Perspective

Stop burning garbage! Exploring an anti-waste-to-energy social movement and its effects on local politics in Spain

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A R T I C L E   I N F O

A B S T R A C T

In 2019, news of the opening of a waste incinerator sparked a socio-environmental controversy in a village in the Pyrenees in Catalonia (Spain). With the aim of influencing local public policies and taking part in the decision making around the project, a group of neighbors formed a citizen platform called the Cercs Anti-incineration Platform (PAIC). In this case study, we present the strategies that the activists followed to become an influential actor in local and regional politics. We describe how a group of citizens became a translocal assemblage and what obstacles were encountered with interaction and administrations. Finally, we highlight the need to broaden the concept of public participation within administrations.

1. Introduction

It is now commonplace to say that the consequences of searching for new resources and cheap economic growth are a problem for the environment and nature and a concern for an important part of society. It is not surprising, then, that many environmental controversies have arisen as a result. Academia has focused a substantial part of its efforts on the study of this type of controversies, generating a large literature around environmental activism and dealing with questions such as its origin, its internal organization, its impact on the population, or the changes that it generates in behavior and consumption patterns in the societies in which it develops [1–9]. However, most articles and studies have theorized around these movements, paying little attention to practical cases in which environmental organizations are seen to act and thus missing the opportunity to explore their local policy impact strategies. While concepts related to environmental activism, such as preservation, risk perception, security, and the NIMBY phenomenon, have been extensively theorized [10–13], we can see that the vast majority of theoretical and empirical approaches to environmental activist movements have been built on perspectives that pay special attention to politics and governance, grassroots innovation, and cultural change [14] and even to the psychological bases of participation in environmental issues, as illustrated by so-called environmental psychology, a field concerned with studying transactions between humans and their environments with specific sensitivity to the role of culture in the ways in which researchers theorize human behavior [15–17].

However, environmental conflicts have intrinsic characteristics that distinguish them from other political or social conflicts. In environmental controversies, the technical and scientific dimensions of the object in dispute are particularly relevant. From environmental experts to engineers, biologists, chemists, ecologists, and so on, the range of experts who have some kind of specialized knowledge in the environmental field is enormous. From the social sciences, it has become clear that there is a need to recognize the specificity of experts and scientists participating in a social controversy as such participation has direct effects on decision making and public participation.

Science and technology studies (STS) provide the theoretical framework necessary to incorporate, identify, and recognize the participation of the notions of expertise, science, and technology in a useful way into the analysis of social phenomena as well as being an ideal starting point for studying the nature of the democratic processes of participation, illuminating their limitations, possibilities, and complexities in general. STS rose on the claim that the intellectual contents of science were not off-limits to sociological analysis and are meant to study the processes by which scientific knowledge and technological artifacts are constructed as well as the changes in the broader social and material worlds that occur as part of the mutual shaping, co-constitution, or co-production of science and technology with society and the natural environment [18]. STS recognize the role that science and technology play in the development of democratic decision making and highlights the fact that decision making relegated to experts may be a barrier to the development of democratic decision making [19–21].

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In particular, STS are interested in the environment, nature, and the relationships between all human and non-human actors in ecosystems [22]. STS study the techno-scientific institutions, practices, and knowledge production concerned with the dynamics of natural systems, with social intervention and impacts on the natural world, and with the planet's capacity to sustain life. Environmental STS thus embody two types of politics: a politics of knowledge and techno-scientific authority or "expertise" that they share with all STS and a politics of nature and sustainability that they share with environmental sociology and political ecology [18]. Despite the appropriateness of the application of the STS framework in environmental studies, its increasing relevance in academia, and the opportunities that it provides for future research directions [23], the work to date is not predominant in the literature.

If we focus our attention on the different types of conflicts concerning environmental issues, controversies revolving around energy production have even more discreet prominence in the literature. It has been noticed that, given the critical role of political factors and governance in transformative energy transitions, especially in national and international action on climate change, there is a clear need to pay more attention to politics [24]. Studies conducted all over the world have shown how the political noise generated around environmental conflicts related to energy production often leads to the debate on the suitability of the project being transformed into a techno-scientific discussion in which, on the basis of reports and counter-reports that assess the impacts and technical characteristics, a solution is sought outside the political arena [25]. The technical language, bureaucracy, and techno-scientific studies that are formulated around controversies of these characteristics often act as a barrier to the democratic development of the decision-making process, which remains in the hands of experts and technicians and eludes citizen participation as a method to reach the final decision.

Nevertheless, the environmental associations and organizations that emerge around environmental conflicts do not give up their efforts to be decisive and very often succeed. On the one hand, we see how activists manage to bring together a great variety of actors around each conflict and how they create a support network in which economic, legal, scientific, and data resources are shared. On the other hand, the actions do not focus exclusively on localized acts in the immediate geographical environment where the controversy is taking place but rather alliances are woven with a multitude of actors and acts are carried out with an impact that influences an entire territory and even involves international institutions. These forms of activism involve the constant politicization of everyday life. Latour [26] situates this fact in a conceptual framework around the relationship between the human and the natural that is explained through his redefinition of "political ecology." In Latour's proposal, political ecology advocates a rapprochement between culture and nature, between the human and the non-human, and represents a new way of understanding the relations between what has so far been conceived as two different worlds. In addition, political ecology presents the need for an uncomplicated dialogue between the political question and the scientific–technical question, both of which are strongly present in the discourses of environmental organizations and NGOs.

In this paper, we focus on describing an activist movement against the opening of a waste-to-energy facility in Cercs, a village located in Spain, within the framework of study that STS offer us. In this article, we identify the roles that technical, scientific, and expert actors played in the development of the controversy as well as describing the strategies that activists followed to influence decision making. Our study incorporates the analysis of the activity from a citizen platform called Plataforma Antiincineradora de Cercs (PAIC) from its birth in October 2019 until October 2020, when urban planning incompatibility temporarily stopped the project. To contextualize this conflict, we will briefly explain why and how waste incinerators are situated in the current energy context and locate Cercs and its sociodemographic reality to understand better how the PAIC acted. We will then describe how activists organized themselves and acted to influence local public policies. We will also explain how the interaction between the administrations and the activist groups developed, identifying the difficulties that local administrations faced in establishing a useful dialogue with the informal voices that made up the opposition network.

