

# “Flix rhymes with sh\*t”. Exploring the potential for place stigmatization of media coverage of a declining industrial village in rural Spain

Place  
stigmatization

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## Abstract

**Purpose** – This study aims to analyze and assess 21 years of media coverage (2000–2020) of Flix, a small industrial village located in an rural area on north-eastern Spain, which has endured in these years a severe environmental and industrial crisis, with a strong potential for stigmatization of the place.

**Design/methodology/approach** – The research is conceptualized under the Social Amplification of Risk Framework, a theoretical/conceptual approach aimed at accounting for the huge gaps that often arise between public perception of technological or environmental risks of some technologies, products and places and the expert estimations of these risks. The authors studied the coverage on Flix by a local, a regional and a national newspaper through a content analysis where the corpus (1,524 news pieces) was coded for several variables, including tone, genre and thematic area.

**Findings** – The studied coverage was in general overwhelmingly negative and strongly focused on “bad news” relating to pollution and deindustrialization, although this was much less the case in the local newspaper than in the regional and, in particular, the national newspaper. Thus, a territorially escalated pattern clearly emerges from our research concerning the stigmatization potential of news media coverage for the specific case under scrutiny.

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## JEL classification – D83

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**Originality/value** – To the authors' knowledge, this is the first time such a longitudinal study of media coverage and its potential for place stigmatization is performed with this specific territorial perspective.

**Keywords** Place stigmatization, Technological stigma, Environmental stigma, Social amplification of risk, Risk communication, Media coverage, Environmental risk, Chemical waste, Deindustrialization, Spain, Catalonia

**Paper type** Research paper

## 1. Introduction

In September 2004, amidst the media storm generated by a scientific report released by the Catalan regional government, revealing the existence of a massive chemical waste dumpsite in the industrial village of Flix in north-east Spain, its inhabitants looking for news on the event in the main Catalan newspaper probably got shocked by these words by a commentator: "When listening to the recent song by granddaddies David Crosby and Graham Nash, a verse stands out that seems to directly allude to the Flix reservoir: 'This place is full of shit that kills' [. . .]. Even Flix rhymes with shit" [1] (Hernández, 2004, p. 24).

From that moment on, Flix has endured a continued two-pronged crisis: an environmental one, related to the "discovery" and removal of the dumpsite, and an economic one, due to the progressive downscaling of production in "the factory," an industrial chemical facility that generated both the dumpsite and the local prosperity. The media have ever since insistently linked Flix with chemical pollution and deindustrialization, often using controversial expressions like the one reported above, or "Ebro cesspit," "contamination bombshell," "toxic waste hill" and "chemical Chernobyl." When locals expressed discomfort and annoyance at the massive and overwhelmingly negative media coverage that could deeply affect the village's reputation and identity, they were sometimes dismissed by the same news outlets as possible accomplices of the environmental bungle.

Although the local population are obviously not at fault for the factory's chemical waste mismanagement, since 2004, the village and its inhabitants have been exposed to a third risk in addition to the environmental and the economic ones: stigmatization. This is the focus of this study, which presents the results of an analysis of 21 years of media reporting on Flix (2000–2020). We assess the role of this coverage in the potential stigmatization of the village, stressing how a local, a regional and a national newspaper reflected Flix differently during the two crucial decades under scrutiny.

As we studied news media coverage on Flix as a dependent variable (Binder *et al.*, 2015), we could only aim to learn about stigmatization as a process, not as a result, as this research does not include an analysis of public perceptions resulting from this coverage (and/or other inputs). In other words, we cannot make any claims about the actual impact the analyzed news coverage had on the village's reputation as reflected in public opinion; instead, we found solid evidence that this coverage was in general overwhelmingly negative, strongly focusing on "bad news" about contamination and deindustrialization, although much less so in the local newspaper chosen for the analysis than in the regional, and particularly, in the national newspaper. Thus, a pattern on a territorial scale clearly emerges from our research concerning the stigmatization potential of news media coverage for the specific case under scrutiny.

## 2. Context

Flix (pronunciation:/flɪʃ/) is a village of 3,410 inhabitants (2020 census) located by the River Ebro in the southernmost province of the Catalan region. It is geographically notorious for being settled in the bottleneck of one of the most perfect meanders of the River Ebro, a

location that is at the root of the village's name (a derivation of Latin "flexus," meaning "meander") and pride: as a local saying goes, Flix is the only village where the Ebro passes twice. This river, the main water course of the peninsula (which is named "Iberian" after it), has therefore strongly modeled the personality and the economy of the village for centuries, including the location in 1897 by the river's right bank of the Sociedad Electroquímica de Flix (SEQF) (Muñoz, 1997; Sánchez-Cervelló, 1997; Cervelló and Forn, 2008; Pujadas, 2016). The SEQF, known among locals simply as "the factory" ("la fábrica"), had an enormous impact on the village and its surroundings, turning it into a modern industrial enclave in the middle of a relatively deprived rural area.

At the turn of the century, the village's population barely exceeded 2,500 inhabitants, who made a living out of agriculture and craftwork. Flix was chosen for the factory's site because of its geographical location (Hierro, 1997) at the place where the railway linking the two main Spanish cities, Madrid and Barcelona, set up in 1892, intersected another powerful means of transportation, the river itself, which at that time was navigable. On the other hand, a low-head dam dating back to the Arab times and that diverted water to the river's right bank ensured energy production for the diaphragm cell electrolysis processes involved in the manufacture of several chemicals. Last, but not least, a further boost for the factory was the building, side by side with the old village, of a modern, separate and self-sufficient residential area for the workers and staff.

For decades, SEQF played a protective and welfare role toward the village, not only providing plenty of relatively well-paid and stable jobs for the local population, but also by building primary schools, providing facilities in its residential area for both a secondary and technical school, sponsoring local entities and festivities, providing cheap and convenient lodging for employees and their families and improving the utility supply for the whole village (Collazos, 1997).

In a few years, early 20th-century Flix left behind its rural past and became a small industrial cluster with strong Spanish and European links. Although the factory's early years were difficult (Torres, 1997), many locals chose the financial stability provided by an industrial salary over the fluctuations and uncertainty of agriculture, while some kept cultivating their fields in their time off from the factory as an extra income (Pujadas, 2016).

