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CORRECTION

Correction to: Understanding Public Perceptions of a New Pit Lake in As Pontes, Spain

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The name of the first author should be Xaquín Pérez-Sindín and be cited as Pérez-Sindín

The title should be without "IMWA Insight" and remain simply as "Understanding Public Perceptions of a New Pit Lake in As Pontes, Spain"

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TECHNICAL ARTICLE

IMWA Insight: Understanding Public Perceptions of a New Pit Lake in As Pontes, Spain

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Abstract
The introduction of coal mining in the 1940's transformed the landscape and economy of As Pontes, Spain. Industrialisation created successive waves of economic and population booms, but when the mining slowed in the 1990s, the region experienced economic depression. Real and perceived social divisions and environmental abuses on the part of the mining company remained entrenched in people's memories. This paper provides an overview of the factors that likely affected community acceptance of the new pit lake in As Pontes, Spain. Pit lakes are often attractive closure options for companies, and community opinion of pit lakes can influence pit end use. Community perceptions of the pit lake before, during, and after filling were assessed using case studies, interviews, and focus groups, and by tracking news events and analysing internet forums. The results broadly indicated high community acceptance of the pit lake by people residing in the town. However, interviews revealed that acceptance of the pit lake was influenced by previous experiences with the mining company; company employees and local politicians were more likely to be positive about the benefits of the lake, whereas those not directly affiliated with the lake (long-term residents, remote villagers, school teachers) were more likely to have a negative view of it. Thus, technical success is not the only factor that influences community acceptance of pit lakes and company closure plans. Unresolved social issues can also influence the way certain people perceive the new landscape, regardless of ecological and aesthetic impacts.

Keywords Mine closure · Addictive economy · Risk perception · Galicia · Endesa · Eume · Post-industrial landscapes · Environmental restoration

As Pontes: A Landscape Transformed

Mining has occurred on the Iberian Peninsula since Neolithic times; cinnabar (HgS) was exploited in approximately the sixth millennium BC (Hunt-Ortiz et al. 2011). The Romans mined gold in northwest Spain approximately 2000 years ago, creating open pits and a complex network of reservoirs and channels (Fernández-Lozano et al. 2015). The semi-rural municipality of As Pontes de Garcia Rodriguez (hereafter 'As Pontes') is located in the northwest of Spain and contains ≈ 10,000 inhabitants (Fig. 1). Although mining has occurred on the Iberian Peninsula for thousands of years, the introduction of industrial coal mining in the 1940's was the beginning of dramatic socio-economic changes for As Pontes. Large-scale coal mining transformed the economy from mainly agrarian to industrial, doubled the population, and permanently altered the landscape.

The town experienced its first industrial boom in the 1940's with the opening of a small coal mine for electricity generation and the construction of a state-owned fertilizer factory. Landscape transformation began in As Pontes when the company built a dam close to the town, flooding valuable local natural areas (Perez-Sindin 2015). Later, in the 1960s, the company built two more dams along the course of the local River Eume for electricity production. In the 1970s, the town experienced a second and greater boom when a state-owned company began construction of what would