1.1. Theoretical insights: STS' contributions to environmental activism studies

The need and importance of including local actors and local policy makers in planning processes and political governance on energy issues have been pointed out previously [27,28], but existing studies on participatory spaces have found a recurrent situation in which institutions create excessively technocratic and exclusive decision-making spaces [29,30]. In this vein, we can observe that the administrations' conception of participation is often excessively restrictive and does not take into account the real needs, capacities, and demands of the citizens who want to participate [31]. It has been reported as necessary to open spaces in which to promote a useful and close participation regime within the governance exercises in issues that concern science and technology [32].

STS have been shown to be a useful tool to consider the role that technoscientific components play in technological, and especially environmental, issues [33,34]. In this type of controversies, the idea that science and technology should take a decisive role in decision making is a widespread imaginary both within the realm of policy makers and for many activist groups that have focused their activity on the generation of scientific knowledge to articulate proposals and defend their positions [35]. There is a large literature on the role that science and scientists play in environmental controversies [36,37], providing multiple examples of scientists and technologists acting as the main voices and deciders in situations with a direct impact on social matters in development policies in areas such as agriculture [38,39], energy [40], and economics [41,42].

However, using science and technology to engage decision making has been problematized by many scholars. Latour [43] defined this use of science as one that cancels politics since, for him, this looking-for objectivity responds to "the polemic type of objectivity that is of no use except as a weapon to wage a political war against politics" (p.34). In line with this idea, several studies have been published on how scientific practices participate, and limit participation, in politic spaces and democratic actions, and this question has been addressed by many STS scholars concerned about the role of scientific expertise in democratic decision making. It has been reported that there are some practices in which expert knowledge builds a separation between the non-expert public and the decision making [21,44–47]. Parthasarathy [48] named this separation between public and technical decision making "the expertise barrier" and carried out interesting work identifying various strategies that activists follow to break it. One of these strategies, called "attack on bureaucratic rules" is the one that we have been able to identify as the key to explaining how opponents of the Cercs waste-to-energy plant acted. Parthasarathy defined the attack on bureaucratic rules as that strategy by which "activists attack bureaucratic rules […] by arguing that decision-making that appears detached and objective masks systematic biases that do not necessarily serve the public interest" [48] (p. 358). This can be a particularly powerful line of attack because bureaucracies play central roles in science and technology policy domains and have traditionally established and maintained their political legitimacy by emphasizing the rationality of their technical decision-making processes [49–51]. The vision of bureaucratic processes as barriers to participation is not new [52], and the presence of reports, data, systematizations, formalities, rules, and standardizations leads to an increasingly narrow perception of decision-making procedures, which are increasingly reserved for fewer and fewer people [53].

To understand how the public may establish active participation in technical decision-making processes, author–network theory (ANT) also provides an appropriate framework. ANT is a sociotechnical approach in

STS studies that offers conceptual tools that can show how a complex network of interacting actors defines the success or failure of a technological intervention. ANT assumes, as one of its premises, that society cannot exist without technology [54,55] and rejects the notion of social purity, understanding that non-human actors and materials play a fundamental role in the structure and function of social networks (Law, 1993). In this way, instead of social networks, it is more appropriate to speak of sociotechnical networks, designating a set of interactions in the world in which agency is not only a human attribute. Agency is exclusively a mediated achievement, brought about by forging associations. There is nothing outside associations, and, to become capable of action and "use" their agency, entities need to form aggregates and find allies to produce an actor network [56].

In this sense, ANT allows for the analysis of actors' relations at a micro-scale of a social movement [57]. To explain how a group of activists in Cercs could influence technical decision making politically, we take into account an ANT concept referred to by McFarlane [58] as *translocal assemblage*. To understand this notion, it is important to bear its two principles in mind. The first, that of assemblage, refers to a space of gathering, coherence, and dispersion. An assemblage is a heterogeneous group of actors that has the capacity to situate itself in a temporality and in a space where the elements that make it up converge, disperse, realign, and change shape according to the conjuncture of the moment. Actors seek to create constant and diverse alignments with a multitude of other actors of different natures. The second principle that the notion of translocal assemblage evokes is the principle of translocality. Translocality is distinguished by the idea of a composition of locally identifiable, but scattered, actors sharing ideas, resources, knowledge, practices, and materials. The links between these actors are more than just connections. This translocality gives the assemblage the capacity to decontextualize and recontextualize itself through social diversity and the different cultural spheres that are part of a network. These relationships and translocality allow the assemblage to make, perform, and create events. STS, ANT, and the concept of an "expertise barrier" become the main concepts for drawing and understanding how technoscientific issues develop in our democracies and drive this study through the analysis of an environmental controversy and the aim of a group of activists to become relevant to the decision-making process.

1.2. Waste incineration: revalorization or the last step in the consumption society?

As a result of the so-called Green Pact approved by the EU [59], the member countries have committed themselves to reaching emission neutrality by 2050, which will necessitate a complete restructuring of the energy production systems of European countries. In this context of energy transition, the planning and inauguration of new plants that generate electricity from practices considered to be renewable follow one after the other, not always with the agreement of the inhabitants of the areas where they are planned. One of these ways of generating energy, and a strategy to reduce the volume of landfills, is the use of so-called waste revalorization plants, where thermal energy is generated from the incineration of industrial and/or domestic waste, which is then transformed into electricity. Revalorization is defined as an operation by which waste acquires utility by replacing other materials that would otherwise have been used to fulfill a particular function. In the case of waste incinerators, energy is obtained from materials left over from people's daily lives (urban waste) or from materials from industrial activity (industrial waste). However, this type of power plant raises serious questions related to public health concerning matters such as the vapors or suspended materials that are released from combustion or the management of heavy metals and the resulting ash. In addition, the latest European Union directives are committed to models that favor the prudent and rational use of resources to move toward a circular economy, a model of economy in which incineration is not considered to be a good option but in which waste management should be based on reuse and recycling practices. For all these reasons, the construction of waste incineration plants provokes complex debates that take place on different layers. On the one hand, promoters frame them in legislation that seeks to encourage the abandonment of the dependence on fossil fuels and reduce landfill volumes. On the other hand, waste recovery is not seen as a solution by many social entities that oppose the current consumption model and see the construction of incinerators as an outdated and harmful solution.