The First World War greatly impacted the factory, boosting its activity due to Spain's neutrality. During the 1936–1939 Spanish Civil War, the factory and the village were heavily bombed and damaged. In the 1940s, they were reconstructed, and new chemical production plants were set up. During the 1950s and the 1960s, new chlor-alkali plants were put into operation, and between 1959 and 1960 the factory's staff trebled (Pujadas, 2016) to almost 1,500 employees in 1960, boosting the local economy and population, which reached a historical peak of 5,418 that same year.

During its 100-plus years of history, the factory has produced organic products, mostly organochlorine compounds like DDT, trichloroethylen, polychlorinated biphenyls, chloromethane, as well as inorganic compounds, like liquid chlorine, sodium hypochlorite, chlorhydric acid and dicalcium phosphate, among other (Pujadas, 2016; Grimalt, 2016; Julian, 2018). At the beginning of the XX century the content of toxic substances contained in the water discharge was relatively unimportant, but as production increased and diversified into organochlorine compounds, among others, its dangerousness and toxicity increased too (Pujadas, 2016). Poor management of the residues left by these production processes, coupled with a lack of regulation, led to the continued uncontrolled dumping of contaminated sludge in the river. Up to 1945, this waste was washed away by the regular river's stream and occasional floods, but that year, a dam was built just in front of the village and beside the factory, raising the river's level permanently and stopping regular and flood

currents, which made the solid particles to accumulate in the bank just in front of the factory (Grimalt, 2016; Pujadas, 2016). Although the dumpsite was partially visible as a small bulging “delta” on the shore of the reservoir, and the local population and some experts were aware of its existence, it remained unknown to the wider public for decades.

In late December 2001 and early January 2002, the media reported a contamination episode that resulted in between 3,000 and 4,000 dead fish being found in the River Ebro downstream from the Flix dam. Some days later, it was revealed that in this time the mercury concentration in the Ebro water reached 7.7 particles per trillion (ppt) in the downstream village of Ascó (legislation permitted a maximum of 1 ppt). On January 5, 2002, high mercury concentrations were detected in tap water delivered from the Ebro to the Tarragona metropolitan region. The media related this contamination episode to the existence of a toxic dumpsite, reported by both experts and locals, in the Flix reservoir. However, no definitive conclusions were reached in this regard and after the media hype died down, the alleged contamination was forgotten again.

It was not until September 2004 that the true reach and implications of the Flix chemical waste dumpsite were made public, when the media published the results of a study commissioned by the Catalan government to the Consejo Superior de Investigaciones Científicas (Grimalt *et al.*, 2003). This research revealed that the dumpsite’s sludge, which amounted to some 700,000 tons, contained “very high concentrations of organochlorine compounds [. . .], mainly of Hexachlorobenzene, PCB and DDT, in addition to mercury and other heavy and low radioactive metals” (Grimalt, 2016, p. 50), which, if the dumpsite were to be agitated by a sudden flood, could pose a severe environmental threat to both the river’s wildlife and human health, as hundreds of thousands of people depend on the river for their tap water supply.

The public administrations immediately reacted and remediation plans were launched and reported in the media. However, due to technical and bureaucratic issues, the dumpsite only got isolated with iron sheet piles in January 2011 (Caralt, 2011), and sludge removal started in March 2013 (Giralt, 2013a, 2013b), almost nine years after the pollution was made public. These delays suggest that the administrations rated the dumpsite’s actual risk as low, or at least not a high priority, as indeed the sediments were stable and protected by the Flix dam. Moreover, continued monitoring of downstream water quality by the Tarragona Water Consortium revealed no abnormality after the January 2002 episode.

Concerning the expert’s assessment of the health risks posed by the factory’s activity and dumpsite, published scientific evidence has yielded mixed results: on one side of the scales (evidence of higher risks), a 1994 article reported “an excess of incident cases [. . .] for thyroid neoplasms, soft-tissue sarcoma and brain neoplasms in men” of the volunteer sample studied in Flix, in coincidence with “unusually high levels of hexachlorobenzene (HCB) [. . .] detected in the air and in sera” of these volunteers (Grimalt *et al.*, 1994, p. 200), while in 1999, it was reported that “exposure to hexachlorobenzene did not affect the general health status of the [Flix] population, but it was associated with specific health effects of the most highly exposed subjects” (Sala *et al.*, 1999, p. 102), i.e., factory workers. On the other hand, later research on potential health effects of the factory’s activity in the lower Ebro basin population did not report significant evidence of higher health risks (Ferré-Huguet *et al.*, 2008; Martí-Cid *et al.*, 2010; Nadal *et al.*, 2011; Vilavert *et al.*, 2015). One study even showed lower levels of mercury on scalp hair of Flix school children than in two other (distant) cities in the province (Batista *et al.*, 1996). To sum up, to our knowledge, very little scientific evidence has been published concerning higher health risks derived from the factory’s activity for the local population, other than factory workers with a high exposition to organochlorine compounds originated by the plant’s production.

Once underway, the belated remediation process was not even a peaceful one, since in 2016, a corruption scandal affected the government company in charge of the operation. The sludge removal eventually ended in June 2020, while the sheet pile wall has not yet been removed at the moment of submitting this article (October 2022).

In parallel to these serious environmental issues, the company owning the Flix factory, Ercros, launched in 2009 the first of a series of activity reductions or relocations. In May 2009, the company shut down the chloromethane plant and discharged 34 employees, while in 2013, another 75 jobs were discontinued out of a roster of 207 (Giralt, 2013a, 2013b). The chlor-alkali plant was shut down at the end of 2017 due to a new EU regulation banning mercury cells in the production of chlorine and caustic soda. This left only the dicalcium phosphate plant in operation with some 45 employees, a residual figure compared to the 1,454 jobs recorded in 1960 (Pujadas, 2016).

### 3. Theoretical and conceptual background

The research reported in this article is conceptualized under the Social Amplification of Risk Framework (SARF), as developed and refined by several authors (Kasperson *et al.*, 1988; Flynn *et al.*, 2001a, 2001b; Pidgeon *et al.*, 2003). SARF is a conceptual/theoretical approach aiming at understanding the social, psychological and communicative processes and factors influencing how technological risk is perceived by the lay population, as opposed to more “objective,” expert-driven risk assessment. SARF researchers try to account for the sometimes huge gaps between public reactions to the risks posed by sites and/or products related to certain technologies like nuclear energy or chemicals, and the rational probabilistic calculations of accidents actually happening at these sites or with these products.

