to motorcycles.
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1930 2. Inclusion of eco-friendly slogans and environmental information

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1932 a. The inclusion of a warning or recommendation, such as “use your car in
1933 moderation”, “use public transport whenever possible”, or “bear in mind that
1934 the non-rational use of your car contributes to climate change”, is highly
1935 recommended.
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1940 b. Car advertising could recommend sharing a car for **some** trips. Slogans such as
1941 “share your vehicle; doing so will save fuel and pollute less” could be included.
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1951 Car advertising could also show vehicles with several passengers to promote
1952 maximum occupancy.
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1956 c. Because websites have no space constraints, the sites for car models should
1957 include sections devoted to environmental information, such as climate change,
1958 low carbon mobility, and car sharing.
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1962 d. Voluntary energy labels should appear in car advertising.
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1965 e. It is advisable to show vehicles in actual scenarios in their usual environments
1966 in cities.
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1970 f. Emissions information should be included in advertising located on various
1971 social network sites, such as Twitter or Facebook.
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1975 3. Information about other mobility alternatives
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1977 a. Car advertising should show respect to users of collective means of transport
1978 (buses, trains, underground, and tram) and bicycles and pedestrians.
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1981 b. Collective transport companies, either public or private, should positively
1982 reinforce the image of their users.
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1986 4. Promoting the fuel consumption of the most efficient cars
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1988
1989 a. Advertisers should change the focus of their efforts from the highest-consuming
1990 and emitting models to the most efficient models with the lowest emissions
1991 rates. This recommendation is made because sports cars and SUVs, which are
1992 more powerful and heavier, respectively, pollute more (Environmental
1993 Protection Agency (EPA), 2007).
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2000 b. Car advertisements should avoid the promotion of very large or off-road
2001 vehicles as normal vehicles for urban transport.
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5. Inadequate sites

- a. Car advertising should absolutely stop using historical city centres, pedestrian areas, or pavement as scenarios.
- b. Advertisements should not show motor vehicles travelling off-road or in protected natural spaces.

6. Not eco-friendly driving

- a. Advertising should avoid showing motor vehicles travelling at high speeds because these images can promote dangerous, wasteful, and pollution-promoting driving styles.

7. Role of children in car advertising

- a. It is advisable to establish a regulatory framework for the advertising of motor vehicles directed at minors or children.
- b. Advertising images of unmoving, sedentary children carried by cars to school should be censured. It is appropriate to promote active transportation to school.

5. Conclusions

This paper represents a significant and original scientific contribution to the study and analysis of environmental advertising, primarily in the automobile sector. This research provides answers to many key questions and represents progress in terms of ideas and evidence. The results of this study add value to the limited literature in the field of advertising, cars, and the environment. The literature concerning good practice codes in advertising linked to sustainable mobility is non-existent, resulting in the novel and valuable approach of this work.

This study, which focussed on energy saving, sustainable mobility, and climate change in car advertising, was performed in Spain between 2007 and 2015–2016. Certain variables were

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assessed, including information regarding emissions and fuel consumption, the energy class of
the vehicles, the main argument and its possible relationship with environmental issues, urban
or natural scenarios, vehicular occupancy, driving styles, treatment of other types of mobility as
collective transport or walking, and environmental taxes.

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The content analysis data indicate that green advertising is not common in the promotion of
cars. In conclusion, the discourse in car advertising does not inform about energy problems,
emissions, or climate change. Additionally, this tendency does not further the ecological
awareness of consumers or promote good practices with respect to energy saving, sustainable
mobility, or the mitigation of climate change. Except for institutional advertising, very few
advertisements make any positive contribution towards the environment, energy saving,
sustainable mobility, or climate change. Most car manufacturer advertisements either adopt an
indifferent position towards the environment or negatively contribute to its protection either
explicitly or implicitly.

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In 2015 and 2016, the analysis addressed the websites for each car model and determined that
the lack of space constraints does not motivate companies to offer further environmental
information or note the vehicle's emissions. Moreover, in these years, we found the main
argument to be the addition of new technologies and gadgets, but no advertising was directed
towards environmental improvement. The evolution of the data on emissions and fuel
consumption over time from 2007 to 2015–2016 has improved concerning size and presence,
but the information remains marginal.