1.3. The Cercs waste incineration plant (Catalonia)

Cercs is the location of the last power plant to produce electricity from burning coal in Catalonia (Spain). The stoppage of the Cercs Thermal Power Plant was promoted by a lawsuit filed by farmers and organizations in the area to denounce serious episodes of acid rain. In 1988, this case led to the first criminal conviction for environmental crimes in Spain [60]. First, and as a result of this complaint, coal extracted from local mines was no longer burned and coal imported from South Africa, a fuel with lower sulfur content and higher calorific value, began to be used. The change of fuel, the new European directives on emissions, the implementation of the agreements signed in the Kyoto Protocol, and several changes of ownership of the plant led to the definitive closure of the thermal power plant in 2011.

The plant, which had been in operation for 40 years, was thus shut down. The environmental impact of its coal burning disappeared, the forests in the area were restored, and there has never again been any episode of acid rain or death of crops or pastures due to this cause. Conversely, however, the closure of the plant meant the shutting down of the local coal mines, causing a great socioeconomic impact in a region where the mining sector had been one of the main economic engines. In fact, a large part of the urban centers that today form part of the municipality of Cercs emerged as industrial colonies dedicated to this sector, which has now disappeared.

Today, Cercs, a municipality in the Berguedà region, has just over 1100 inhabitants, according to the population census, which was updated in 2019. The active population is mostly dedicated to services and the industrial sector, and livestock and tourism have been taking prominence but are still far from achieving the economic performance and jobs that mining and the thermal power plant provided. Cercs, moreover, cannot escape from a demographic reality that is evolving toward increasingly accentuated depopulation. Young people are migrating to the cities in search of better job opportunities, causing a vacuum of talent and new possibilities for a territory with an increasingly aging and dependent population. In this context, local and regional administrations have focused their efforts on promoting different economic sectors, seeking to stimulate the economy of a region where work was once plentiful.

The reopening of the old thermal power plant, converted into a waste incinerator, was the latest of these initiatives. Thus, the company EM Spain Waste & Treatment SL submitted a public tender with the aim of refurbishing the old facilities and reopening them to produce electricity by burning, this time, industrial waste instead of coal. The plan to refurbish the plant, as with other initiatives mentioned above, met with opposition from a significant part of the population. Different entities, organizations, and associations mobilized to protest against the reopening of the facilities, fearing a repetition of the pollution and acid rain episodes that they had suffered years ago.

In the midst of the controversy, the COVID-19 pandemic erupted. The saturation of the administration, the confinement measures, and the stoppage of all non-essential services cooled the conflict, which, for a few months, remained silent. With the start of the new academic year, however, the controversy returned. Today, in November 2021, the protests have not stopped and there is still a chance that the incinerator project will go ahead.

2. Materials and methods

To answer adequately questions about "who" is participating in the controversy and "how" they do so, we conducted data collection through focal ethnographic work. Focal ethnography [61,62] is a type of ethnography that presents a shift from extensive research over time, typical of classical ethnographies, to the intensive analysis of concrete data decided by the researchers. In our case, we focused our attention on three distinct aspects: first, the presence of the controversy in the press and social networks; second, the activities of activists; and, third, the discourses of those actors involved in the controversy. Accordingly, we monitored some local newspapers and social networks. We visited the physical sites where the plant would be built as well as attending and following the protests, rallies, and plenary sessions of the city council and the Parliament related to the issue. Finally, semi-structured interviews with actors holding different positions regarding the plant and its suitability were conducted and recorded. Both the data collected in the analysis of the press and social networks and those obtained from interviews were subjected to a thematic analysis, based on the work of Attride-Stirling [63] and Clarke and Braun [64], in which themes or patterns of common meanings were identified and structured, classifying and systematizing them through thematic networks into three types of themes—basic, organizing, and global—to facilitate their description.

2.1. Press and social networks

In total, more than 135 press articles dealing with the controversy were identified. News, opinion articles, investigative articles, press releases, and editorials related to the controversy, from two newspapers in their digital editions, were analyzed. The two criteria for selecting the newspapers were that they were leading in the territory and that they were geographically established in it. Although national newspapers were occasionally consulted when they echoed the protests or important decisions regarding the controversy, to ensure systematized and continuous data collection, we chose the regional newspaper Regió7, which was the one that gave the news of the opening of the plant for the first time, and the news portal Aquí Berguedà, a digital news portal specializing in regional events. In addition, the social networks Facebook, Telegram, Twitter, and Instagram, the platforms on which the Anti-Incineration Platform was most active, were monitored.

2.2. Participant observation

We visited the power plant facilities and the town adjacent to them, Cercs, to gain an idea of how close one is to the other and what the communications and the physical and geographical environment are like. We also attended two town council meetings and a plenary session as well as three rallies—two demonstrations and a road blockade—and we followed parliamentary sessions and town council plenary sessions live via streaming.

This phase of participant observation was of a short duration due to the outbreak of the COVID-19 pandemic and the resulting measures restricting mobility and crowds. The work carried out before the first mobility restrictions made it possible to expand the list of actors present in the controversy and to identify the individuals behind the organizations, entities, and political parties taking part in it. Due to the pandemic and the resulting restrictions, the number of face-to-face protests organized from March 2020 onward was drastically reduced and press releases, statements, and positions in official and institutional bodies and debate sessions in governmental spaces such as the Parliament or city council plenary sessions gained prominence.

2.3. Interviews

With the unexpected pandemic reality, we had to face the

impossibility of continuing with participant observation. Even so, since we had identified the main actors, we proceeded to prepare telematic interviews that were conducted and recorded during the months of confinement. We continued by means of semi-structured interviews with pre-formulated questions, which allow the possibility of generating new questions during the interviews.