According to SARF, a number of “stations” mediate between public perceptions of risk on the one hand, and risk signals on the other; these stations, like “the scientist who communicates the risk assessment, the news media, cultural groups, interpersonal networks” (Kasperson *et al.*, 1988, p. 177), and other factors involved in the mediation process, can either amplify some risks, or rather public risk perceptions, or attenuate them, in the first occurrence usually following an adverse triggering event like “the release of a government report that provides new information of the risk” (Kasperson *et al.*, 2001, pp. 16-18), as the case under scrutiny here.

SARF researchers have highlighted stigmatization of products, places or technologies as one of the major possible outcomes of risk amplification processes (Kasperson *et al.*, 2001; Kasperson *et al.*, 2003). Technological stigma “is based upon negative imagery” (Kunreuther and Slovic, 2001, p. 332) associated with places, products and technologies following risk events and the subsequent risk amplification processes. In this sense, technological place stigmatization is a public opinion phenomenon involving observers (“the public”) getting a negative perception “of living in a community [the observed] that has experienced a degraded quality of life” (Zhuang *et al.*, 2016, p. 1323).

Technological stigma translates into avoidance overreactions by the public concerning certain products, technologies and/or places deemed “undesirable because of their association with a technological danger” (Flynn *et al.*, 2001a, 2001b, p. 310). The stigmatized product, technology or place and its population (Bush *et al.*, 2001) “may experience enormous indirect consequences that far exceed the direct consequences [...] of the risk or the event” (Kasperson *et al.*, 2001, p. 27), like the “inability to attract new investment” (Colocousis, 2012, p. 759).

A different, yet cognate, strand of research inspired by sociologist Loïc Wacquant (Wacquant, 2007; Wacquant, 2008; Wacquant *et al.*, 2014) has focused on “territorial

stigmatization” of deprived estates in postindustrial metropolis as “the symbolic defamation of particular places/neighborhoods, or the socially labelling of certain places with undesirable characteristics” (Zhang *et al.*, 2021, p. 3). This socio-anthropological research on the “territorial fixation and stigmatization” of advanced marginality (Wacquant, 2007, p. 66), although departing from technological or environmental risk as the cause for “blemish of place” (Wacquant, 2007, p. 67), adds to SARF perspective in highlighting the heavy short- and long-term consequences, both material and symbolic, of stigmatization for places and the people living there, its deep-reaching and complex policy implications (Slater and Anderson, 2012; Kallin and Slater, 2014) and the central role played by journalism and the media in the dynamics of place defamation, alongside other symbolic authorities like “the state, church, [and] the law” (Wacquant *et al.*, 2014, p. 1272).

Technological or environmental stigma is particularly prone to develop in relation to chemical technologies (Kunreuther and Slovic, 2001, p. 333). This is particularly relevant for our case study. Despite the “discovery” and subsequent remediation of the mentioned chemical waste dumpsite having not evolved into real and direct health hazards for the local population, its stigmatization potential remains high, as “places can suffer stigma in advance or in the absence of any demonstrated physical impacts” due to the fact that stigmatization is based on perceptions, not on statistical risk calculations (Gregory *et al.*, 2001, p. 6).

SARF researchers have highlighted the role of news media in risk amplification processes and the resulting potential stigmatization of technologies, products and places (Flynn *et al.*, 2001a, 2001b; Kunreuther and Slovic, 2001; Kasperson *et al.*, 2001; Kasperson *et al.*, 2003; Gregory and Satterfield, 2002; Binder *et al.*, 2015). In this sense, SARF “connects risk, media and stigma in a logical conceptual framework” (Flynn *et al.*, 2001a, 2001b, p. 11).

Several contributions to the debate, though, have nuanced the existing general agreement among risk scholars as to the relevance of media coverage in technological risk amplification and stigmatization processes. Kasperson *et al.* (2003, p. 21), referring to an article by Kasperson *et al.* (1992), contended that “even heavy and sustained media coverage does not by itself ensure risk amplification or significant secondary effects,” and, that, according to Remm (1991), “the pure volume effect is only one of many influences of the media in public perceptions of risk.” Other ingredients of the social amplification process and the complex interactions between it and the media coverage need to be taken into consideration when the causes of risk amplification and stigmatization are assessed, and “render it difficult to determine the specific effects of the volume and content of media coverage” (Kasperson *et al.*, 2003, pp. 22–23). Binder *et al.* (2015) mention several empirical studies that report attenuation, or both amplification and attenuation effects occurring as a result of news media coverage.

### *3.1 Previous empirical research: location and territoriality matter*

Kunreuther and Slovic (2001, p. 352) considered at the start of the new century that there was “very little empirical research on stigmatization of places, products, industries, and technologies.” Kasperson *et al.* (2003, p. 29) agreed shortly after, that “a high-priority area for research on social amplification” was “extending the current knowledge base of risk-induced stigma and their effects.” Specifically concerning media coverage of technological risk, Binder *et al.* (2015, p. 73) stated that “it is evident [...] that there is a lack of research.” Our own literature review seems to confirm a continued shortage of empirical research on media coverage and potential stigmatization of places/products/technologies.

Among the earlier published studies on the relationship between technological risk and media coverage we found, a noteworthy article is the one published by Greenberg *et al.* (1989) on the coverage of environmental risk in the evening news of the ABC, CBS and NBC

US television networks between January 1984 and February 1986. They found that this coverage amounted to just 1.7% of the total airtime, and “the networks appeared to be using traditional journalistic determinants of news [...] plus the broadcast criterion of visual impact to determine the degree of coverage of risk issues” (1989, p. 119).

Flynn *et al.* (2001a) took stigmatization specifically into the game in the content analysis of newspaper coverage of the 1989 FBI raid of the Rocky Flats facility of the US Department of Energy, a major nuclear weapons production plant in Colorado. The study was carried out to determine the impact of this coverage on the stigmatization of the surrounding residential area. Their conclusions supported their hypothesis “that dramatic and highly visible stories about Rocky Flats mismanagement and the potential contamination of the adjacent communities stigmatized residential property in the subject communities” (Flynn *et al.*, 2001a, 717).

McInerney *et al.* (2004) conducted a study on how American newspapers and popular magazines had reported on technological risk surrounding genetically modified food between 1992 and 2002 and concluded that “press releases affect what is published in the popular press” (2004, p. 45), and that “incomplete scientific knowledge and reporting can become problematic” in terms of risk amplification and potential for stigmatization of the biotechnology industry (2004, p. 69).