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Recent car advertising does not highlight the environmental consequences of these products or
offer advice to consumers regarding habits that can help reduce pollution or emissions. This is
consistent with the scandal that surfaced in September 2015, when the US Environmental
Protection Agency reported that Volkswagen violated the Clean Air Act. Similarly,
advertisements for other motor means of transport, such as motorcycles and quads, do not
provide any information regarding emissions or fuel consumption.

As a result of this analysis, we developed a taxonomy of different variables allowing some recommendations to be made regarding the use of responsible advertising as an extra element in the decarbonizing policies of transport. Consequently, a code of good practices for the advertising of cars and other means of transport was provided and detailed in 28 specific proposals.

Finally, based on the results of the analysis and the code of good practices, it is necessary to note the following implications for future work:

The results and proposals obtained in this Spanish study are applicable to print and website advertising in other countries, because of the internationalization of this type of advertising campaign.

Moreover, the results of this work can be useful for car brands to build their communication strategies towards achieving sustainable mobility. However, the limitations of the work only allow us to note some trends that can be further studied by the scientific community.

Based on the results of this study, it is necessary to include instruments that systematically supplement the lack of information currently exhibited by governmental and independent observers. Spain already has some observatories of advertising concerning gender issues and immigration. It is suggested that vehicular transport, an area with significant relevance to quality of life and the environment, requires a specific observatory. The function of this mobility observatory could be to monitor the media, gather information on transport advertising, analyse and assess such information, and promote different guidelines to ensure a positive change towards habits that help reduce the effects of climate change.

The content of the code and the observatory should be negotiated with companies such that they adopt them in their advertisements and comply with their application. Thus, the assumption of these good practice codes by companies implies self-regulation. This approach could result in pressure for sustainable mobility and affect many elements that could be used by car brands as

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2187 highlighted elements for building communication strategies. The observatory could also become
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2189 a communication channel in which citizens could present complaints about bad practices or
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2191 defaults of the code. Finally, the observatory should publish an annual report summarizing its
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2193 activity, similar to other observatories.
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2204 sectors.
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Table 1. Sample of analysed advertising

Sector	Number advertising	Format	Period
Cars	157	Newspaper El País	2007
Cars	198	Newspaper Marca	2007
Cars	57	Newspaper El País	2015
Cars	122	Newspaper El País	2016
Cars	36	Websites	2015
Cars	46	Websites	2016
Cars	320	Newspaper, magazines and advertising hoardings	2005-2006
Cars	252	Television	2000-2005
Cars	150	Television	2016
Other modes of transport (motorcycles, advertising, etc.)	157	Newspaper and magazines	2006-2007
Other motorized modes of transport	15	Newspaper and magazines	2015-2016
Transport infrastructure advertising	57	Newspaper and magazines	2004-2007
Transport logistics advertising	22	Newspaper and magazines	2006-2007

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Table 2a Quantitative analysis of press advertising

Item	El Pais (2007)	Marca (2007)	El Pais (2015)	El País (2016)
Advertising did not contain any information regarding consumption and emissions.	14%	30%	0%	0%
Legibility of the information regarding consumption and emissions is low because this information is shown in a one millimetre high or even smaller font.	27%	7%	0%	0%
The information regarding consumption and emissions was barely legible due to the existence of heterogeneous backgrounds or the information was placed in a vertical angle.	9.5%	12%	14%	30%
The information regarding consumption and emissions was barely legible due to another reason.	36.5%	19%	14%	30%
Accuracy of the information regarding consumption and emissions: advertising presents the consumption of a specific model.	14%	9.5%	18%	12%
Information regarding consumption and CO ₂ emissions in a font smaller than 2 mm.	86%	70%	39%	19%
Information regarding consumption and CO ₂ emissions in font larger than 2 mm.	0%	0%	61%	81%
Information regarding consumption and CO ₂ emissions not in a central position.	100%	100%	100%	100%
Inaccurate information regarding consumption and emissions: advertising presents the consumption of a wide range of models.	86%	90.5%	82%	88%
Inaccurate information: the shown range was higher than 80 g/km.	37%	45%	3.5%	20%