The interviews were conducted telematically through video calls on the Zoom platform. A total of 14 interviews of about 1 h each were conducted. The interviews were distributed among six people with positions in the regulatory agencies and eight other people linked to the organizations involved with the Anti-Incineration Platform. Subsequently, the interviews were subjected to the same thematic analysis as the data extracted from the press, thus enabling us to identify and organize the wide variety of topics circulating around the controversy.

3. Results and discussion

Since our main interest in this article concerns the ability of activists to influence local policies and overcome the barrier of expertise, we will identify two key processes in the development of the controversy: how citizens organized themselves to form an influential pressure group—the PAIC—and how the dialogue between this pressure group and the administrations developed. It is important to note that these two processes, and their internal specifications, occurred simultaneously and do not imply a chronological history. The PAIC continued to expand and grow as an activist movement while seeking to articulate mechanisms to establish a dialogue with regulators. We need to imagine the processes identified below as dimensions of constant change, activity, and interaction while understanding that their weight in the development of the conflict varied according to the pandemic context and restrictions on mobility and meetings.

We will begin by describing the two starting positions of the city council on the one hand and the opponents of the project on the other. For the anti-incineration activists, the plant made no sense because it was an activity of the past and an inefficient and environmentally damaging system:

> Incinerators burn resources, while the European Union says they should not be burned. Incineration is a technology of the past. The 332,000 tons of waste—1000 tons a day will be burned!—will be brought in from Barcelona, but also from the south of France, Italy and the United Kingdom … It is a real sabotage to build an incinerator at a time when everyone considers that it is necessary to reduce.

(Opinion article in the newspaper Regió7 published on October 9, 2019)

On the other hand, from the consistory, which prioritized the alleged economic effects on the town, the project was not viewed as damaging. This stance was defended by a Cercs town council official in an interview conducted for this study:

> Nobody has to explain to me what a thermal power plant is. I have suffered acid rain, I used to go to a school that was a hundred meters away in a straight line from the power plant […]. I know what it is. But I also know what depopulation is, the economic loss we have had since we have ceased to be an industrial municipality and I know how hard it is to live here. Faced with an investment of 300 million euros, I can't say no from the get-to, even though I know it's hard.

(Interview 5. Min: 21:20)

As can easily be seen, these are two diametrically opposed points of view that logically led to an intense controversy. To understand their development, we will focus on two processes that seem to us to be particularly relevant. First, we will present the process by which the PAIC became a relevant actor in the controversy, increasing its influence on the affected people and little by little achieving a position throughout Catalonia. Second, we will show how the dialogue between activists and

institutions unfolded as well as highlighting the limitations and difficulties encountered in this dialogue.

3.1. First process: how the PAIC evolved from a group of citizens into a heterogeneous and complex network

The news of the reopening of the power plant jumped onto the pages of the regional newspaper Regió7 on October 1, 2019. The newspaper first unveiled the project in an article with a cautious but optimistic tone:

> The project is an opportunity to make a disused industrial complex useful, create economic activity and provide an outlet for waste that today occupies space in landfills. […] This horizon must be qualified by some unknowns that will have to be clarified: that combustion does not generate any type of pollution […], and that the transportation of the waste does not have an excessive impact. It is, therefore, a project that will gain credibility as it progresses and provides guarantees. Even good ideas must be demonstrated.

The following morning, the same newspaper echoed the beginning of the controversy by describing "the birth of a platform made up of local councilors and environmental groups." From this point on, the PAIC sought to gain weight and influence by resorting to a strategy based on three basic axes: social mobilization, activity on social networks and in the press, and the search for support from local organizations and from outside the municipality.

3.1.1. First axis: social mobilization

Due to its geographical position, Cercs is witness every weekend and holiday to long queues of people coming from Barcelona and other major Catalan cities to spend a few days of peace and rest in the mountains. On October 4, 2020, in the middle of the "operation return" of the weekend, the PAIC took one of the actions with a larger impact in terms of people involved. For 2 h, it intermittently shut down the road, causing traffic jams of up to 8 km. While the cars were stopped, the activists informed their occupants about the incinerator plan, its possible harmful effects, and the names of the politicians who had the power to make decisions.

This is just one example of different acts of protest and mobilization that the PAIC has carried out since the news of the incinerator project broke. It is worth noting the added difficulty that the pandemic has meant for rallies, demonstrations, and similar activities, but, even so, several protests have been held, each of them attracting about 500 people. These acts of protest and citizen mobilization had various effects on the community, and, as the activists themselves pointed out, the actions had different objectives:

> Environmental conflicts are ultimately political. It is about defining a political model that has environmental but also social and economic impacts […]. One of the things we are looking for is to make a counter-discourse, to provide information to counter-argue what politicians or businessmen tell us.

> (Interview 11. Min 14:15)

As we can see, one of the intentions of the mobilizations was to define the nature of the conflict itself. During the mobilizations, activists placed the controversy not only in the environmental sphere but also in the political one. The fact of situating the conflict around the incinerator in the political sphere is vital since it was a quality that would accompany the entire protest and the key to defining the relationship that was established between the activists and the administrations. Thus, one of the objectives of the mobilizations was to place the conflict on a higher scale than the environmental impact on the inhabitants and the town of Cercs. For the activists, the controversy reached further: it was conveyed through political, economic, and social discourses, and it was through social mobilization that they built this identity.

Other activists, also organizers of the protests, explained to us that these social mobilizations were intended to make noise and propaganda for the movement:

> Our action is basically based on public pressure to set the agenda of the political parties that then design public policies. They are attentive to the vote market and, if we manage to make noise, they will listen to us.

> (Interview 4. Min 9:30)

The rallies, roadblocks, and demonstrations achieved notoriety that managed to appeal to other actors and thus add support to the activists' cause. This sum of support translated into social pressure on the administrations, which, as another interview excerpt tells us, was crucial to achieve their demands:

> All the projects that have been knocked down have been done with social pressure […] It is our cornerstone. Then you depend on casuistry, such as influencing someone in the administrations who is more sensitive and can change things. […] in the local world it is easier to reach city councils and councilors and having the city councils on your side helps a lot.

> (Interview 7. Min 45:30)

Thus, a final objective of the acts of social protest was to show the capacity of mobilization and make it clear that there are people who are willing to move and act to achieve the objectives demanded, facts that exerted social pressure on the administrations and prompted some people within them to pick up the demands and act in favor of the protesters.