In research on the same province where Flix is located, Castelló (2010) used frame analysis and interviews with journalists to study how the petrochemical cluster of Tarragona had been reported in the local press in 2006 and 2007. The author found the industry was mostly framed in economic, not environmental terms, and almost three-quarters of the analyzed articles reflected the industry under a positive light. Particularly relevant for our study is the author’s conclusion that “the “proximity factor” affects media coverage of risk issues,” as “in a proximity scenario, a closer relationship with sources is established and there are more direct implications and feedback of journalist’s work” (Castelló, 2010, p. 475), strongly affecting news production routines and, in the case under scrutiny in Castelló’s research, tilting the scales toward a positive coverage of the industry that predominantly focusses on its economic benefits for the local population.

Haigh (2018) examined seven years (2008–2015) of newspaper coverage of the eventually discarded KXL pipeline project, which planned to transport 830,000 oil barrels daily from the Gulf Coast to Alberta, Canada. He performed a content analysis of news items about the subject published in five nationwide American newspapers and two state-level newspapers of each of the seven states involved, thus introducing a territorial factor into the study. One of his conclusions is that “state newspapers were slightly less negative than national newspapers” (Haigh, 2018, p. 203).

Territoriality had already been highlighted by scholars in the early years of the framework development as a variable with a potential effect on risk amplification/attenuation. Kasperson *et al.* (2003, p. 20), for instance, pointed out that “amplification at the national or regional scale accompanied by attenuation at the local scale may not be uncommon [...] The economic benefits associated with risks appear to be a significant source of attenuation at the local level.” In a similar vein, Kasperson *et al.* (2001, p. 12) posit that “unfamiliar or distant places may easily fall prey to distorted or stereotypical perceptions,” i.e. the distance from the place where risk events have happened may easily add to risk amplification. Other empirical studies, not dealing with media coverage but with perceptions of the local population of “risk places,” resonate with these arguments. For instance, Miller and Sinclair (2012, p. 493) concluded from their research on risk perceptions in a US coal mining resource community that “experience with a hazardous industry may very well lead to pride in the community’s heritage as a natural resource provider and identification with the industry.” Castán-Broto *et al.* (2010, p. 959) examined risk perceptions

among residents around five coal ash disposal sites in Tuzla, Bosnia and Herzegovina, and concluded that “the emergence of a stigma associated with environmental pollution is not necessarily correlated with deteriorating ties with a place.”

#### 4. Research design and methods

The above described literature review revealed the relative paucity of published empirical research specifically examining media coverage of technological risk and its role in place/product/technology stigmatization. More specifically, there is little literature on how the variable of the media’s territorial scope (the territory of reference for its news coverage and audience: local, regional or nationwide) affected this coverage. Our research modestly intends to add to the scholarly debate on SARF by expanding the existing evidence about these points. We therefore delimited our object of study as the journalistic coverage of Flix, a “risk place” closely linked with a chemical factory for more than 100 years, in the period 2000–2020, by three mainstream newspapers corresponding to three different territorial levels: local-provincial, regional and national. The main research question was the following:

*RQ1.* What were the differences in how the selected newspapers covered Flix in the first 21 years of the century, in terms of stigmatizing potential?

This question could be broken down into the following:

*RQ2.* How positive or negative could this coverage be considered for each newspaper (positivity-negativity variable)?

*RQ3.* How did this coverage break down thematically (thematic variable)?

*RQ4.* How did this coverage evolve during the two selected decades?

*RQ5.* How did the newspapers’ “territorial scope” variable interact with the variables “thematic focus” and “positivity-negativity?”

To answer these questions, we performed a content analysis of the media coverage concerning the village of Flix between January 2000 and December 2020 by three Spanish daily newspapers:

- (1) *Diari de Tarragona*, based in the Catalan town of Tarragona and mainly covering the homonym province, where the town of Flix is located. It can therefore be considered a local-provincial newspaper. *Diari de Tarragona* is the news outlet of reference in the province, and is published in print and online. It includes a daily section with a specific coverage of the Terres de l’Ebre (“Ebro lands,” referring to the river) sub-region, where Flix is located.
- (2) *La Vanguardia*, based in the Catalan capital city of Barcelona and mainly covering the region of Catalonia, where Flix is located, in print and online, although it also devotes ample attention to national and international news. It has been the most read and influential quality paper in Catalonia since the early 20th century.
- (3) *El País*, based in the Spanish capital city of Madrid and with a national scope. It has been considered, since its foundation in 1976, the most influential and circulated quality Spanish newspaper. *El País* covers in print and online the Spanish territory through a network of local offices and includes supplements that separately report on respective regions.



These newspapers were selected as the most influential and representative ones for each of the three territorial levels (local, regional and national), and also for accessibility reasons: *La Vanguardia* and *El País* run their own corporate online archives including every single daily edition since 1881 ([lavanguardia.com/hemeroteca](http://lavanguardia.com/hemeroteca)) and 1976 ([elpais.com/archivo](http://elpais.com/archivo)), respectively, while *Diari de Tarragona* can be thoroughly searched through the Mynews archival service ([mynews.es](http://mynews.es)).

The designated unit of analysis was the article, piece or item: a separate textual unit with a specific focus. Articles containing the word “Flix” and published between January 2000 and December 2020 were thoroughly searched and downloaded from *La Vanguardia* and *El País* online archives, while *Diari de Tarragona* was only searched from November 2001 onward, as no prior archives are kept in the Mynews database for this news outlet. We selected a time span of 21 years to get a wide longitudinal perspective, thus avoiding making an analysis that is too short term and circumstantial. We chose 2020 as the period’s closing date because this is the year when the Flix reservoir was fully cleaned.

Out of this initial corpus, we discarded pieces that made only a passing mention to Flix, sports news and notes included in the entertainment listings, as we considered them irrelevant in terms of their potential influence on Flix’s reputation. We not only kept news, but also feature articles, interviews and opinion pieces dealing with the village of Flix. News coverage focusing on an event and consisting of a main text and several related sub-pieces was counted as a single piece, instead of separate ones. The final sample amounted to  $N = 1,524$  pieces or items: 113 published in *El País*, 247 in *La Vanguardia* and 1,164 in *Diari de Tarragona*.