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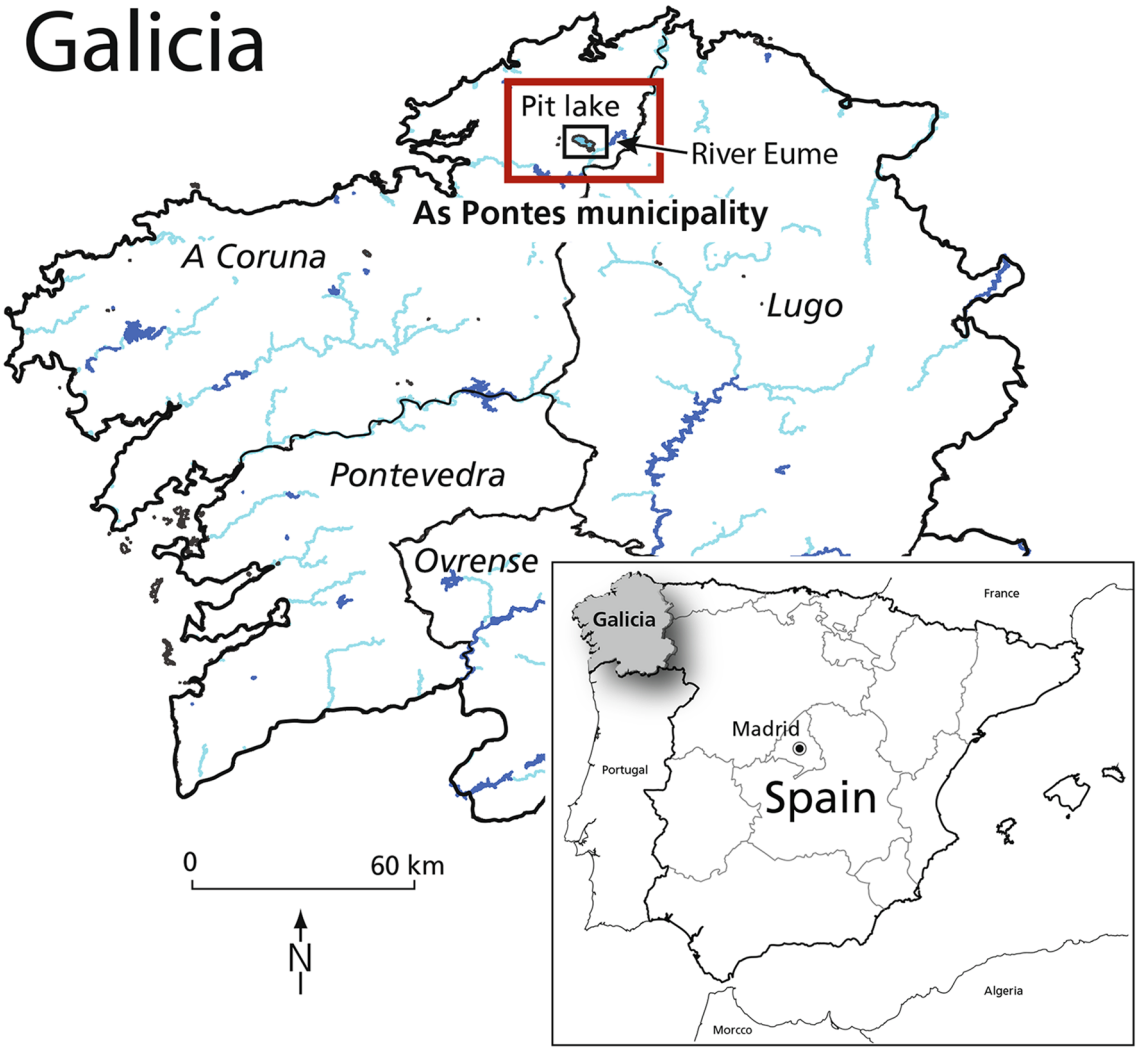


Fig. 1 Location of As Pontes pit lake in Galicia, Spain. Map created by Xaquin Perez Sindin Lopez using 2019 data from the Health Department of Xunta de Galicia

eventually become the largest power plant in Spain. In 1982, 14 million tonnes (t) of brown coal were burned, which represented half of all coal produced in Spain that year (Maurín Álvarez 2011). Construction of the power plant resulted in land acquisitions 1 km from the town centre, which led to the displacement of families and the disappearance of entire villages (Aréchaga 2011).

Mining continued for three decades (1976–2007) and the company extracted more than 260 million t of coal (brown lignite), reaching a surface area footprint (mine void and dumps) of 38 million m^2 (3800 ha) to feed the power plant (Aréchaga 2011). The mine complex at As Pontes required an extensive network of river diversions, canals, roads, and access points, further transforming the formerly rural landscape (Fig. 2). After 30 years of production and 20 years of economic boom, lignite extraction in the As Pontes opencast mine significantly decreased in the late 1990s due to cheaper coal imports from Indonesia, sending the region into economic depression. Workers experienced layoffs, early retirement, and unemployment, and the town's population declined (Perez-Sindin 2015).

Landscape Restoration and Pit Filling

In compliance with Royal Decree 2994 of 15 Oct. 1982 on 'restoration of natural space affected by mining activities' (Spanish Ministry of Industry and Energy 1982), the energy company Endesa was mandated to restore the mined area in As Pontes. Anticipating closure, Endesa began remediation in 1985 at the dump site by remodelling the landscape, treating the topsoil, and planting vegetation (Medina et al. 2017). With the intention of increasing biodiversity, habitat was the focus of the remediation, resulting in the construction of



Fig. 2 Partial views **a** of the town of As Pontes, Spain (foreground) with the mine and dump (background) Photo from Endesa in (Barcena et al. 2007) and used with permission from Soledad Souto (the author). Satellite images of As Pontes and surrounds before (1945; **b**) and during (1980; **c**) the production extraction period. Satellite photos from Instituto Geografico Nacional http://fototeca.cnig.es/ and used with permission from Soledad Souto

prairies, scrubland, forests, and wetlands around As Pontes (Fig. 3; Medina et al. 2017). The restoration extended to the mine void itself, and according to Endesa, creation of a pit lake was the "only possible solution" to rehabilitate the pit (Fig. 4; p. 25, Medina et al. 2017).