3.1.2. Second axis: the role of social networks and the press

The same newspaper that first made the project public with a certain favorable tone, weeks later, published an opinion article entitled "We don't want an incinerator in Cercs or anywhere else." The arguments of the article, signed by a member of an environmental organization in the region, pointed to the need for a change of energy model and consumption model and the planning of an economic strategy based on sustainability and care of the territory.

We have seen this idea before, when social mobilization sought to define the nature of the conflict. Along the same lines, social networks and the press were the key to the dissemination and construction of the activist discourse. In this sense, the activity on the networks, mainly Instagram and Twitter but also Facebook and Telegram, was remarkable during the period in which we were studying the controversy: between October 2019 and October 2020, over 840 posts were made on the platform's various official social networks, and it managed to gather 247 followers on its Telegram news channel, 802 on Facebook, 944 on Twitter, and 1416 on Instagram. The most popular platform for activists was Twitter, with 671 publications in the year that we were monitoring. The second most active social platform was Instagram, with 138 posts, and Facebook ranked third with 38 posts. If we look at the content of the posts and publications, we can see that four main lines of action were drawn, among which two are prominent. We classified the 847 total posts into five different categories, and the results are revealing: those publications that involved interactions with other associations totaled 431 (50.88 %); PAIC communiqués, assessments, and/or official positions totaled 279 (32.93 %); calls for or announcements of protest actions accounted for 74 publications (8.73 %); direct interpellations to politicians or administrations accounted for 44 posts (5.19 %); and, finally, the last category, containing varied content that was not classifiable into the previous categories, such as photographs or contests, accounted for 19 more posts (2.24 %). Thus, our study of the activity and content of the social networks showed that this activity focused on two main objectives: first, to interact with other activist movements; second, to provide an important symbolic and discursive dimension to the controversy.

Along the same lines, the press analysis included 95 articles from the regional newspaper Regió 7 and 38 articles from the local newspaper Aquí Berguedà. Of these, 126 were journalistic chronicles of the rallies or government resolutions related to the incinerator plant, while only 6 articles turned out to be opinion articles. Thus, although local newspapers echoed the demonstrations and positioning of activists, their role in the construction of the activist discourse was not as important as we can see in the social networks.

3.1.3. Third axis: seeking support from different local and non-local organizations

As is the case in many small towns, people who take on responsibilities and engage in initiatives in associative movements do not usually do so in isolation. The profiles of the citizens involved in the local social fabric often mean that the same person is involved in several platforms or neighborhood organizations at the same time and may even become part of formal local politics. The PAIC is no exception; most of the members who founded the activist platform already had an associative, political, and/or activist background prior to the conflict, which meant that they had not only the background and experience that this entails but also an extensive network of political contacts and other associations that allowed the incorporation of various actors into the cause, thus creating a heterogeneous network in which more resources and experiences were shared. Thus, through informal channels, such as personal calls, e-mails, or messaging, they managed to contact neighbors, ranchers, and farmers in the area and different entities and associations in the region that joined or showed their support: the Association for the Defense and Study of Flora and Fauna (ADEFFA), the Group for the Defense of Nature of Berguedà, the Catalan Fishing Federation, the Font Gran de Cercs Sport Fishing Society, the Association of People Affected by Cancer of Berguedà Gingko, the association Huellas de Puig-reig, the Association of Livestock Farmers of Catalonia, the neighborhood associations of San Corneli and Rodonella de Cercs, the Association of Women of Guardiola, the Airenet Platform, the Center for Ecology and Alternative Projects (Cepa), the Catalan Platform Zero Waste (PCRZ), the association Anahata Global de Gironella, and others. In addition, through the internal governance spaces of the political parties to which citizens who combined their activist activity with formal politics belonged, they achieved a rapid positioning of two national political parties with an important representation as well as pronouncements against the headquarters of the regional institutions governed by these political groups.

Thus, thanks to this mobilization in the formal and informal spaces of the political and social network of the territory, the controversy increased with the number of actors involved. Several city councils of nearby municipalities passed motions against the reopening of the plant; the PAIC organized talks, colloquiums, rallies, and signature collections to protest and disseminate its message; channels of dialogue were established with the Generalitat of Catalonia—the autonomous body responsible for environmental legislation; and legal actions against the project began to be taken.

This support from public institutions was very important in the controversy and grew increasingly in terms of territory and public representation. First, the regional councils—supramunicipal entities formed by elected representatives of the municipalities of the region where they are established, such as the Consell Comarcal del Berguedà, the Consell Comarcal del Solsonès, and the Consell Comarcal del Bages—spoke out against the plant. Then there were the Diputacions, larger institutions that incorporate several counties, such as the Diputació de Barcelona or the Diputació de Lleida. Their pronouncements were important because they managed to delocalize the conflict since these bodies represent about 6 million people—78.94 % of the total population of Catalonia—and cover 61 % of the Catalan territory.

Such support was possible through formal and informal contact on the part of the activists, as these testimonies from representatives of the anti-incineration platform explained to us when we asked how they decided where to ask for support and how they obtained it:

> Basically we would call (our) political parties and from there we would pull. Then other parties would join in. We were lucky because we had relatively open doors of entry.
>
> (Interview 4. Min 13:30)

This shows that they had an agenda, mainly within certain ideological frameworks. This fact of resorting to formal political parties placed the groups opposed to the controversy in an ideological correspondence that, conversely, would expand over time, incorporating into the voices against the incinerator other sensitivities and ideologies of political parties that were far removed from the promoters of the PAIC in other national matters, even personalities of the same party that defended the plant in Cercs.