For each piece, we manually recorded the following data in a spreadsheet: publication date, headline, word count (only for the text, not including headlines, subheads, graphs, highlights, etc.), journalistic genre or type of text, thematic category and tone of the coverage, i.e. whether the article reflects the village in a positive, neutral or negative light, according to the coder’s assessment, based on its estimated impact on Flix’s reputation. The genre shortlist included four categories: news, features, interviews and opinion pieces, while the thematic shortlist consisted of the following eight categories: pollution, economy and business, nature and environment, heritage and local history, crime and events, politics, culture and education, infrastructures and services and society/other. Typically negative pieces included the ones under such headlines as “Contamination bombshell in Flix” (pollution category), “The Ebro river is dying” (in reference to several plagues affecting the river, nature and environment category) and “Hunger strike in Flix for Ercros” (protest against production scaling down and job cuts, economy and business category), while typically positive texts included the ones under such headlines as “Twenty-one storks released in Flix” (nature and environment category), “The government unblocks the remaining remediation works in Flix” (pollution category) and “Industrial revitalisation” (on reindustrialization schemes, economy and business category). Not included in the coding were data deemed less relevant for the purposes of the analysis, concerning, e.g. authorship, the pages in which the articles were located, the article’s layout, accompanying pictures and/or graphs, etc. Although the coding criteria were agreed on by both researchers, the coding was performed by one of us. Descriptive statistics were used for the analysis.

## 5. Results and discussion

### 5.1 Amount and chronology of coverage

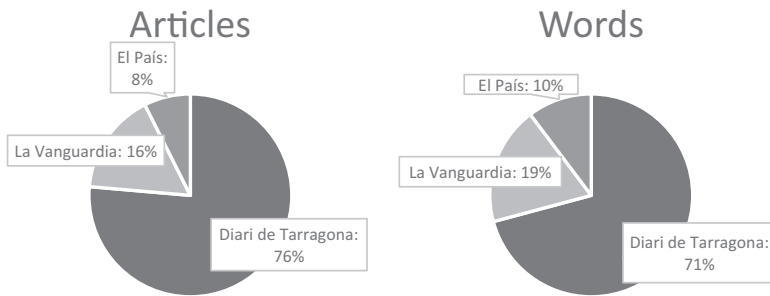
As expected, the largest proportion of the sample corresponds to the local *Diari de Tarragona* (76% of the articles and 71% of the words published on Flix) (Figure 1). *La Vanguardia*, as a regional news outlet, comes second, and *El País* is last: the broader the

territorial scope of the newspaper, the smaller the amount of both published articles and words on Flix. It is noticeable that the proportion of words published in both the regional and national newspapers is higher than the corresponding proportion of articles, which means that these are, on average, longer than those published in *Diari de Tarragona*.

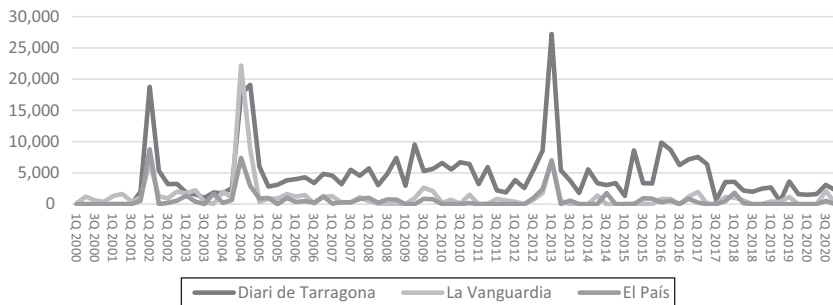
A chronological analysis of the analyzed coverage (word count) reveals three main peaks and two subpeaks (Figure 2):

- (1) First quarter 2002: coverage on Flix was null (*El País*) or very low (*La Vanguardia*) until January 2002 (*Diari de Tarragona* was not included in the Mynews archives until late 2001), when mercury contamination was discovered in water delivered by the Consorci d'Aigües de Tarragona, a public agency in charge of tap water collection in the River Ebro, purification and delivery in the metropolitan area of Tarragona. This contamination was immediately linked in the news with the Flix reservoir, widely suspected of hosting a chemical waste dumpsite in front of the factory. This triggered interest from all three newspapers, with *Diari de Tarragona* leading the coverage (18,774 words), followed at a distance by *El País* (8,779) and *La Vanguardia* (6,569).
- (2) Media attention in the analyzed newspapers dropped after this episode, more so in *La Vanguardia* and *El País* than in *Diari de Tarragona*, until another risk event triggered a new surge: the release by the Catalan regional government in September 2004 of a scientific report confirming what many locals and some experts already knew or suspected: that the right shore of the Flix reservoir hosted a huge dumpsite amounting to 700–800,000 tons of chemical waste, including mercury and low radioactive materials. In this case, *La Vanguardia* led the

**Figure 1.** Articles and words published on Flix in the selected newspapers as a proportion of the sample, 2000–2020



**Figure 2.** Evolution of news coverage (word count) on Flix on a quarterly basis, 2000–2020



coverage, with 22,179 words, closely followed by *Diari de Tarragona* (17,597) and, further behind, *El País* (7,404). Although the *Diari*'s coverage peaked at a lower level than *La Vanguardia*'s in the third quarter of 2004, it extended to the following quarter (specifically, the month of October), where it reached its peak.

- (3) After this second peak, coverage dropped in all three newspapers (more so in *La Vanguardia* and *El País*) for almost nine years. During this period, the *Diari*'s coverage recorded a subpeak in the second quarter of 2009 (9,546 words), when the factory announced a reduction in its activity and the related job cuts.
- (4) The third main peak in coverage happened during the first quarter of 2013, when two events coincided: the announcement of a massive activity reduction and job cuts in the factory and the start of the dumpsite's removal. In this case, the *Diari* recorded its highest peak, with 27,230 words, far above *La Vanguardia* and *El País*, which also peaked at around 7,000 words each.
- (5) *Diari de Tarragona* recorded another subpeak during the first quarter of 2016, coinciding with another job cut in the factory, which almost went unnoticed by *La Vanguardia* and *El País*.

In this chronology, it is noteworthy that, while *El País*'s and *La Vanguardia*'s coverage peaked during episodes related to technological risk (chemical pollution) in 2002 and 2004, *Diari de Tarragona* did so in the context of a severe economic crisis of the village due to the factory's heavy job cuts, also subpeaking in 2009 and 2016 due to further job cuts in the factory. This indicates that the *Diari* has a stronger focus on economic news in their Flix coverage compared to *La Vanguardia* and *El País*.