The company took a multi-pronged approach to lake water quality, which included fast-filling the lake with natural surface water from the Eume River, engineering solutions for the management of acidity, and adding lime to an inflowing channel to combat acidification in the pit lake (Juncosa et al. 2019; Medina et al. 2017). The pit was completely filled in 2012, which required 52 months and ≈ 548 hm^3 of water (Juncosa et al. 2019). Although the lake was filled with a combination of runoff, direct precipitation, and diversion channels from the dump and groundwater, the most important volumetric source was the River Eume (Juncosa et al. 2019). As the pit lake filled, lake morphology changed over time, with three major water



Fig. 3 An artificial wetland built by Endesa in 1985. Photo from Endesa in Barcena et al. (2007) and used with permission from Soledad Souto



Fig. 4 Photos of the pit (**a**) and pit lake (**b**) in As Pontes, Spain. Photos used with permission from Soledad Souto

bodies appearing and disappearing (Juncosa et al. 2019). The pH in the water bodies from January 2009 to April 2010 varied between 6 and 12; the alkaline measurements were due to the lime additions (Juncosa et al. 2019). From July 2011 to January 2017, the pH in the pit lake as well as the river water inflow was circumneutral, with minor seasonal fluctuations (Juncosa et al. 2019). The conductivity of the pit lake water (250–300 µS cm^{-1}) was consistent over time (January 2010 to January 2017), due to low conductivity inflows from the Eume River (≈50 µS cm^{-1}) as well as variably conductive inflows from two smaller channels (upper limit ≈ 500–800 µS cm^{-1}) (Juncosa et al. 2019). The two smaller inflow channels drained the dump sites, and high conductivity levels were associated with mobilisation and evapoconcentration of soluble minerals from exposed dump site slopes (Juncosa et al. 2019).

The river water improved pit lake water quality by reducing sulphide oxidation (Juncosa et al. 2019), and the former mine is now an artificial recreational lake with a beach and two islands (Fig. 5). The lake is ≈8.1 km^2, 5 km long, 2.2 km wide, and has a maximum depth of 205 m (Juncosa et al. 2018). This pit lake can be considered a technical success, but for some Pontesans, it is a controversial symbol of the region's industrial history.



Fig. 5 Photos of the pit lake in As Pontes, Spain after filling showing the beach. Photo used with permission from Soledad Souto

As Pontes: A Society Transformed

Mining in As Pontes permanently changed the physical landscape by creating the new lake, but it also changed the social landscape by creating and strengthening social divisions. In addition to villages and people being displaced by the construction of the power plant, ≈2000 new hires arrived during construction in the 1970s and during and after the peak production period. The new external hires were culturally different from the established residents, for most of the locals spoke Galician, whereas the new people spoke Spanish. The newcomers were also more educated, and occupied top positions in the company structure, whereas the local people were mostly confined to entry-level positions or subsidiary companies. The new hires also tended to live in above-standard company houses, creating friction between long-term residents and newcomers (Perez-Sindin 2015; Torres 2002). These social labels were reflected in everyday life, affecting how people worked, celebrated, lived, and even viewed politics, effectively isolating the two new main groups: 'from the town' vs. 'newcomers' (Perez-Sindin 2015).

After the economic boom of the 1980's and 1990's, the people of As Pontes were left with a large mine void and dump sites in close proximity to their homes. Although the pit lake was filled successfully, locals questioned the environmental cost of diverting the water from the river (Bustabad 2010). As described above, the company Endesa built two large-scale dams on the River Eume in the 1960's. Since construction of the dams, a 3.4 km stretch of the Eume below the dam wall has been dry for over 50 years, with accusations that the company had not provided environmental flows for the river (Bustabad 2010). Environmentalists blamed Endesa for exploiting the river, and government administrations for "looking the other way". One of the dams is currently located in a declared natural protected area and has accumulated 27 m of sludge and sediments (Bustabad 2010). Environmentalists have accused the company of "bleeding (the river) dry to flood the open pit" and believe that "the lake is an aesthetic patch to wash the company's image" as well as "a death sentence for the river" (Bustabad 2010).