Finally, the institutional support reached the largest legislative body in Catalonia, the Parliament, in which activists, along with other entities from all over Catalonia, presented a motion for a moratorium on all incinerators in Catalonia. This is how one activist explained it to us in one of our interviews:

> We have influenced the Parliament because we know the deputies [...]. If you talk to them as a party member and also as a member of a platform, they can still say less than no to the requested support. We explained to them what we were doing from the platform and through them we managed to get them to listen to us and we were able to hold meetings with all the political groups two or three times.
>
> (Interview 6. Min 13:30)

As we can see, this statement reinforces the idea that meeting people, creating alliances, and involving as many actors as possible are important. This great effort in what we can call weaving alliances resulted in the construction of a network of actors around a local platform on which there was a substantial increase in data, information, and expertise while, at the same time, the identity of the platform itself changed. The actors were no longer a group of citizens concerned about the risks involved in a project at the local level but a deeply heterogeneous network in which citizens, institutions, environmental organizations, neighborhood associations, political forces, and so on took a position and acted against the project. In addition, in this framework, relevant non-human elements, such as laws and legal provisions, were sought. One of the most important economic efforts made by the activists was to cover the cost of hiring lawyers to study possible legal actions, seeking errors in the processing of the project or administrative incompatibilities for its implementation. In that effort to interconnect resources, knowledge, and actions, what we finally have is a vast assemblage made up of citizens, organizations, political parties, and environmental groups from different parts of the territory.

3.2. The interactions between the PAIC and the administration

The interactions between activists and administrations are not easy to explain, and we will focus on identifying the main obstacles encountered by both sides in developing a useful dialogue. These obstacles are essentially due to differences in the basic notions of the nature of the conflict, on the one hand, and in the difficulty of the administration itself in relating to informal voices, on the other hand.

3.2.1. First obstacle: differences in notions of the nature of the conflict

There are two basic differences between activists' and administrations' definition of the conflict. On the one hand, for activists, the problem was global, while, for administrations, it was clearly local. On the other hand, the nature of the controversy was political for the activists, while it was a discussion on the adequacy of the incineration plant based on purely technical aspects for the administrations.

As we saw above, the vision that the PAIC and its members had of the controversy was global. For them, the incinerator was part of a political, economic, and social discussion that extended beyond local boundaries. However, this confluence of such varied actors is incomprehensible from a more localist view, such as the one held by local administrations:

> I think that in this they have gone a bit out of their minds. I don't understand what all these people and administrations have to do with the conflict. This is a Cercs issue and that the technicians have to talk and agree and then if the permits and papers are in order there is not much more to do.

> (Interview 10. Min 50:05)

As we can see, then, this first difference in the definition of the controversy hindered the understanding of and dialogue on the issue between opponents and regulators. More specifically, for the administrations, the problem was defined in the technical field, in which experts needed to decide on the safety of the plant and make a decision based on their conclusions:

> The technical side has to put on the table all the pros and cons so that citizens can decide. […] With this study we will be able to know what is good, what is bad and what we can change, so that we can then make decisions.

> (Interview 5. Min 12:10)

This vision of the controversy led to criticism of the Anti-Incineration Platform for wanting to make a political conflict out of one that was purely environmental:

> A possible environmental issue has been used to make a political opposition against the mayor. There are people who have joined the protest because they have an environmental concern and other people who have a disagreement with the mayor or the government team and use that conflict to attack him.

> (Interview 10. Min 4:05)

We can see that it was the local administration that showed the most evident interest in going through the intermediation of science to determine the suitability of the incinerator plant. Up to the time when we studied the controversy, the activists did not show any interest in enrolling scientists and, rather, showed their rejection of the performance of a prestigious university in the country. This fact contrasts with other cases that we can find in the literature in which scientists and their practices were enrolled in activist groups and took part in their political claims. This is the case of the study by Daniels and Walker [65], in which technicians took the lead in achieving the suspension of industrial exploitation plans in several U.S. wilderness areas, measuring, describing, and cataloging their biodiversity and sensitive species, or a study conducted following a toxic spill in Doñana National Park (Spain), in which activists hired experts to measure the toxicity of the sludge spilled and monitor migratory birds passing through the park to quantify the damage, present responsibilities, and propose measures to avoid a new episode of contamination [66]. More recently, we can find the study by Kinchy [67], which explained how, in a campaign to stop the harmful practices of fracking, concerned citizens took measurements through standardized reports of the state of the water in streams, wells, and lakes, and the one carried out by Carmona and Jaramillo [68] in a mining region of Colombia where scientists argued that the mining activity had affected the headwaters of a stream that irrigated an ecosystem seriously threatened by climate change.

Although it has been said that the use of science and experts in environmental controversies is a strategy pursued by both protest organizations and administrations as a means of finding a common language with which to dialogue [69], the PAIC activists do not appear to have shared this view. Not only did they not make use of scientific knowledge in their arguments or enlist experts but, in their messages,

there is evidence of harsh criticism of the use of science to settle what they considered to be a political controversy, claiming the lack of participatory tools and their right to be heard. According to them, the technical reports that the local authorities wanted to ask about would be mere propaganda to drown the activists' political criticisms under a sea of data and standardizations.

Cataloging scientific studies as propaganda, the activists accused the administrations of partisan use of scientific arguments and generated a sense of instrumental use of science, far from its supposed impartiality and its notion of response to the public interest, a fact that is not strange since distrust in scientists, engineers, politicians, and corporations and their use of science to push an agenda or promote or boycott a technology had already been observed [70–72].

Given the strong technical dimension that administrations give to the decision-making process, it is not surprising that one of the most notorious actions of the city council was to propose an agreement with the Polytechnic University of Catalonia to carry out a feasibility study and produce a subsequent report analyzing the risks and the suitability of the plant based on, obviously, technical criteria. The response of the activists, nevertheless, was to insist that they were not discussing technical issues and to see the report as a diversionary maneuver and a way to silence the debate:

> They tell us that in these studies everything is well done, that we will have the information […] They tell you "those of the university are very good" and yes, they are, but that is not the issue […]. In my opinion, what they want to do is drown you in propaganda, because nobody wants it (the incinerator)!

> (Interview 4. Min 24:36)

In any case, and this is important, the insistence of the administrations on giving weight to the technical aspect came from a need to protect themselves from the judicial processes that very often derive from environmental controversies:

> It happens to us a lot that in any project the environmental part is the weak part. At a formal level, the environmental procedure is extremely cumbersome and punctilious […] It is very easy that due to a formal issue the environmental process and therefore the whole process is cancelled.