### 5.2 Evolution of negativity rate

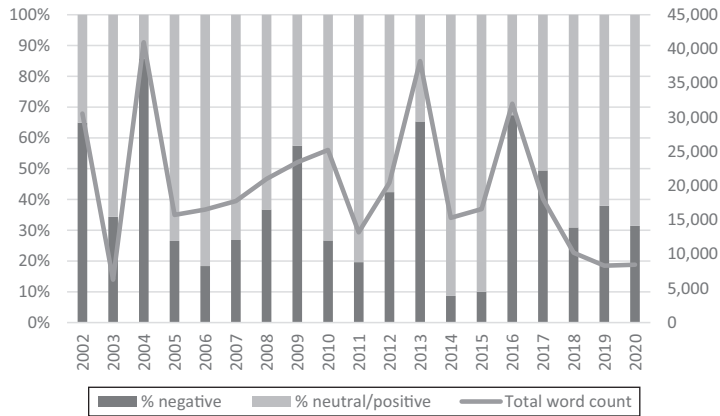
A longitudinal analysis of negativity rate of the Flix news coverage (proportion of negative coverage over the total word count) was performed for each newspaper on a yearly basis. A clear pattern emerges in *Diari de Tarragona*: the greater the amount of coverage, the higher the negativity rate, and vice versa (Figure 3). The years where the absolute amount of coverage peaked (2002, 2004, 2013 and 2016) also recorded the higher overall negativity rate, which makes sense if we take into account that these were the years when highly negative events happened in Flix, related either to pollution or the industrial crisis, or both at once. This pattern is much less clear in *La Vanguardia*, and disappears in *El País*, where, e.g. the amount of coverage for the years 2001, 2009–2011 and 2014–2020 is both very low (even non-existent in 2011 and 2019) and 100% negative. In our view, a correspondence between negativity rate and overall amount of coverage on a particular place is a predictable result, due to media logic and newsworthiness criteria which determine that negative events have a greater chance of making the news ("bad news is good news" goes the old journalistic motto, with its popular reverse "good news is no news") (Galtung and Ruge, 1965; Altheide and Snow, 1979; Altheide, 2002; Gil Calvo, 2003), but this correspondence needs a certain coverage volume threshold to become visible in the analysis. In other words, the difference between *Diari de Tarragona* on one hand, and *La Vanguardia* and *El País* on the other, concerning this correspondence is the result of the overall amount of coverage itself, rather than a direct consequence of the territorial scope of each newspaper.

### 5.3 Estimated image of Flix

The estimated image of Flix conveyed by the analyzed coverage also follows an escalated pattern. Figures 4 and 5 show that around two-thirds of the articles (63.8%) and above half

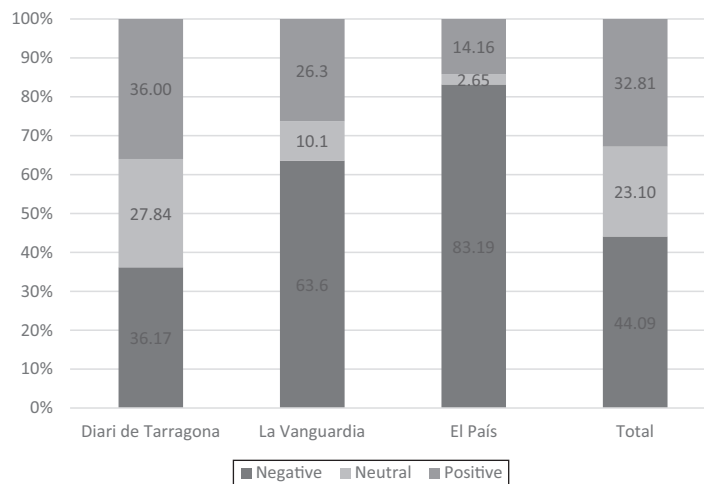
of the words (53.62%) published in *Diari de Tarragona* have been labeled as positive or neutral. In *La Vanguardia*, these percentages go down to 36.4 and 29.3, respectively, whereas in *El País*, they plummet to 16.8 and 11.9. In other words, while the *Diari*'s coverage of Flix was found to be mostly positive or neutral, *La Vanguardia*'s and, especially, *El País*'s coverage are overwhelmingly negative, both considering the proportion of articles and the word count.

The closer proximity of the *Diari*'s territorial scope to the study village, which translates into a much bigger proportion of the sample, as seen above, may account for these differences. As the territorial scope increases in the two other newspapers, the sheer amount of coverage on Flix drastically diminishes, making it more difficult for "good" or "neutral"



**Figure 3.** Negativity rate (bars) and total amount of coverage (line) on Flix in *Diari de Tarragona*, 2002–2020

**Notes:** *Diari de Tarragona* is not covered in the Mynews database prior to late November 2001. Therefore, there are no data for 2000 and very little for 2001, which is why these years are not included in the chart



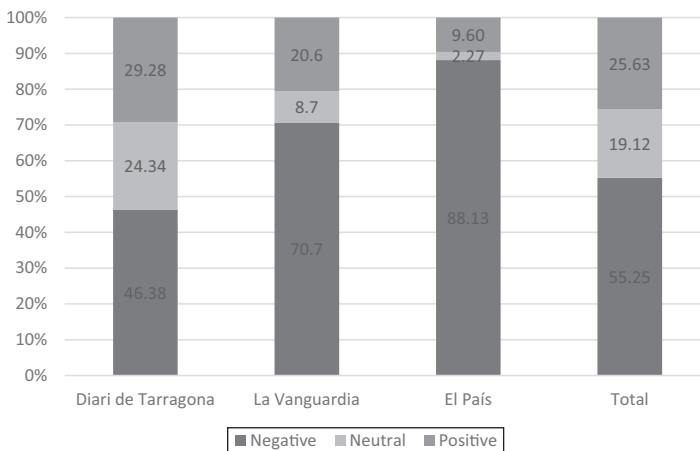
**Figure 4.** Proportion (%) of positive, neutral and negative coverage (articles) on Flix published in each newspaper, and in the combined amount (2000–2020)

news on less spectacular, more everyday life news to get through the more stringent newsworthiness criteria. Media logic makes the big media pick mainly “big” stories on small places, which more often than not correspond to “bad news”: disasters, wreckages, crime stories, weird or uncommon facts, etc. (Altheide and Snow, 1979).