Measuring Community Perception

Mining has dramatically altered both the landscape and society of As Pontes, Spain. The most striking change has been the flooding of an abandoned mine pit to create the new lake: Lago das Pontes. In this research, community perceptions of the pit lake before, during, and after filling were assessed using case studies, interviews, focus groups, tracking news events and analysing internet forums. The purpose of the research was to determine what factors influenced peoples' perceptions of the lake. The research presented here is a snapshot of a larger study investigating the impact of large-scale energy mining projects from a sociological perspective (Perez-Sindin 2015).

Briefly, data were collected via 12 semi-structured interviews with Pontesans from notable institutions (Table 1). Interviews were conducted with people from organisations such as local government, political parties, NGOs, trade unions, the Endesa mining company, businesses, and educational bodies in either Spanish or Galician. Formal and informal group discussions were also conducted (Table 2). The two formal group interviews were divided between education sector participants and former company employees, whereas the less-structured group discussions contained a mix of both 'newcomers' and 'long-term' residents (Table 2).

Local online forums were analysed for community reaction to the pit lake, such as the Facebook community 'Eres de As Pontes si' ('You're from As Pontes if'), which was

Table 1 List of interviewees by institution and position within the institution. Interviews were 'semi-structured' as per Perez-Sindin (2015)

Institution name	Institution purpose	Positions
As Pontes council	Local government-social-democracy political party	Mayor and Councilor of Industry and development (1)
Bloque Nacionalista Galego	Main opposition political-coalition of left-wing Galician nationalist parties	Local general secretary
Euroeume–Regional Development Agency	Non-governmental organization	President
Comité Intersindical Galego (CIG)	Trade union	Local coordinator
Comisiones Obreras (CCOO)	Trade union	Local coordinator
Endesa	Mining company	Early retired miner and former trade union representative (1) and qualified position (1)
University of A Coruña's Institute of Geology	University	Director
Local business (informal conversation)	Business	Owner (2)
A Magdalena Public Primary School	School	Teacher (2)

Table 2 Participant composition of group discussions with residents of As Pontes, Spain

Focus group 1: Former Company employees	Focus group 2: Education sector	Sporadic group discussion
Early retired and former power plant employee (45 years old, male)	Teacher in Public Primary School 'A' (64 years old, male)	Newcomer (45–50 years old, male)
Early retired and former mine employee (55 years old, male)	Teacher in Public Primary School 'B' (55 years old, male)	Newcomer (32 years old, female)
Early retired and former mine employee (60 years old, male)	Teacher in Public Primary School 'C' (57 years old, female)	Long-term resident (32 years old, female)
	Teacher in Private Primary School (52 years old, female)	Long-term resident (45–50 years old, female)
	Psychologist (48 years old, female)	

billed as a "group dedicated to share anecdotes, stories, events, photos, etc. of 'our people'" with more than 2500 members (25% of the population; Anonymous 2019a). A second Facebook group ("Politica-Sociedade As Pontes", 800 followers) created to "debate, present ideas, share news or report injustices" (Anonymous 2019b) was also analysed. Online observations were conducted according to Martínez and Rodriguez (2008) and Kozinets (2002), with full methods detailed in Perez-Sindin (2015). Using the search term 'lago' (lake), online and discussion comments were codified and classified as either neutral, critical, or positive. Local historical literature was reviewed for community perception of the new lake, and included the content of local and regional newspapers and audio-visual materials, such as a 2010 interview with the director of the As Pontes mine by Television de Galicia. The interview was analysed using the thematic analysis technique of Fereday and Muir-Cochrane (2006).

Community Perceptions of Lago das Pontes: the New Pit Lake

In 2007, a few months before the lake began flooding, a survey of 308 respondents (95% confidence interval) in and around As Pontes showed that 60% of the respondents living in As Pontes town perceived the new lake as something 'positive' or 'very positive' (Perez-Sindin 2015), while 18% of the total viewed the new lake as 'negative' or 'very negative'. However, there was a greater negative perception of the lake in the villages located in the northern and furthest part of the municipality. There, only 39% of the respondents valued the lake as something positive, compared to 72% in the town centre. Villages outside of As Pontes were more attached to the primary sector, such as agriculture.