Table 2b Quantitative analysis of press advertising

Item	El Pais (2007)	Marca (2007)	El Pais (2015)	El País (2016)
Inaccurate information: different names are used in regard to the declared consumption type (mixed)	40%	42%	60%	65%
Inaccurate information: different names are used in regard to the declared consumption type (average)	17%	8%	11%	11%
Inaccurate information: different names are used in regard to the declared consumption type (combined)	15%	13%	17%	8%
Inaccurate information: different names are used in regard to the declared consumption type (weighted)	8%	6%	0%	0%
Inaccurate information: different names are used in regard to the declared consumption type (combined average)	3%	1%	9%	7%

Table 2c Quantitative analysis of press advertising

Item	El Pais (2007)	Marca (2007)	El Pais (2015)	El País (2016)
Information regarding the energy class of the vehicle	0%	0%	0%	0%
Main argument of the advertisement (easy financing)	20%	23%	21%	44%
Main argument of the advertisement (sports characteristics)	6%	0%	12%	7%
Main argument of the advertisement (power)	6%	8%	0%	1%
Main argument of the advertisement (consumption/emissions)	2%	0%	0%	0%
Main argument of the advertisement (technology)	0%	8.5%	58%	66%
Main argument of the advertisement (space)	10%	2%	3.5%	4%
Main argument of the advertisement (ecology)	3%	0%	0%	0%
Main argument of the advertisement (emotion)	0%	0%	44%	12%
Main argument of the advertisement (family)	0%	0%	5%	0%
Vehicles shown on artificial backgrounds	61%	56%	21%	41%
Vehicles shown in natural scenarios	17%	0%	8,8%	0%
Vehicles shown in urban scenarios	14%	15%	54%	38%
Vehicles shown in road scenarios	5%	21%	14%	21%
Environmental rates in advertisements	-----	-----	0%	0%
References to European rules Euro 4 and Euro 5	0%	0%	—	—
References to European rule Euro 6	-----	-----	0%	0%

Bad advertising practices	26%	22%	26%	17%
Off-road models	8%	7%	21%	20%

Table 3. Quantitative analysis of websites of cars

Item	Websites (2015)	Websites (2016)
Main arguments of the advertisement (sophisticated technology)	100%	98%
Main arguments of the advertisement (style)	58%	80.4%
Main argument of the advertisement (easy financing)	28%	24%
Main argument of the advertisement (comfort)	11%	20%
Main argument of the advertisement (gadgets)	75%	89%
Main argument of the advertisement (silent motion)	2.7%	2%
Main argument of the advertisement (emissions)	0%	4.3%
Advertising containing any information regarding consumption and emissions on the homepage	5.5%	24%
References to European rules Euro 6	5.5%	6.5%
Off-road cars promoted for urban use	100%	57%
Emphasis on low consumption	14%	11%

Table 4. Bad practices detected in the analysis

Category	Bad Practice
Emissions and consumption	<ol style="list-style-type: none"> 1. Making consumption and emission information of vehicles difficult for the consumer to read due to the following factors: small letter size, confusing backgrounds, and positioning outside the central areas of the advertisement. 2. Different modes of fuel consumption confuse the buyer. 3. No inclusion of mixed consumption. 4. Presenting consumption and emissions for an entire range of vehicles without indicating the specific performance of each model. 5. On television, the medium with the highest advertising investment, it is almost impossible to read emissions and consumption data due to the small size and rapid movement of this information. 6. Advertising for motorcycles and quads does not show consumption and emissions data or information regarding noise or pollutants.
Misleading environmental information	The environmental benefits of a model are extended to the full range, when these behaviours could vary.
Inappropriate driving venues	<ol style="list-style-type: none"> 1. Showing vehicles off-road or in protected natural spaces. 2. Promotion of vehicles with great power or size as ideal vehicles for cities, particularly in the case of off-road vehicles. 3. Cars parked in inappropriate places, such as parks, pedestrian zones, and the interior of beaches. 4. Promotion of off-road vehicles circulating through historic city centres.
Lack of environmental information	<ol style="list-style-type: none"> 1. Absence of environmental information despite the abundant space available on websites. 2. Ubiquitous display of digital devices (gadgets) and sophisticated technologies without showing their environmental and/or energy dimension. 3. Almost no presence of the Euro emission regulations enforced during each case (i.e., Euro 5 and Euro 6). 4. The main argument for hybrid and electric cars is their sophisticated technology instead of their possible environmental advantages. 5. Mobility infrastructures: vehicular mobility and the number of kilometres of highway must grow indefinitely without assessing the environmental and social externalities. 6. Logistics: Transport and moving goods globally is not shown to have environmental implications. 7. Absence of information regarding the energy class of vehicles. 8. General lack of environmental slogans in advertising.