> (Interview 8. Min 41:40)

In addition, legal strategies to stop a project are often not limited to formal issues and involve designing personal lawsuits against politicians, technicians, or officials who make decisions:

> What we are rethinking is that perhaps the complaints should go through criminal proceedings. That we hold the person responsible for the company accountable, with their personal resources. This is where you really do the most damage.

> (Interview 7. Min 37:30)

It is precisely this increase in the judicialization of environmental conflicts that has been causing changes in the administrative procedure that have paradoxically led to a reinforcement of technocratic criteria—both techno-scientific and legal—when it comes to decision making by the administrations. Faced with the possible repercussions of the activists' legal struggle, which may even involve actions against the personal or family assets of the administrators, the technical aspect functions as protection, as a public official explained to us in this interview excerpt:

> In this case [he gives as an example a past controversy] they brought a criminal complaint against me where my personal assets were at stake. It is very distressing. For all these reasons, it is essential to have technical and legal reports that support the decisions we make. […]

We armor ourselves. Not because we are afraid, but because the decisions must be well made.

(Interview 1. Min 26:45)

Another criticism that is drawn from the administrations is the fact that several members of the activist platform were at the same time public officials in the local administration itself or other administrations. This accusation of a conflict of interest was responded to by the activists as normal and inevitable in the framework of a small community:

A person who is an activist is usually a person who is mobile, informed and concerned. When you have ideas about your environment, it is normal to have politicized ideas and to dedicate time in your life to social work […]. It happens a lot in small towns. There are 20 different associations and there are the same people in all of them, but not because they want to be there, but because that's the way they are.

(Interview 4. Min 5:20)

In short, what the activists were saying is that the clear divisions that the administrations were trying to draw between the political and the technical, between formal and informal politics, and between the global and the local are not so clear in real life. The technical, scientific, and social dimensions do not have a clear, distinct, and identifiable separation, and, as we will see in the next point, relating to this reality is a problem for administrations that do not have the tools to attend to informal voices.

3.2.2. Problems in interacting with informal voices

It should be noted that interactions between activists and administrations are provided for in the legal system. There are participation mechanisms that guarantee that any person or organization that wants to have a say in a project can do so. Specifically, the Catalan legal framework that regulates the approval of plans with an environmental impact, which include projects such as the one that has generated the controversy that we are studying, corresponds to Law 6/2009, of April 28, on the environmental assessment of plans and programs. This law provides that "the affected organizations and the interested public, as well as the administrations, organizations or natural and legal persons linked to the protection of the environment, must be consulted on the scope and degree of specification of the report" as well as that "the administrations and, where appropriate, the entities and persons consulted may send the environmental body their opinion […] within a period of one month." We can see in this way how citizens and entities such as the PAIC can "make their opinion known" in environmental assessment processes. However, in practice, this participation must be performed in a concrete way, and two basic problems arise for the planned dialogue to develop fruitfully.

The first problem is language. It is necessary for the language to be technical, as reflected in this fragment of an interview with an official of the Generalitat de Catalunya:

(Environmentalists) must know how to express their opposition based on evaluable criteria […] They must ensure that the criteria are objectively acceptable.

(Interview 1. Min 31:20)

We can see that, despite the provision of participation mechanisms by the administrations, since there are channels through which information can circulate and be taken into consideration, communication must be articulated through scientific data and following a narrow bureaucratic path marked by deadlines and very strict requirements for form and substance. It may be a problem for non-experts to articulate useful opposition through the standardized procedures. This is not new; precisely in waste management studies have already suggested that people's participation is found in terms of everyday actions and private decisions, such as recycling, but it becomes much more complicated to find popular participation in waste issues in the decision making of political institutions, whether local or national [73].

The second problem with interaction is that it may be difficult for the administrations to identify the group to which are they speaking. In fact, some members of the city council claim not to know anything about the PAIC:

(PAIC) has never tried to talk to us in an orderly and serious way […]. In fact I don't even know who they are. You go around seeing some visible faces but it is supposed to be an organization with a president, secretary, a treasurer … we don't know them and it becomes difficult to know who we have to address.

(Interview 10. Min 15:55)

These two problems in the dialogue between opponents and regulators have their origin in the strong technocratic tendency of the bureaucracy that deals with environmental issues. In other words, there is no room for political, sociological, or economic discussions around the assessment of the suitability of a project with an environmental impact. On the contrary, the dialogue is expected to be conducted in techno-scientific language that is too costly in terms of time and financial resources for organizations such as the PAIC to tackle. For the administrations, participation involves obviating the subjective, ideological, and political and limiting themselves to the objective and calculable. Indeed, according to a canonical view of participatory spaces organized by administrations, the citizens who participate in them should come free of personal interests and without being deeply involved in the issue at hand [74,75]. Thus, when confronted with activists, the local administration tried to move the debate to a more aseptic field through the use of technical reports, presenting a good example about the meaning of "cancellation of politics" [43].

Here, faced with this cancellation of politics, the anti-incineration movement chose not to submit its discourse to scientific–technical language that would leave aside a large part of its political demands and opted, again, for its cause to gain followers, social support, and political influence throughout the territory. In short, it insisted on globalizing the conflict.

The activists' efforts to delocalize the conflict were born from their global vocation because, for them, it was not a technical and local problem but a problem framed in a social, economic, and environmental reality that surpassed the limits of the micro-world of the village of 1100 inhabitants where the plant was to be located. This was highlighted by an activist:

The waste problem is an environmental problem and therefore a global problem. If they say that they take it somewhere else, maybe here we would not have the prominence we have now but we would still be against it. […] That is why we are in contact with other larger entities or that cover the entire Catalan territory, because the incinerator is an issue that must be faced as a country, or rather as a world.

(Interview 3. Min 4:20)

However, the material possibilities for activists to create a sufficiently stable and influential network on a large scale were scarce. Being a small organization in a small village and with scarce economic, human, and material resources, its activity did not manage to become an organization of global, worldwide reference. However, it did manage to collaborate and create synergies with many other local and regional activist organizations, institutions, citizen groups, and associations close to the headquarters and others spread throughout the country. The PAIC, then, seems to have operated as a translocal assemblage in which agency was distributed among all those local actors that formed it. By enlisting different actors with their own agendas and interests, the PAIC renounced the issue of the Cercs incinerator as the central axis of a more far-reaching activist campaign, transforming it into an issue concerning

the use of incinerators as an energy source in Catalonia.