In October 2014, 2 years after inauguration of the new lake, one of the top television stations in Galicia broadcasted a special program from As Pontes to 'advertise' the new post-mining landscape, interviewing local politicians and business people (Via 2014). The program had a decidedly upbeat tone. The mayor of As Pontes highlighted the "vitality and drive" with which the people of As Pontes "face the future" without "useless pessimism" (Via 2014). Reflecting on the new pit lake, a prominent business owner in the area commented about how" sensational" it was to see this "special ocean where the mine once was" (Via 2014). Soon after the program aired, internet forums such as the Facebook page 'Eres de As Pontes si…' (Anonymous 2019a) became debate platforms for community members to discuss the show (Perez-Sindin 2015), and particularly if the pit lake should become 'symbolic' of As Pontes. Using text analysis and codification as described above, ≈ 24% of the comments took a negative view towards the concept, while ≈ 61% showed a more positive view of the lake's symbolism and promotion (Table 3). The distribution of praise/critical stance ratio was slightly more equalized with regard to the number of 'likes': 53% to 41%. When individual participants were categorised, 44% of the participants were 'for'

Table 3 Analysis of public opinions on the post-mining natural areas of As Pontes, Spain, with a focus on the pit lake. Source: debate on Internet Facebook community "Eres de As Pontes si…" search under keyword "lake." Accessed 2015-04

Stance	Comments		Likes		Participants	
	Frequency	%	Frequency	%	Frequency	%
Neutral	6	15.79	4	5.33	4	25
Praise	23	60.53	40	53.33	7	43.75
Critical	9	23.68	31	41.33	5	31.25
Total	38		75		16	

the pit lake, 31% were 'against', and 25% were 'neutral.' Over time, a large group of people from As Pontes engaged in ongoing public debate on multiple platforms, exposing the different ways Pontesans interacted with the new post-mining landscape; for more data, see Perez-Sindin (2015).

Voices of the People: the Lake in Their Words

Interviews and online observations facilitated deeper insights into how people perceived the post-industrial landscape. Interviewees (Tables 1 and 2) often described As Pontes as an "industrial town," and the mining boom of the 1970's shaped their perceptions of the town and coloured their memories of the past. Peoples' personal experiences of mining, industry, environment, and the economy likely played a fundamental role in how they perceived the new lake half a century later; for full interviews and analysis see Perez-Sindin (2015).

One of the company employees highlighted how industrial development shaped an 'urban mentality' in the minds of the people: "We no longer have that small town mindset, ours is more like a city than a town. For instance, my daughter now lives in Barcelona and she sees how people there live and think…she finds herself more identified with people from Barcelona than from (small) towns."

This 'urban mentality' could also be described as resulting from the 'industrial mind set' of Pontesans, which was promoted by local elected officials. In his interview, the local Councillor of Industry for As Pontes stated: "What really makes the town different? Well, probably something that many studies omit, which is, above all, our industrial mentality. Why? Because we all were born and raised next to that monster (the power plant). We see it every day and (it) is part of our lives, it is something that people are always open to…willing to (embrace) industrialization and probably any other company." The mayor of As Pontes said: "Economically speaking, well, I think the industrial mind-set, tremendous isn't it? Tremendous, I always say, to two ministers of industry, three actually with whom I had the opportunity to speak, I told them that government needs to take care of As Pontes. (The) company clearly does it and government needs to do it because this is an industrial spiritual reserve, that is, if tomorrow ministry needs, in a given moment, two, three, four, five power plants, in As Pontes, nobody will complain about that".

Despite the enthusiasm for industrial activities among local politicians and company employees, many Pontesans were critical of the social and secondary economic effects of mining. During the discussion group with the education sector, one of the teachers self-identified as "anti-company" and stated that "the previous company [the one exploiting coal in a smaller scale since fifties] had a school for trainees, but now they [the new larger company] cut [this school]." Another teacher in the same focus group who had worked in a private school that closed down after the boom due to a lack of students argued "those who were not from the club [mining company]…fell behind." She then pointed out that other nearby towns "[didn't] do so badly" (after the end of the mining boom), thus questioning the actual benefits of mining.

Sporadic and more informal conversation amongst the non-mining interviewees revealed that the flow of newcomers did not necessarily mean an increased demand for local services. Years after their arrival in the town, social isolation between company and non-company employees remained as much a part of the social imagery as the mining itself: "They (the company employees) did not come down (to town)… they used to have their own schools, cinema, supermarket and even church. This harmed the local commerce. When they wanted things…they went to the cities. They brought everything from outside" (informal interview with local business owner and long-term resident).