It seems pertinent to point out that one should not take for granted that a proportionally more negative coverage on a specific place in a particular medium as compared with others would automatically translate into a more negative reputational effect on it. Reputation occurs in public opinion, not in the circulated messages themselves, which are one among several factors influencing public opinion. In this case, furthermore, the high negativity of the coverage on Flix in *La Vanguardia* and *El País* as compared with *Diari de Tarragona* is balanced by its low amount and frequency.

#### 5.4 Thematic distribution of coverage

When the thematic distribution of the coverage on Flix in each newspaper is analyzed, we again find the escalated pattern described above (Figure 6). In all three outlets (word count), pollution is the thematic category most represented, whereas in the combined sample, it amounts to more than half of the coverage (52.3%). This seems consistent with the recent history of the village and the continued contamination issues derived from the factory’s activity, mainly the “discovery” in 2004 of the dumpsite on the reservoir’s right shore and the subsequent remediation activities. But the proportion of this category in each subsample greatly varies, from 43.2% in *Diari de Tarragona* to 80.9% in *El País*, with *La Vanguardia* featuring 71.1%. In the *Diari*’s coverage, all the other eight coded thematic categories are present and jointly amount to 56.9% of the total word count of coverage dealing with Flix. Therefore, the coverage can be considered fairly balanced, despite the predominance of the pollution theme. However, on the other side of the spectrum, *El País*’ subsample does not include items on four thematic categories (heritage and local history, society/other, culture and education and politics), and it makes a merely token coverage of the category infrastructures and services. *La Vanguardia* is somewhere in between, although with a strong emphasis on pollution and less than 30% of the subsample devoted to the other thematic categories.

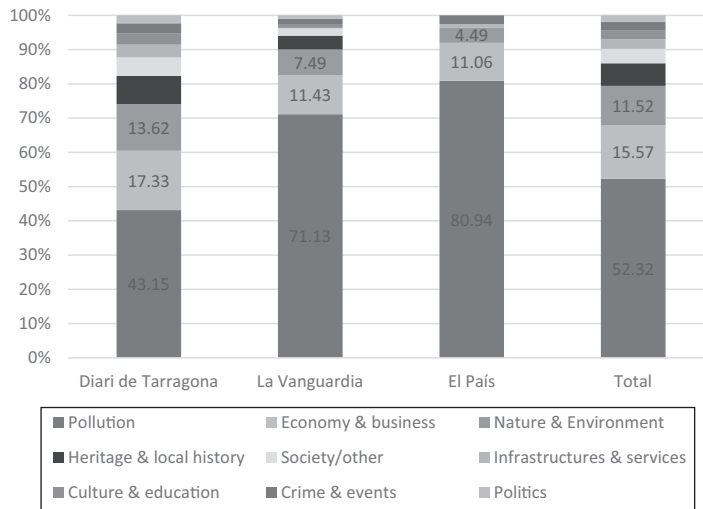


**Figure 5.** Proportion (%) of positive, neutral and negative coverage (word count) published in articles on Flix in each newspaper, and in the combined amount (2000–2020)

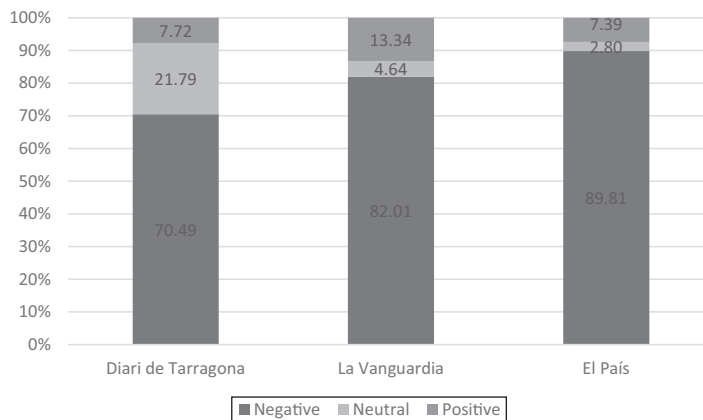
Again, the proximity factor seems to be the explanation for these results. The closer to the village the territorial scope of the newspaper, the larger the amount of coverage on it and the more thematically diverse. Conversely, a nationwide newspaper will devote much less coverage to this place, and the news on it will go through a more stringent selection, where newsworthiness criteria like spectacularism, negativity and exceptionality will be determinant, a pattern in which the theme pollution fits particularly well. *La Vanguardia*, as a regional newspaper with a nationwide readership, is, in this regard, closer to *El País* than to *Diari de Tarragona*.

It is no surprise that a vast majority of the news on pollution published in the three analyzed newspapers was coded as negative (Figure 7). This theme has clear negative connotations, so we could hardly expect otherwise. In this sense, it is a matter of discussion whether “good” news on pollution in Flix, like the various advancements in the remediation

**Figure 6.** Thematic coverage of Flix in each newspaper as a proportion of each newspaper’s subsample and of the combined sample (word count) (2000–2020)



**Figure 7.** Proportion (%) of positive, neutral and negative coverage (word count) of contents on pollution in Flix published in each newspaper (2000–2020)



schemes, should actually be considered positive, given that they act as a reminder that pollution is still an unsolved issue there. At any rate, the familiar, escalated pattern again emerges here, with a higher amount of neutral and positive contents on pollution published in *Diari de Tarragona* than in the other two newspapers.

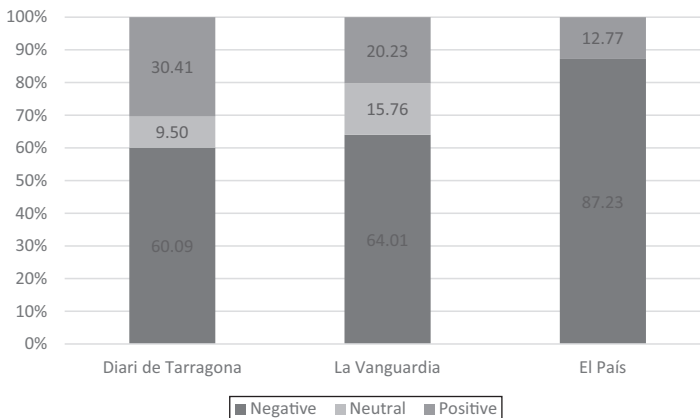
In addition to pollution, two other thematic categories that emerge in the analyzed coverage deserve some attention. The second most represented category both in the combined sample and in each newspaper's subsample is economy and business. This is consistent with the historical industrial importance of Flix's chemical factory, and more specifically with the continued job cuts and activity reductions that it underwent during the analyzed period. Therefore, the vast majority of the analyzed coverage on this thematic area has been coded as negative in all three newspapers (again: less so in *Diari de Tarragona* than in the other two newspapers) (Figure 8).