Therefore, on the one hand, there were the administrations trying to articulate their position and opening spaces for dialogue through science and strongly bureaucratized spaces, and, on the other hand, there was the PAIC forming a framework that built an opposition based on highly politicized ideas and positions. What we can see here, then, is a lack of synchrony in the perspectives of activists and administrations. Such was the distance between activists and regulators that the institutions, which should be able to incorporate and respond to citizens' demands and claims, were not even able to recognize who was talking. This difficulty for the administrations to communicate with the informal voices is perfectly represented in that interview in which a member of the local government complained that they did not know whom they should approach to talk to the activists. We can see here the institutions' lack of tools to engage in dialogue with informal voices, and, although at no time did the institutions refuse citizen participation, the procedures in which they contemplated it did not turn out to be a practical reality for the type of citizen movement that had been organized. The PAIC's assemblage acted from the grassroots of citizenship and was organized through very diverse, local, and politically active movements and organizations from across the country. In this global context, PAIC members spoke of bad governance and private interests in the construction of the incinerator, while the council insisted on the technical discussion being appropriate and necessary to decide on the project and accused the activists of having partisan interests.

Undoubtedly, one of the problems that is also evident in this case involves the meaning of technical for the different actors involved. Latour [26] said that technical is a good adjective but a lousy noun. In this case, it turned out to be, at the very least, a controversial adjective insofar as the different uses that can be made of it constituted the warhorse issue between activists and administrations. Indeed, for the administrations, it is simply a sub-program (one possible meaning), a black box that must be opened—and can only be opened by technical (another meaning, expressing their subordinate role) personnel. This was a detour certainly, but a minor one that should later lead to the main task: deciding on the viability of the plant. For the activists, however, it was not a simple detour. For them, what the administrations presented as a means was nothing more than an end, an end that was none other than translating a political problem into another kind of problem—a technical problem (another meaning to express the constitutions of an obstacle blocking the voice of activists). In Latour's [26] words, it was like entering a new labyrinth in which to lose oneself forever.

What is interesting is that the controversy was based on a view of nature that the two parties seem to have shared, that is, nature as the other of the social, for the understanding/management of which we have knowledge that is specific to certain sciences, which we call the sciences of nature. The quid of the question, we could say, is not whether this vision of nature and its knowledge can be transcended but whether it is the time or the place for this knowledge. For some, the administration, it decidedly was. For others, the activists, it was certainly not.

However, what we propose here is to pay attention to some debates that have arisen precisely within these same natural sciences and that provide arguments to question this vision of nature as the other of the social. Specifically, we refer to the debate on the role of the social sciences in conservation policy issues. Historically, the natural sciences have tended to be the sole or primary information source used to guide conservation actions. Nevertheless, many influential conservation scientists have long recognized the importance of both social and natural considerations for conservation [76]. Indeed, Bennett et al. [77] concluded that the social science of conservation is not an optional add-on but a vital component, alongside the natural sciences, of effective conservation decision making during planning, implementation, and management. In the same vein, several studies in pure science fields have suggested that a better understanding of the human or social dimensions of environmental issues would improve conservation [78,79]. In a way, such studies would challenge this separation of tasks between natural and social sciences when it comes to managing nature and would be in line with what has been reported by science and technology studies during the last decades. That is, nature and society are not separate entities but constitute what can be named "socionatural assemblages" [80], "socionatural worlds" [81], or simply "socionature" [82].

Taking this argument to the end, we could say that, if the agreement between activists and administrations were to occur with respect to this particular vision of society and nature, then perhaps the disagreement that they showed regarding technical reports could be overcome. Nowadays, technical reports refer to environmental studies and incorporate scientists such as environmentalists, physicists, chemists, biologists, and so on. Nevertheless, once they can move the split between nature and society forward, a technical report cannot be anything other than a socio-technical report: a type of report that could hardly be carried out simply by "technical personnel" and that could no longer focus solely on what are currently considered to be "technical aspects." In the search for better management of socionature, policy makers should take into account that it is a sociotechnical approach that they need, an approach that merges those technical criteria that policy makers traditionally demand with cultural aspects, social interests, or history.

4. Conclusions

Understanding the development of environmental controversies has become a key factor for effectively incorporating the demands, opinions, and visions of citizens into public policies. At this time of rising concern for the climate and the environment, providing administrations with democratic tools is a priority to involve citizens in the processes of social change that will bring about public agendas on energy and industrial and technological transition.

In this case, we have been able to see that the form of activism is adapted to the material possibilities and the specificities of the context of activist movements, so knowing how to read the specificities of each case is very important to create useful and open spaces for dialogue and participation. In the case of Cercs, we have seen that the role of science and technology was not a priority for the activists. Thus, opposing the classic strategy of incorporating experts and scientific practices into the activist ranks, the PAIC opted to create a translocal assemblage as a tool for political influence. We must give value to this type of work performed by some movements focused on creating a network with a strong political component since it is a form of mobilization that represents a very involved and participatory citizenship in local public policy.

Finally, we must highlight the difficulty that institutions experience in incorporating the political demands of these movements and their inability to relate effectively to informal voices, such as those that made up the PAIC and its allies. In this sense, it is important for administrations to work to equip themselves with the tools to interact effectively with these movements while rethinking what they understand by participation. The role of regulators in this controversy has evoked an overly formal and restrictive conception of participatory spaces; instead, for these processes, public participation in local policies should be understood as continuous, dynamic, and porous and must be taken into account in the design of participatory spaces. We also suggest that it would be appropriate to rethink the definition of "environment" that is included in technical reports. When regulators ask for these environmental impact reports, reference is only made to the natural environment, but, if we understand the environment as a broader and more inclusive concept, perhaps these impact studies should take into account the communities living in the affected territory. It would be appropriate to change the conception of these technical reports and design a sort of socio-technical report in which not only trees, air, or water quality but also the imaginaries and cultural and sociological peculiarities of the inhabitants that surround the place are taken into account.

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