At the end of the interviews and focus groups, participants were asked to share their opinions on the new lake and its future. A former company employee said that the pit lake was "a necessary investment, a vast investment…because the lake itself can bring a leisure and touristic transformation, and it may also be an industrial transformation…perhaps… cellulose or other industries." Another company employee expressed conflicting emotions saying "the lake is attractive and that will bring jobs, and that will bring leisure things, and that will change the people's way of living. I am absolutely convinced. I hope…for me the lake is an illusion, it is a terrible passion." For many, particularly those previously involved in mining, the lake itself was not simply representative of the end of mining, but the promise of a new industrial future, particularly in the form of the potential cellulose factory. However, the president of the regional development agency and business owner was critical during his interview, calling the new lake "not an economic solution for the town…it is just a hole full of water. That's all."

Local internet forums became important platforms for debate about the new lake. Many of the participants used the lake as their cover photos or profile pictures, demonstrating that the lake was becoming part of people's identities. In the years after the lake's inauguration, the town council funded several mass media campaigns to advertise the town as a tourist destination, which were debated on the local forums. After the town advertised an Ironman with a swimming event in the lake that attracted around 500 athletes, locals expressed doubts about whether the lake was attractive enough to be a tourist destination: "They aim to make As Pontes a touristic hotspot, but they omit that we must be an industrial area…where are the thousands of visitors that were to visit As Pontes thanks

to the lake?" Another user asked: "What is the aim of the lake? With the beautiful landscapes in Galicia, who really wants to spend vacations just next to a power plant?" (both from Anonymous (2019b)). Some online commentators were convinced that the pit lake had 'no economic benefit' for the town. "It is obvious that the public investment will not have an effect in the town, you've got to be joking, neither in the shops nor in the hostel industry" (Anonymous 2019b). "Indeed, it advertises the town but it has no benefit for the town, these people (the Ironman participants) do not have lunch or dinner or go to bars; when the event is finished, they just go home and most of them don't even step into the town" (Anonymous 2019b).

Some of the most critical views of the lake appeared to be based on gossip, rather than official company or media sources. The same private school teacher interviewee who discussed those who "fell behind" because they were not "from the club" (i.e. the mining company) believed that there was to be a paint factory located in the middle of the lake, and expressed her concern about what "they" want. "I have the belief that now they want to (construct) a paint factory, in the middle of the lake! Imagine (if) they also bring the cellulose factory some (are advocating) for… (this is a) fear I have!" In a sporadic conversation with a long-term resident and local business owner, she showed scepticism regarding the quality of the water in the pit lake. Despite the public announcements made by the company Endesa (EFEVerde 2014) and the Department of Health (Abelairas 2013) that the lake was safe for bathing, the interviewee argued that bathing was in fact not recommended: "No, no, let's see, he [anonymized] was told by his cousin, who worked in the company, that bathing is not recommended, that it was added…don't know which substance…and it is not good, oh well."

Some commentators who were critical of the new lake felt that it was a 'deception' on the part of the company. One commentator said: "They deceive us with the lake in front of our nose but the f*cking multinational, let's see when they open it to the public, (I) don´t think I can enjoy it while all this junk is there…" (Anonymous 2019a). "That's (a natural beach) (is) really nice and not this f*cking sh*t of (a) lake that we see through a fence!!!! I've had it up to here with these f*cking photos from la Belleza del Pueblo [in reference to one of the promotions about the lake]" (Anonymous (2019a).

One resident lamented the loss of control s/he felt as a result of the post-mining landscape: "The lake and the dump are the result of one of the greatest abuses suffered by As Pontes' neighbours, and I perfectly know what I am talking about. If someone wants, I can explain personally, but it is really tiring being bombarded with the lake and restored dump every day. Before having all this we had our life… poor, but ours" (Anonymous 2019b).