Mobility alternatives	<ol style="list-style-type: none"> 1. Transport by car is presented as normative and a lifetime goal, in lieu of other possible forms of travelling. 2. Disregard or underestimation of other modes of travelling: public transport, bicycles, and walking.
Not eco-friendly driving	<ol style="list-style-type: none"> 1. On television, many advertisements show aggressive and high-speed usage situations, which lead to energy waste and contribute to climate change. 2. Many television ads show a single person riding in a car, i.e., a low occupancy level and low transport efficiency. 3. Disregard for efficient and ecological approaches to driving.
Promotion of highest-consuming vehicle	The most powerful vehicles within the existing range of a model are promoted.
The role of children	The transportation of children to educational centres using cars is promoted, encouraging sedentary behaviour in childhood.

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Figure captions

Figure 1. Example of presenting consumption and emissions for an entire range

Figure 2. Example of promotion of vehicles with great power or size as ideal vehicles for cities, particularly in the case of off-road vehicles

CITROËN C5.
MEJOR COCHE DEL AÑO 2009



très Bonn.

CITROËN prefiere TOTAL

Consumo mixto (L/100 Km) / Emisión CO₂ (g/km): C5: 5,6-10,5/149-248

Impresionante. La potencia entra por los ojos, la línea, el diseño, ¿bonito, verdad? Es uno de los coches más innovadores del momento. Pero lo importante va por dentro. Nadie puede imaginar la tecnología que Citroën ha desarrollado en el nuevo C5 hasta que no toma el mando. Conducirlo es vital para entender lo que significa excelente. En dos palabras, "très Bonn". Y en un par de líneas: dos tipos de suspensiones, faros bixenón autodireccionables, asiento del conductor con función masaje, alerta de cambio involuntario de carril y eficaces motores de hasta 211 CV.

Tienes un Citroën C5 1.8 16v Collection por 250€ al mes en 35 cuotas*.
TAE 9,65% con una entrada de 7.013,00€ y una cuota final de 8.656,00€.

* PVP recomendado en Península y Baleares: 21.640€ (IVA, Impuesto de matriculación y transporte incluidos). Si lo desea, al final del contrato, podrá cambiar su vehículo por uno nuevo, devolverlo o seguir disfrutándolo abonando la cuota final. TIN 7,90%. Comisión de apertura contado 416,87€. Importe total a plazos 24.835,87€. Oferta de Banque PSA Finance válida para clientes particulares y hasta fin de mes. Modelo visualizado Citroën C5 Exclusive + Pack cuero integral. RBE nº: 2222/08

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URBAN CHIC.

Desde 238 €/mes.

24 Cuotas

Entrada: 5.812,70 €

Último pago de 13.236,59 €**

TIN: 7,95% TAE: 9,51%

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3 AÑOS DE GARANTÍA
100.000 KM

Multi-Opinion

FREELANDER Td4 Equipo de sonido con radiocassette y 6 altavoces, ABS + Distribución Electrónica de la Presión de Frenado (EBD), Tracción permanente 4x4, Control Electrónico de Tracción (ETC), Control de Descenso de Pendientes (HDC), doble airbag y motor 2.0 Td4 16v Common Rail. Además, cuenta con 3 años de garantía y asistencia en carretera.

Land Rover Freelander Targa Td4 E. P.V.P.: 22.300 €*. Comisión de apertura 329,75 €. Precio total a plazos: 25.091,04 €. Financiación ofrecida por FCE Bank plc válida hasta 31/03/2003. *P.V.P. recomendado en Península y Baleares. I.V.A., impuesto de matriculación, transporte y campaña promocional incluidos.

**Transcurridos dos años tú decides si lo devuelves, lo cambias por otro modelo de la gama Land Rover o te lo quedas pagando la última cuota (todo ello según condiciones pactadas en contrato).



THE LAND ROVER EXPERIENCE

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