The third most represented category is nature and environment, with 11.5% of the overall sample and a clearly positive coverage in *Diari de Tarragona* and *La Vanguardia*. In *El País*, the coverage is mixed but is much more positive than in the other two thematic categories analyzed: pollution and economy and business (Figure 9). A vast majority of the items coded under this label deal with the local nature reserve of Sebes, which is paradoxically located on the same shore of the Flix reservoir, just opposite the highly controversial dumpsite, and is noteworthy for its rich and diverse birdlife. Even the nationwide *El País* devotes some attention to it (4.5% of the subsample). This reserve, which was set up in 1993, can therefore be considered a reputational asset for the village and a wise decision of the administrations involved (city council and regional government), as it counters, if only slightly, the probable negative impact of the industrial and pollution issues on the image of Flix.

## 6. Conclusions

The main research question guiding our study was: How did the selected newspapers cover Flix from 2000 to 2020 in terms of stigmatizing potential (*RQ1*)? To answer this question, we addressed three derived questions. Our results are summarized below:

*RQ2*. How positive or negative could this coverage be considered for each newspaper? Despite the continued occurrence of highly negative events related to contamination and deindustrialization in Flix, the coverage was predominantly positive or neutral in the local



**Figure 8.** Proportion (%) of positive, neutral and negative coverage (word count) of contents on economy and business in Flix published in each newspaper (2000–2020)

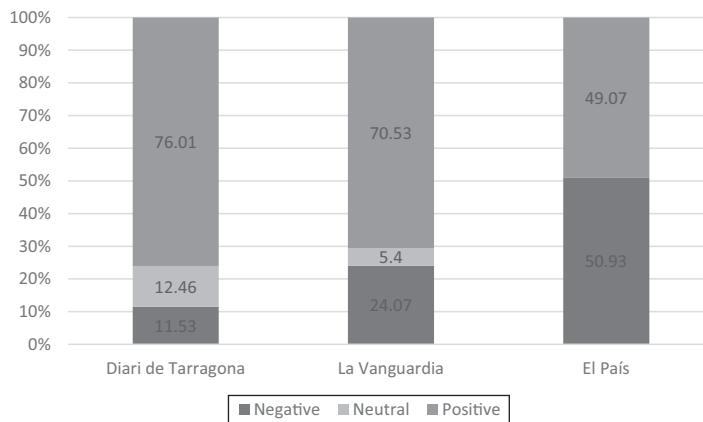
newspaper *Diari de Tarragona*; however, it was clearly negative in *La Vanguardia*, and overwhelmingly negative in the national newspaper, *El País*. Therefore, the negativity rate of the coverage increases progressively according to the territorial scope of the three analyzed newspapers, i.e. the less local, the more negative.

*RQ3*: How did this coverage break down thematically? This progressively increasing pattern also emerges here: despite pollution being the main thematic focus in the three newspapers, the coverage of the local newspaper has a much higher degree of thematic variation, while on the other end of the spectrum, the national newspaper strongly focuses on pollution and devotes very little attention to other aspects. When the negativity-positivity and thematic variables are considered together, again the territorial scope of the analyzed newspaper translates into a progression of the negativity rate in the three most covered themes: pollution, economy and business and nature.

*RQ4*: How did this coverage evolve during the two selected decades? On one hand, as we could expect, coverage peaked in the three analyzed newspapers at the time of the dramatic events related to contamination and deindustrialization. The coverage receded in periods without these newsworthy occurrences. The negativity rate and of the overall coverage evolved in parallel in *Diari de Tarragona* (the higher the amount of coverage, the higher its negativity rate), a pattern progressively blurred in *La Vanguardia* and *El País*. We consider this to be a consequence of the much lower amount of coverage in these last two news outlets, rather than a direct consequence of a territorial scope factor.

Our results therefore reveal a strong territorial factor in the news coverage of a place under technological risk. Our findings are consistent with other scholarly contributions that indicate the relevance of territoriality in technological risk amplification and place stigmatization processes (Kasperson *et al.*, 2001; Kasperson *et al.*, 2003; Castelló, 2010; Castán-Broto *et al.*, 2010; Miller and Sinclair, 2012; Haigh, 2018).

Back to *RQ1*, when we analyzed the potential stigmatization in the coverage of each newspaper, we realized that this potential increases as the territorial reach of the medium is broader. In short, the stigmatizing potential of the regional, and mainly the national newspaper's coverage, looks much stronger than the local newspaper's coverage, as it is far more negative and focused on the pollution controversy. These findings highlight the need for policymakers (e.g. state, regional and/or local administration striving to curb and revert the deteriorating reputation of a place affected by technological stigma) to take into account



**Figure 9.** Proportion (%) of positive, neutral and negative coverage (word count) of contents on nature and the environment in Flix published in each newspaper (2000–2020)



the different stigmatizing potential of media coverage depending on the territorial scope of the incumbent medium.

However, another variable needs to be taken into account: the sheer amount of coverage, which is low in the regional newspaper, and very low in the national one, compared with the coverage in *Diari de Tarragona*. Moreover, the cumulative effect of media coverage at a territorial level needs to be taken into account: while the local population is exposed to local, regional and national coverage on the village, at the other end, people from outside Catalonia only get news on Flix through national media. Both factors could paradoxically result in a milder stigmatizing effect of the national news coverage at a broader territorial scale, despite it being the most negative, compared to the more positive and thematically varied local news.

Further research is therefore warranted to explore the relationship between media coverage and place stigmatization on a territorially increasing level, without losing sight of other relevant variables influencing place stigmatization, like the emerging role of social media and other mediation stations, including local activists, experts and officials, in shaping public opinion. At the other end of the spectrum, research into stigmatizing factors or causes, like (traditional or new) media coverage, begs for complementing research on the actual effects and consequences of this coverage in place reputation and economic potential, as well as local population self-esteem and symbolic capital, in locations affected by technological stigma.

#### Note

1. Translation from Spanish by the authors. The sentence “This place is full of shit that kills” was originally in English.

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