Lessons from As Pontes

In As Pontes, industrialisation resulted in an economic boom that did not benefit all inhabitants equally. Thousands of new hires from outside the town created an isolated settlement, leaving many locals questioning the economic benefit of the mine. Some of the locals even lost their homes when the new power plant was built, displacing or destroying entire villages. The industrialisation process also resulted in a dam that dried up a stretch of the River Eume for over half a century and created a giant mine pit next to their town. In essence, mining created the conditions to lift the region out of poverty, but tended to do so unequally, and impacted individuals differently (sensu Hajkowicz et al. 2011). Previous experiences of mining and industrialisation likely coloured Pontesans' perceptions of the new pit lake. While this paper provides only a snapshot of the full data in the project (see Perez-Sindin 2015), the results indicated that Pontesans who were previously engaged in successful mining and business activities tended to have a more favourable view of the new lake. Community members who were on the margins of the mining boom tended to view the lake with suspicion. This research demonstrated that community perception of pit lakes and mine remediation activities is coloured by historical experiences and conflicts, regardless of the technical success of the lake.

In the years before and during the flooding, environmental and safety concerns promoted in the media may have contributed to people's negative perceptions of the pit lake, particularly for those living along the River Eume. Several ecological organizations questioned the environmental impact of the project. In July 2010, Greenpeace organized an 'environmental camp' for 11–13 year-old children in the town of Pontedeume, a tourist town located at the mouth of the Eume (Buron 2010). During the camp, children took "comparative measurements…pH, nitrates, water hardness, bioindicator species…of the nearby Baxoi River and the River Eume" and "verified" the "poor state" of the River Eume, citing the Endesa thermal power plant as "one of its main sources of contamination" (Buron 2010). The children also conducted a survey of nearby residents and found "a great concern for the environmental status of the area". They concluded their activities with a parade through the town and hung a banner from a nearby bridge (Buron 2010). Greenpeace also made statements in the press about the pit lake itself, with the head of Energy and Climate Change for Greenpeace Spain stating that "the water is in contact with the walls of the mine. When it (i.e. river inflow) is stopped for months…will it (i.e. water quality) still be as good?" (Sierra 2012).

Safety concerns about the geological stability of the pit may have also contributed to a negative view of the pit

lake for downstream residents. Speaking to the media in 2008, the director of the Geological Institute at A Coruña University warned of an "invisible but latent risk that threatens the future lake" (Rodriguez 2008). The professor proposed that due to the movement of tectonic plates in the area of As Pontes, particularly bordering the lignite deposit, the pit lake is at risk of seismic activity (Rodriguez 2008). According to the professor, the impact of such seismic activities could result in a tsunami in the lake, which could follow the course of the Eume River, threatening agricultural areas and villages downstream (Rodriguez 2008).

The view that As Pontes could be an "industrial spiritual reserve…with (potentially) two, three, four, five power plants" suggests the presence of an "addictive economy" in mining towns (Freudenburg 1992) where high wages create disincentives for residents to invest in alternative skills or entrepreneurial initiatives, creating an addiction to mining. In this 'addictive' economy, future community development is limited to the reopening of the mine and repetition of previous booms, while overlooking alternative development paths. While repeating the coal boom seems unrealistic in As Pontes, the addiction might be to the boom itself. The addictive economy mind set was demonstrated in the interviews with people who said that that the new lake could attract industrial investments (such as a cellulose factory), rather than being a source of revenue in its own right. Although these Pontesans viewed the lake favourably, they did so through the lens of attracting even more industry to the town.

When companies seek mine closure, a pit lake is often an attractive option. Community endorsement is an extremely powerful variable in determining pit lake end use and securing investment (see Blanchette and Lund 2016; Tirant 2019). However, when companies commit perceived or real social or environmental abuses, people are less likely to embrace a pit lake on closure or trust the information from the company. While the water quality in the pit is 'still evolving,' Juncosa et al. (2019) demonstrated that the pH was circumneutral towards the end of their study and reflected river water quality. Nevertheless, there was deep suspicion among some Pontesans about the water quality of the pit lake and its final use. Even if the mine does communicate information to the public, a pit lake may not be well-received because people may choose not to believe the information from the mine.

The results of this research are applicable to post-mining societies beyond As Pontes and raise questions about social and economic engagement in small towns during industrialisation, as well as the addictive nature of boom-time economies. While this research provides answers about community perceptions of a new pit lake, it raises many more questions about how mines can and should properly engage with communities to ensure satisfactory mine closure. Pit lake and mine water research have focussed on issues relating to environment and technology. Mine closure planning should empower communities with post-mining options (Blanchette and Lund 2016), but engagement is an important part of that process. Community perception of the post-mining landscape is a key aspect of landscape rehabilitation, and historical actions by the mining company can determine future acceptance of closure plans.

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